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Themed Section : Engineering and Technology

Investigation of flexural strength of Fly Ash and Super Plasticizers Filled Binary Concrete Composites

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ABSTRACT

In the present research presents the performance of binary concrete when filled with fly ash and plasticizers were discussed based on the soaking water in predetermined no of days such as 3, 7 and 28 days respectively. Flexural strength was evaluated for both fly ash filled concrete and super plasticizers. Hand layup technique was used to prepare the composites. Fly ash filled binary concrete was optimized at 30wt. %. Super plasticizers were proved that when the concrete filled with them with less weight ratio 1.5wt.% itself they showed good results when compared with flay ash filled binary concrete.

Keywords: Concrete, Flay Ash, Super Plasticizers, Flexural Strength

I. INTRODUCTION

It has been above 70 years to research and use fly ash. With its application, the action mechanism of fly ash had been recognized. During the initial stage, only its pozzolanic activity is paid attention. Many researchers devoted themselves to the research of the potential activity of fly ash and the hydration process of fly ash cement. With the deepening of the cognition for fly ash properties, some people found that the particles of fly ash have the morphology that is different to other pozzolanic materials. It is the unique particle morphology to make it have the ability reducing water, which other pozzolanic materials do not have. It influences not only the rheological property of fresh mortar but also the initial structure of hardened cement stone.

Jan de Zeeuw and Abersch in the end of 1970s put forward that the role of fly ash, which its particle size is less than 30 , may be similar to that of the micro-particle of un hydrated cement in cement stone. Danshen et al., in 1981 summarized the previous research results and put forward the hypothesis of "fly ash effects." They considered that fly ash has three effects in concrete, i.e., morphological, activated and micro aggregate effects. The three effects are relative each other. This shows that the morphological effect is the important aspect of fly ash effects. The morphological effect means that in concrete, mineral-powdered materials produce the effect due to the morphology, structure and surface property of the particle and the particle size distribution. From the influence of fly ash on the properties of cement-based materials, the morphology effect includes three aspects: filling, lubricating and well distributing. These roles depend on the shape, size distribution, etc., of fly ash and influence many properties of concrete. Dayal and Sinha (1999) have reported the specific gravity of Indian coal ashes to range between 1.94 and 2.34 with a mean value of 2.16 and standard deviation of 0.21. The specific gravity of fly ash decreases as the particle size increases. The specific gravity increases when the fly ash particles were crushed. Typical values of the specific surface of Indian fly ashes (3267 to 6842 cm2/g) were comparable with that of the foreign ashes (2007 to 6073 cm2/g).Diamond 1986 studied the fly ash contained spherical particles of wide size range about 1m to more m with smooth surface. Some of the particles were

covered with surface irregularities or deposits. The interior structure of a particle revealed the presence of iron rich magnetic grain on a sphere and in the adjacent sphere needle shaped particles of mullite crystals were present. Garg (1995) studied the morphology of Indian fly ashes. The fly ashes contained angular as well as rounded black particles, spheroid glass, and minute silica grains. Sharma (1993) has classified Indian fly ashes based on the shape of particles as one of the parameters. According to him group-fly ashes contained mainly spherical particles with the size range between 2-25m. The surfaces of glassy spheres in this group are predominantly smooth without any deposit, only some adherence was observed. Poon, C.S.,et al.(2002) Low calcium fly ash (ASTM Class F) has been widely used as a replacement of cement in normal and high strength concrete. In normal strength concrete, the replacement level can be more than 50%, while in high strength concrete; the replacement level is usually limited to 15± 25%. According to ASTM C 618-89, fly ash, or pulverized fuel ash (PFA) in the U. K., is a "finely divided residue that results from the combustion of ground or powdered coal." It is primarily the inorganic portion of the source coal in a particulate form. The amount of literature concerning fly ash is considerable, including an ASTM standard (C 311-89) for sampling and testing fly ash for use as an admixture in Portland cement concrete. A number of standards exist which specify the desired properties of the fly ash. In the United States, ASTM C-618 is the standard. The hydraulic behavior of a fly ash is influenced by (1) its carbon content, which should be as low as possible; (2) its silica content, which should be finely divided and as high as possible; and (3) its fineness, which should be as high as possible Orchard 1973b. Fly ash is normally produced by burning coals which have been crushed and ground to a fineness of 70 to 80% passing a 75µm sieve. Different types of coal produce different quantities of ash. Depending on the concentration of mineral matter in that type of coal the ash content of the coal used in the western countries is generally less than 20% as the coal is processed prior to delivery at the power point, while in India the ash content of coal used is as high as 50% as the coal contains a higher percentage of rock and soil. Two kinds of fly ash are produced from the combustion of coal are Class C - High, more than 10%, calcium content produced from sub-bituminous coal and Class F - Low, less than 10%, calcium content produced from bituminous coal. The addition of fly ash to concrete has a considerable effect on the properties of fresh concrete. There is agreement that low calcium ashes show some retarding influence on the mix. This may be due to the fact that the cement is becoming more "diluted." The effects of fly ash on fresh concrete are well known. Workability and pump ability of concrete is improved with the addition of ash because of the increase in paste content, increase in the amount of fines, and the spherical shape of the fly ash particles. Note that this improvement in workability may not be true for coarse, high carbon fly ashes. The use of fly ash may retard the time of setting of concrete. This is especially true of Class F ashes. C lass C ash may or may not extend setting time and there are results that show reduction of setting time. Fly ash, in contrast to other pozzolans, reduces the water requirement of a concrete mix. It has been suggested that the major influencing factor in the plasticizing effect of fly ash is the addition of very fine, spherical particles. In fact, it has been shown that as the particle size increases, the plasticizing effect decreases. This indicates that some fly ashes do not improve workability. The rheology of fly ash cement pastes has been shown to behave as a Bingham model. Finally, the inclusion of some fly ashes in a mix reduce bleeding and segregation while improving finishibility. This again can be attributed --to the increased amount of fines in the mix and lower water requirement. It is reported that the use of some fly ashes causes an increase in the amount of air entraining admixture required in concrete. It is proposed that carbon in the fly ash absorbs the AEA therefore requiring more to be used as an active role in the mix. In general class C fly ashes require less AEA than class F ashes. Also, there may be an increased rate of air content loss with manipulation if this ash is used. Plasticizers or water reducers, and super plasticizer or high range water reducers, are chemical admixtures that can be added to concrete mixtures to improve workability. In order to produce stronger concrete, less water is added (without "starving" the mix), which makes the concrete mixture less workable and difficult to mix, necessitating the use of plasticizers, water reducers, super plasticizers or dispersants. Plasticizers are also often used when pozzolanic ash is added to concrete to improve strength. This method of mix proportioning is especially popular when producing high-strength concrete and fiber-reinforced concrete. Adding 1-2% plasticizer per unit weight of cement is

usually sufficient. Adding an excessive amount of plasticizer will result in excessive segregation of concrete and is not advisable. Depending on the particular chemical used, use of too much plasticizer may result in a retarding effect. Super plasticizers have generally been manufactured from sulfonated naphthalene condensate or sulfonatedmelamine formaldehyde, although newer products based on polycarboxylic others [1-14]. The main objectives of using fly ash in high strength concrete are to reduce heat generation and to obtain better durability properties. However, in concrete mixes prepared at a low water-to-binder (w/b) ratio, 20% fly ash content may not be sufficient to suppress the excessive heat of hydration. Manz and others (1982) have suggested that high-calcium fly ashes (Class C ashes) are best distinguished from the low-calcium (Class F) ashes by the incrementing properties. Thus, a general term 'mineral admixtures' has been suggested to describe all classes of slags, ashes, pozzolans and other cement supplements, with a further distinct on being drawn the basis of their self-cementing capabilities. The above form of classification has been proposed as being preferable to the current division of fly ashes. Ramezanianpour, (1994) Haw ever the terminology, 'high-calcium' and 'low calcium have been used in this study, in general, and Class C and Class F, while referring reporting the type of fly ashes actual used by various researchers, in their investigations. Tcnoutasse and Marion (1986) investigated the selective dissolution of different Began low-calcium fly ashes with water, hydrochloric acid solutions by chemical and microscopically techniques. 'The behavior of fly ashes was also studied in lime-saturated solution. The hydration mechanism was investigated as a function of time, for OPC and OPC' containing 10% to 80% of fly ashes. Cannon (1968) research carried out on the methods of proportioning fly ash concrete mixtures to obtain equal strength to those of conventional control mixtures. Cannon employed Abrams' law and a factor that accounted for the relative costs of fly ash and concrete. Rosen (1976), Gosh (1976) and Popovers (1982) extended the above concept to develop mixture proportions for fly ash concrete. Ghoul (1976) approach, are the standard guidelines available for proportioning pozzolana cements. U.K., Munday and others (1983) proposed a procedure for obtaining any desire strength at 28 days, which requires the collection of data, for a fly ash source. Brown (1982) found that both slump and vee-bee time improved increased substitutions and the changes were found to depend on the level of ash substitution on the water content. He also observed an increase in workability up to 8%replacement of sand or aggregate by ash. Further increase in the percentage replacement caused a rapid decrease in workability. The main objective of thesis is to investigate the strengthen characteristics of the concrete using different proportions of fly ash and super plasticizers. Here fly ash is a product of pulverized coal, considered as a waste by product finding difficulty to be disposed off. Using different proportions of fly ash the maximum strength can be reached in certain proportion of fly ash value. Similarly, super plasticizers are also using different proportions the maximum strength can be reached certain proportion of super plasticizers**.** The scope of the study is to know the properties of the fly ash and super plasticizers in different proportions. It can be used for find the strength values and find out the maximum strength of the concrete.

II. METHODS AND MATERIAL

Materials used in Binary Concrete concrete are Cement, Fine aggregate, coarse aggregate, water, fly ash, and super plasticizer were used in this project. Zuari 43 grade ordinary Portland cement is used for casting the elements. The following test are conducted such as Fineness test, Standard consistency test, Initial setting time test, Final setting time test, Specific gravity test, Compressive strength test were conducted. In this study we can find out the various tests like compressive strength, split tensile strength and flexural strength are done. The strength properties are done M40 grade concrete mix design. The advantage of binary concrete can be enhanced by substituting some of the cement with other materials, such as fly ash. Fly ash is one of the by-products coal combustion in power generation plants. Large amount of fly ash are discarded each year, increasing costs for disposal. On the other hand, fly ash has been shown to improve the overall performance of concrete, when substituted for a portion of the cement. In same manner super plasticizers is also added different proportions the maximum strength can be reached certain proportion of super plasticizers**.** Then the maximum strength can be given at a certain proportion

of adding fly ash and super plasticizers at various tests. These tests based on we can identified strength of concrete in addition of fly ash and super plasticizers. Results of the cement are tabulated in the **Table 1** as mentioned below.

Table 1 : Test results on cement

S.NO	TEST NAME	RESULT		
1	sieve test	8 %		
2	standard consistency	29 %		
3	Initial setting time	52 min		
4	Final setting time	480 min		
5	Specific gravity test	3.15		
6	Compressive strength	3 days	7 days	28 days
		N/mm^2	N/mm^2	N/mm^2
		22.12	30.12	44.23

In this investigation fine aggregate is naturally available sand and it is free from dirt, dust and any organic matter. The fine aggregate used for the project was obtained from Penna river .The following tests were conducted on the sand such as Sieve analysis, Bulking of sand by volume method, Specific gravity test. **Table 2** indicates the results of the fine aggregates as mentioned below.

Table 2 Test result on fine aggregates**.**

S.NO	TEST NAME	RESULT
1	Sieve analysis	Zone lll
2	Bulking of sand by volume method	12.5%
3	Specific gravity test	2.51
4	Relative density	45% (medium dense)

In this investigation hard broken granite aggregate is used. The size course aggregate is various from12 mm to 20 mm. The source the aggregates is Srikalahasti. The following tests like sp. gravity test, fineness modulus test, water absorption test, aggregate impact test, and aggregate crushing strength tests were conducted. The final results thereof as mentioned below in the **Table 3.**

Table 3 Evaluation of course aggregates concrete composites.

S.NO	TEST NAME	RESULT
1	Fineness modulus	7.5
2	Specific gravity	2.33
3	Water absorption	2.1%
4	Crushing strength	22.43%
5	Impact test	28.12%

The following tests of fly ask such as Moisture content, Loss on ignition, Silicon oxide content, Alumina oxide content, Calcium oxide content, Chloride content, Free calcium oxide content, Total alkali oxides content, Particle density determination (by Pycnometer bottle and Le-Chatlier Flask methods), Fineness determination (by dry sieving, wet sieving, Blaine air permeability and laser methods) were conducted. The following tests for fly ash cement pastes, mortars, or concretes are outlined and they are namely Soundness (expansion test), water requirement (expressed as water content of test specimen divided by water content of control specimen to achieve equal specified consistencies), Preparation and curing of specimens, determination of compressive strength (28 days).

III. RESULT AND DISCUSSION

This test was developed by BRAZILAN at Japan in 1943, this is the simplest test and it has been referred in ASTM C78.

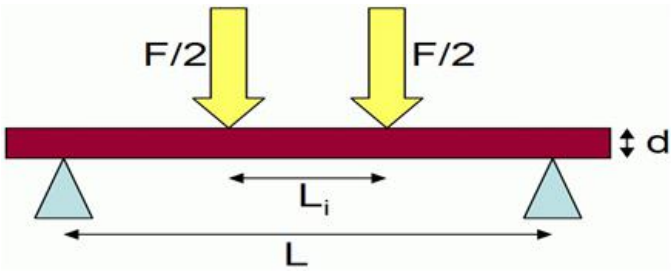

Figure1 Line diagram of flexural strength test using UTM.

This method is used to measure the tensile strength of concrete, and it is a laboratory test. The apparatus for conducting the flexure strength test essentially consists of 4000 kg U.T.M., weighing balance, scale, beam of size 10x10 cm, and length 50 cm, vibrator, measuring jar, pan for mixing cement & sand, trowel, and non porous plate. **Figure 1** shows the line diagram flexural strength testing by UTM. The test specimens are stored in water at a temperature of 24^0c to 30^0c for required curing period as per ASTM C 192. T hey tested immediately on removing from the water whist they are still in a wet condition. The dimension of each specimen should be note down before testing. The specimen is placed in the machine in such manner that the load is applied to the upper surface as in the casting mould. The axis of the specimen is carefully aligned with the axis of the loading device. **Figure 2** shows the photo picture of UTM.

Figure 2 Photo picture of Universal testing machine.

The load is applied without shock and increasing continuously at a rate such that the extreme fibers stress increased approximately 0.7 kg/cm^2 the load is increased until the specimen fails, and the maximum load is applied to the specimen during. The test recorded. The flexural strength is expressed as *modulus of rupture.* **Figure 3** shows the arrangement of loading below.

Figure 3 Arrangement of loading.

Flexural MR is about 10 to 20 percent of compressive strength depending n type. Size and volume of the coarse aggregate used. Figure 4 shows the Typical fracture failure of the specimen. **Figure 5** shows the variation of flexural strength as a function of fly ash after 3 days soaking in the water conforms that the flexural strength is gradually increases when the fly ash increases on other hand. It was also observed that the when the fly ash was 30wt.% maximum flexural strength was observed as 3.58N/mm^2 and after that strength was decreased.

Figure 4 Illustration of fracture of failure specimen.

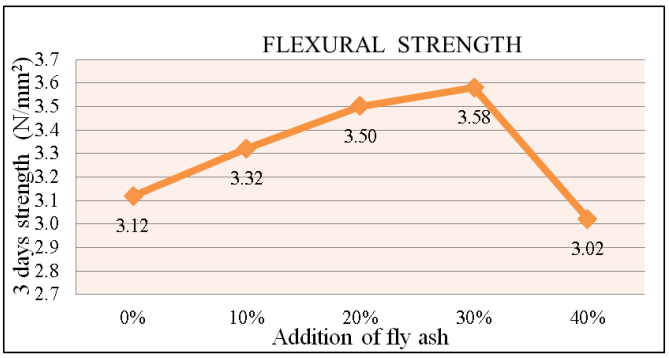

Figure 5 Variation of flexural strength as a function of fly ash after soaking 3 days in water.

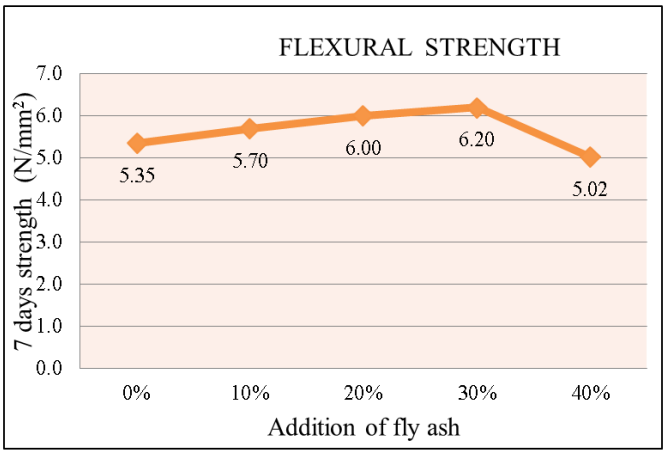

Figure 6 Variation of flexural strength as a function of fly ash after soaking 7 days in water.

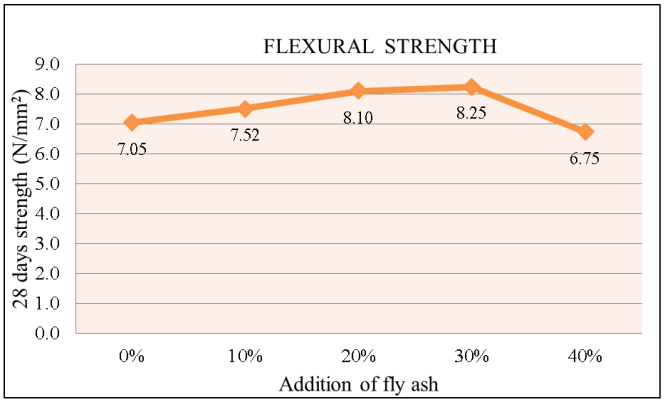

Figure 7 Variation of flexural strength as a function of fly ash after soaking 28 days in water.

Figure 6 shows the variation of flexural strength as a function of fly ash after 7days soaked in the water was indicates that the flexural strength is gradually increases when the fly ash increases on other hand. It was also observed that the when the fly ash was 30wt.% maximum flexural strength was observe as 6.20 N/mm^2 and after that flexural strength is decreased [2].

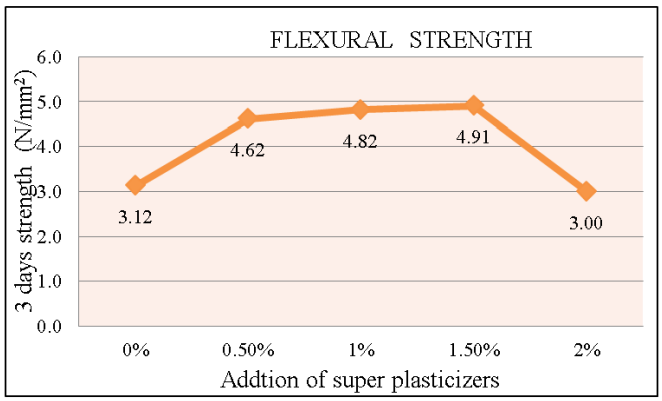

Figure 8 Variation of flexural strength as a function of super plasticizers after soaking 3days in water.

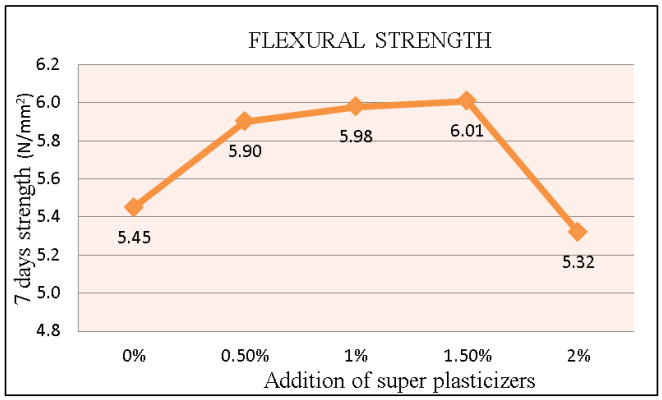

Figure 9 Variation of flexural strength as a function of super plasticizers after soaking 7days in water.

Figure 7 shows the variation of flexural strength as a function of fly ash after 28 days soaked in the water was indicates that the flexural strength is gradually increases when the fly ash increases on other hand. It was also observed that the when the fly ash was 30wt.% maximum flexural strength was observe as 8.25N/mm^2 and after that flexural strength is decreased [13]. **Figure 8** shows the variation of flexural strength as a function of super plasticizers after 3days indicates that the flexural strength is gradually increases when the plasticizers increase on other hand. It was also observed that the when the fly ash was 1.5wt.% maximum flexural strength was observe as 4.91/mm^2 and after that flexural strength is decreased. When soaking days are increased as a result of that strength is gradually increases.

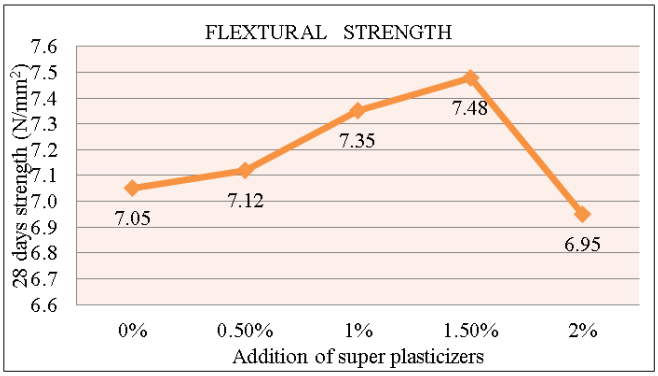

Figure 10 Variation of flexural strength as a function of super plasticizers after soaking 28 days in water.

Figure 9 shows the variation of flexural strength as a function of fly ash after 7days indicates that the flexural strength is gradually increases when the plasticizers increase on other hand. It was also observed that the when the fly ash was 1.5wt.% maximum flexural strength was observe as 6.01N/mm^2 and after that flexural strength is decreased. When soaking days are increased as a result of that strength is gradually increases. **Figure 10** shows the variation of flexural strength as a function of fly ash after 28days indicates that the flexural strength is gradually increases when the plasticizers increase on other hand. It was also observed that the when the fly ash was 1.5wt.% maximum flexural strength was observe as 7.48N/mm^2 and after that flexural strength is decreased. When soaking days are increased as a result of that strength is gradually increases.

IV. CONCLUSION

- Fly ash is added at different proportions namely 0%, 10%, 20%, 30% and 40%.
- For 43 grade cement with M40 mix, by adding up to 30% of fly ash to the cement, the strength is increased and by adding 40% of fly ash the strength is decreasing.
- The test results show that on addition of 30% of fly ash to cement it has gained maximum strength at 28 days period but the rate of strength gain compared to ordinary Portland cement concrete OPCC is at slower rate at initial days.
- The flexural strength increased by 16.18% when compare to normal concrete.

- By use of fly ash as admixture, the cost of construction is also considerably reduced.
- Non-biodegradable fly ash is effectively utilized in Binary concret, so it reduces the disposal problem of fly ash.
- For 43 grade cement with M40 mix, by adding 0%, 0.5%, 1.0%, 1.5% of super plasticizer to the mix prepared the strength is slightly increased and at adding 2.0% of plasticizer to the mix prepared the strength will slightly decreased.
- The test results show that on addition of 1.5% of super plasticizers to concrete it has gained maximum strength at 28 days period.
- The flexural strength increased by 13.46% when compare to normal concrete.
- Super plasticizer may not increase the strength of concrete directly. But it helps in reducing the w/c ratio. Which in turn result in the increase of strength of concrete due to reduction of w/c ratio.
- It is concluded that when compare to super plasticizer, fly ash gives more desirable properties to concrete and ecofriendly.

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Themed Section: Science and Technology

Development of Poly-Lactic-Acid (PLA) Composite Films Filled with Aerosil / Wollastonite on Characterization

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ABSTRACT

This research presents on the two different fillers composites filled with aerosil and wollastonite fibers respectively were dispersed on to the Polylactic acid (PLA). Two different systems were prepared such as system-1(i.e. PLA + aerosil) and system-2 (i.e. PLA + wollastonite). In this connection synthesis of polylactic acid solution and development of composites were prepared with aerosil as filler. Tensile strength and modulus were examined with the help of Instron Universal Testing Machine. Using hand layup technique was used to prepare the composite. Glass moulds are used for casting purpose. Tensile strength and tensile modulus and chemical resistance were measured for the above mentioned two different systems. PLA composite film thick was increased from 1-1.5mm for all the composites. Aerosil and wollastonite filler ratios were considered as 0.1, 0.2, 0.25, and 0.3 wt.% respectively for both the systems. Among two systems system-2 got significantly good performance than the system-1. And also weight of the system-1 is lesser than that of the system-2 as aerosil has high specific volume when compared with wollastonite filler.

Keywords: PLA, Aerosil, Wollastonite, Tensile Strength, Tensile Modulus, Chemical Resistance

I. INTRODUCTION

Polylactide (PLA) is rigid thermoplastic polyester with a semicrystalline or completely amorphous structure depending on the stereopurity of the polymer backbone. PLA has gained a considerable interest due to its bioresorbability, biodegradability, and biocompatibility. Furthermore, its ability to be crystallized under stress, thermally crystallized, filled, and copolymerized, turn it into a polymer with a wide range of applications. PLA is a biodegradable polymer, made from renewable sources, with either a semi-crystalline or amorphous structure. Although these features make PLA an appropriate candidate for food packaging there are, however, some important issues that should be overcome such as poor thermal stability, low mechanical resistance, and limited gas barrier properties. Based on results reported in the literature, the addition of nano-sized fillers (clays) can efficiently improve the mechanical and barrier properties provided that they are well dispersed in the matrix and form an exfoliated structure. On the other hand, this work shows that the incorporation of organically modified clay into PLA enhances the rate of degradation and hence markedly decreases the thermal stability of the resulting nanocomposites. Therefore, control of PLA thermal degradation is another challenge in developing PLA-clay nanocomposites. Packaging materials have been, to a large extent, based on non-renewable materials. The only widely used renewable packaging materials are paper and board which are based on cellulose, the most abundant renewable polymer world-wide. However, major efforts are under way to identify alternative non-food uses of agricultural crops and the production of packaging materials, based on polymer from agricultural sources, could become a major use of such crops. Indeed such alternative bio-based packaging materials have attracted considerable research and development interest for long time and in recent years the materials are reaching the market. Among all bio-based biodegradable polymers studied, poly (lactic acid)

(PLA) appears to be one of the most attractive polymers commercially available, because of its iodegradability, ease of processing, transparency and price. In general, commercial PLA grades are copolymers of poly (L-lactic acid) and poly(D,L-lactic acid), which are produced from Llactides and D,L-lactides respectively. The ratio of L-enantiomers to D,L-enantiomers is known to affect the properties of PLA, i.e. whether the materials are semicrystalline or amorphous. There is increasing interest in using PLA for disposable degradable plastic articles; however, there are properties such as flexural properties, gas barrier properties, high melt viscosity and melt strength/'elasticity' during processing, that are often not good enough for some end-use applications, such as blow molding. To improve the physical properties of PLA, especially in terms of thermomechanical stability, addition of different fillers (nanoparticles) in PLA was explored. The principal drawbacks of such a biodegradable polymer in terms of industrials application like food packaging are its poor thermal resistance, low mechanical and limited gas barrier properties. These drawbacks could be overcome by improving the thermomechanical properties through copolymerization, blending, and filling techniques. However, the use of fillers appears to be the most attractive approach because of lower cost. There are different approaches for the preparation of PLA nanocomposites: in-situ polymerization, solution intercalation, and melt intercalation. Since melt intercalation provides more advantages as compared to others, this technique has been used as a standard method to develop polymer-layer silicate nanocomposites. Use of wollastonite in high fraction will reduce the cost of composite and improve tensile strength, impact properties and dimensional stability and yield. High aspect ratio resulting on these wollastonite composites to resist machining and thus has greater surface area, better stress propagation. Reinforcement with wollastonite increases the starting crystallisation temperature and induces a shorter processing time in injection moulding and thus the effect of crystallinity of the composite for this reason the reinforcement of rotational moulded articles with wollastonite is of interest for research. These materials exhibits increase in flexural modulus, HDT, superior dimensional stability, reduced cost and ease processability. The aim of this work is to improve melt viscosity, thermo-mechanical and gas barrier properties of PLA by mixing it with aerosol/ wollastonite, so that properties able to enlarge the PLA application fields. In the present research we zero in on the PLA acid was dispersed with aerosol and wollastonite separately with different weight ratios on characterization.

II. METHODS AND MATERIAL

Poly (lactic acid) was supplied by Nature Works 4060D, and was used as a matrix. SLS and chloroform (Merck, Germany) were used as a surfactant and solvent, respectively. The grade of wollastonite (W) used for preparing different compositions was Fillex-11AB3 (surface treated), supplied by Wolkem India Limited. Aerosil (grade RY50, BET Surface area (m2/g): 30 + 15, PH: 4.5-7.5, Carbon content [wt. %]: 3.0-4.0, Chemical composition: Sio2) filler. Tensile strength, three point bending tests were carried out at par with ASTM D 53455. Tensile and flexural tests were performed on Instron universal testing machine (3369).

Synthesis of PLA composite material

Two different systems were prepared such as aerosil dispersed into PLA matrix as a first system and wollastonite particles dispersed into the same matrix for preparing the second system. PLA granules are taken in a conical beaker by 2wt.% which is mixed with 100ml of chloroform solution. This modified solution was thoroughly stirred for about 3/4hour. Once the solution is completely made then aerosil particles by 0.1wt.% dispersed into the solution. Then using spatula we stirred the complete solution for about ½ an hour. This solution was poured on to the glass mould which is prepared by ASTM standards. Make sure these mould were coated with polyvinylalcohol solution as it is facilitate easy removal. Then the specimen is allowed to cure for 24 hours and post cured composites were cut in to dumbbell shapes for testing. After doing this specimen the above procedure is repeated for getting remaining specimens by taking other aerosil weight ratios such as 0.1, 0.2, 0.25, 0.3 . Neat PLA composites were also prepared along with aerosil filled composites. In order to prepared second system wollastonite was used as a filler to disperse into the same matrix as mentioned above. ASTMD543-87 was used to prepare the specimens for conducting chemical resistance. Three acids, three alkalis and four solvents were used for this purpose.

Acetic acid, nitric acid, hydrochloric acid, ammonium hydroxide, aqueous sodium carbonate, aqueous sodium hydroxide, carbon tetrachloride, benzene, toluene, and distilled water were used after purification. In each case, the samples (5mm x 5mm x 3mm) were pre-weighed in a precision electrical balance and dipped in the respective chemical reagents for 24 hrs.

III. RESULTS AND DISCUSSIONS

Table 1: Experimental results of chemical resistance test for system-

Filler loading(wt.%)	0.0	0.1	0.2	0.25	0.3
Hydrochloric acid, *HCl(10%)*	1.202	1.304	1.018	0.985	0.856
Acetic acid , (CH_3COOH)(5%)	1.023	0.365	0.142	0.523	0.632
Nitric acid ,(HNO_3) (40%)	2.014	1.542	1.325	1.856	2.745
Sodium hydroxide , (NaOH) (10%)	3.421	1.892	1.754	1.458	2.563
Sodium Carbonate - ,(Na_2CO_3) (20%)	-0.235	-0.364	-0.963	-0.478	-0.421
Ammonium Hydroxide ,(NH_4OH)(10%)	0.230	0.125	0.352	0.412	0.478
Benzene	4.456	5.563	6.589	8.754	10.235
Toluene	2.365	3.012	1.025	4.023	1.002
Carbon tetrachloride, CCl_4	0.123	0.365	0.441	0.336	0.222
Distilled water,H_2O	1.023	1.089	1.005	1.456	1.025

They were then removed and immediately washed in distilled water and dried by pressing them on both sides with a filter paper at room temperature as described elsewhere. These samples were then re-weighed and the percentage loss/ gain were determined using the equation:

$$\%\, Weight\ loss\ of\ gain\ of\ the\ sample = \frac{Original\ weight - Final\ weight}{Original\ weight}\ x100$$

Table 2 : Experimental results of chemical resistance test for system-2.

Filler loading(wt.%)	0.0	0.1	0.2	0.25	0.3
Hydrochloric acid, *HCl(10%)*	2.102	3.402	4.014	0.865	0.582
Acetic acid ,(CH_3COOH)(5%)	1.243	0.235	0.245	0.532	0.458
Nitric acid ,(HNO_3) (40%)	2.452	1.752	1.005	1.744	2.745
Sodium hydroxide , (NaOH) (10%)	4.253	3.256	2.025	1.489	3.477
Sodium Carbonate - ,(Na_2CO_3) (20%)	0.245	0.356	0.588	0.856	0.563
Ammonium hydroxide ,(NH_4OH)(10%)	0.563	0.255	0.374	0.466	0.856
Benzene	4.475	5.744	6.889	8.452	10.253
Toluene	-2.253	-3.035	-1.025	-4.004	-1.042
Carbon tetrachloride, CCl_4	0.124	1.023	2.036	0.356	0.455
Distilled water,H_2O	1.145	1.745	1.454	1.889	1.470

Tensile strength and modulus

Table 3: Experimental results of tensile strength and modulus of system-1 and system-2.

Filler Fractions	Tensile strength (MPa)		Tensile Modulus (MPa)	
(wt.%)	System-1	System-2	System-1	System-2
0.0	5.20	5.20	1523.96	1523.96
0.10	6.06	7.23	1598.44	1835.02
0.20	6.77	8.88	1635.75	1956.33
0.25	7.11	9.56	1705.48	1985.04
0.30	6.85	8.52	1809.25	2304.63

From the above **Table 3:** Shows the experimental results of the mechanical properties such as tensile strength and modulus of system-1(PLA + aerosil) and system-2 (PLA + Wollastonite). In this study we have considered five different variations (0.0, 0.1, 0.2, 0.25, and 0.3) of filler fractions have been considered for this study. Aerosil and wollastonite are two fillers have considered for this research work. Tensile strength for system-1 and system-2 graphs were shown in the **Figure 1**. It was noticed that tensile strength was gradually increases from sample 0.0 variations to sample 0.25 variations. The tensile strength was optimized at the 0.25 variation of aerosil filler and at this variation strength was measured as 7.11 MPa, on other hand strength was decreased for the sample 0.3 variation. The reason might be due non-uniform distribution of particle or increased viscosity of the modified solution might be the reason. Even for the system-2 also similar results were noticed line strength was gradually increases from the sample 0.0 variation to till 0.25 sample variation and at the 0.25 variation performance was 9.56MPa. System-2 sample 0.25 variation has got 34.45% of increase in tensile strength was observed when compared with the system-2. Tensile modulus graphs for system-1 and system-2 were shown in the **Figure 2**. It was noticed that tensile modulus was gradually increases from sample 0.0 variation to sample 0.3 variations. The tensile modulus was optimized at the 0.3 variation of aerosil filler and at this variation strength was measured as 1809.25 MPa. When the particles are consolidated in the matrix stiffening effect will be gradually increases some extent, this might be the reason increased modulus. Even for the system-2 also similar results were noticed line strength was gradually increases from the sample 0.0 variation to till 0.3 sample variation and at the 0.3 variation performance was noticed as 2304.63 MPa is the maximum performance. In fact in system-2 sample 0.3 variation has got 27.38% of increase in tensile modulus was observed when compared with the system-2.

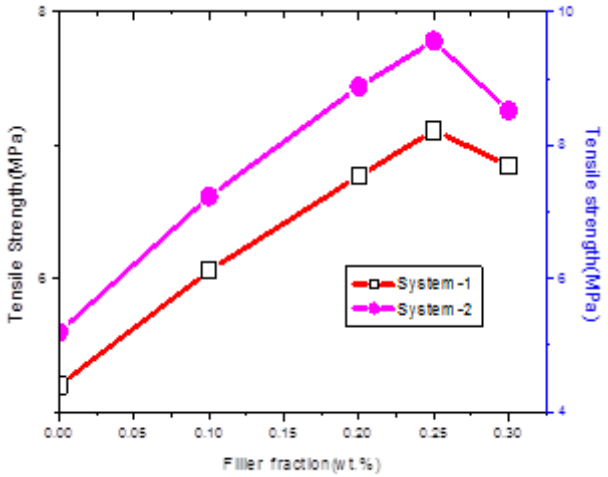

Figure 1: Variation of tensile strength performance as a function of filler fractions of two systems

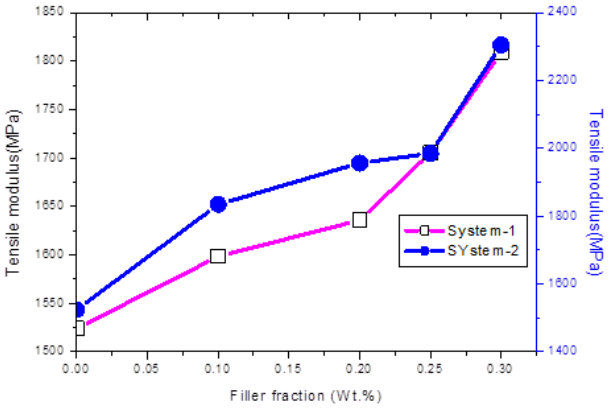

Figure 2: Variation of tensile modulus performance as a function of filler fractions of system-1 and system-2

Table 1 shows the tabulated results of the chemical resistance test for the system-1. It was observed from the results that except sodium carbonate lost weight whereas remaining all samples got some weight. Among the samples that have got weight, benzene got high weight gain than other. Loss of weight for sodium carbonate is due to the chemical reaction of the carbonated molecules with the aerosil or lactic acids. Ashok kumar et al., were observed by the similar results in their research. Moving on to **Table 2** depicts the chemical resistance results of the system-2. It was observed from the results that except toluene lost weight whereas remaining all samples gained some weight. Among the samples that have got weight, benzene got high weight gain than other. Loss of weight for toluene is due to the chemical reaction of the toluene molecules with the wollastonite particles.

IV. CONCLUSION

Aerosil/wollastonite filled PLA composites prepared with different weight ratios such as 0.1,0.2, 0.25 and 0.3 wt.%. System -1(i.e. PLA filled with aerosil filler) tensile strength was poor when compared with system-2 (PLA filled with wollastonite filler). Reasons attributed that due to high specific volume for aerosil was made the non-homogeneous mixing of the filler throughout the matrix consequently filler concentrated on the top surface identified for poor performance. On other hand, for system-2 due to low specific volume particle of these spreads all over the matrix which made uniformly distribution of the filler. For system-1 tensile strength was optimized at 0.2wt.% whereas for system-2 tensile strength was optimised at 0.25wt.%. Tensile modulus for the system-1 was increased up to 0.25wt.% on other hand tensile modulus was increased for system-2 up to 0.3wt.%. It was also noticed that chemical resistance was also found good for all the chemicals except sodium hydroxide and toluene for system-1, whereas for system-2 is also good chemical resistance except toluene.

V. ACKNOWLEDGEMENTS

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Hydrogen Fuel Cell Car

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ABSTRACT

Water is among the natural resources that needed by living organisms such as human. Rapid development through human activities leading to the water pollution existed in river, for example Malacca River. Therefore, a literature review has been conducted to identify the effectiveness of using remote sensing towards water quality in Malacca River. Various research studies conducted by scientists and researchers stated that data from the satellite like Landsat, IKONOS, SPOT, IRS, CZCS, and SeaWiFS may be applied in assessing water quality parameters including suspended matter, turbidity, phytoplankton, and dissolved organic matter. The measurement for water quality parameters can be carried out through in-situ measurement, as experimental examination may be done through on-site studies and inside laboratories. Water quality assessment is extremely needed to strengthen the result produced through analysis of remote sensing data to determine the impacts and factors that contributed to the river pollution. As a result, remote sensing data from Landsat, IKONOS, Quickbird and SPOT may be applied to determine water quality parameters such as suspended matter, phytoplankton, turbidity, dissolved organic matter, and other parameters in the Malacca River. As conclusion, remote sensing has become a tool in monitoring and solving water quality issues, serving as a basis for management activities and planning activities in terms of river water quality.

Keywords: Hydrogen, Fuel Cell, PEM, PEMFC, AFC, PAFC, MCFC, SOFC

I. INTRODUCTION

Energy Resources

Types of Energy Resources

Conventional Energy Resources
Fossil fuels
Hydro resources
Nuclear resources

Non-conventional Energy Resources

- Solar energy
- Wind energy
- Biomass energy
- Geothermal energy
- Ocean tidal energy
- Ocean wave energy
- Ocean thermal energy conversion

What is a Fuel Cell?

Fuel cells are electrochemical devices that convert the chemical energy of a reaction directly into Electrical energy. The basic physical structure or building block of a fuel cell consists of an Electrolyte layer in contact with a porous anode and cathode on either side.

Classification of Fuel Cells:

Fuel Cells can be classified in several ways

Based on type of electrolyte:

- Phosphoric Acid Fuel Cell (PAFC)
- Alkaline Fuel Cell (AFC)
- Polymer Electrolyte Membrane Fuel Cell (PEMFC)
- Molten Carbonate Fuel Cell (MCFC)
- Solid Oxide Fuel Cell (SOFC)

Based on the types of the fuel and oxidant

- Hydrogen (pure)-Oxygen (pure) fuel cell
- Hydrogen rich gas – air fuel cell
- Hydrazine – oxygen/hydrogen peroxide fuel cell
- Ammonia –air fuel cell
- Synthesis gas – air fuel cell
- Hydrocarbon gas – air fuel cell
- Hydrocarbon (liquid)-air fuel cell

II. METHODS AND MATERIAL

Based on Operating Temperature

- Low temperature fuel cell (below 150^0c)
- Medium temperature fuel cell (150^0c-250^0c)
- High temperature fuel cell (250-850^0c)
- Very high temperature fuel cell (800-1100^0c)

Based on the Chemical Nature of Electrolyte

- Alkaline electrolyte type
- Neutral electrolyte type
- Acidic electrolyte type

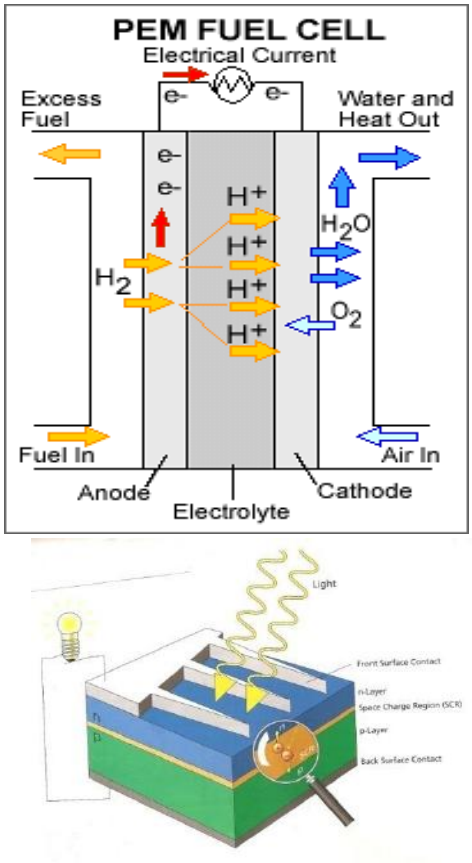


Figure 1 : Schematic diagram of photo voltaic cell

Figure 2 : My Proto Type Model

EXPERIMENTS ON SOLAR CELLS

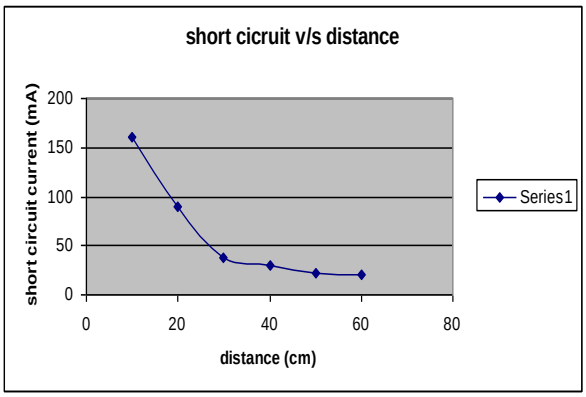
Measurement of short circuit current and no load voltage

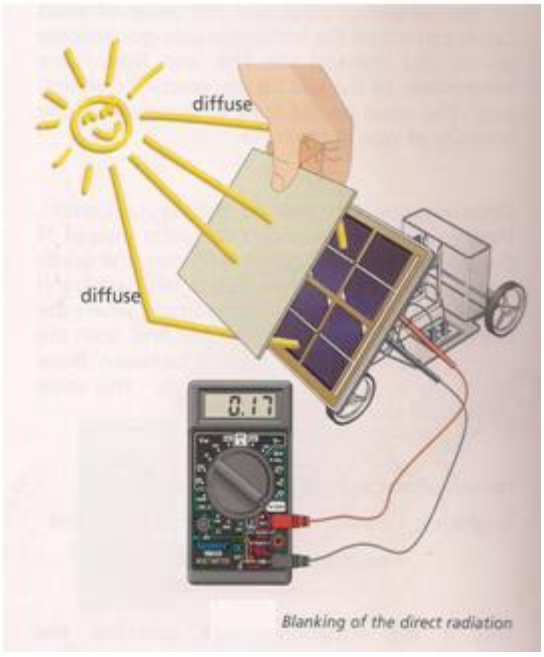
a. Short circuit current
b. no load voltage
c. Calibration of radiation meter
d. Direct and diffuse radiation
e. Efficiency of solar panel

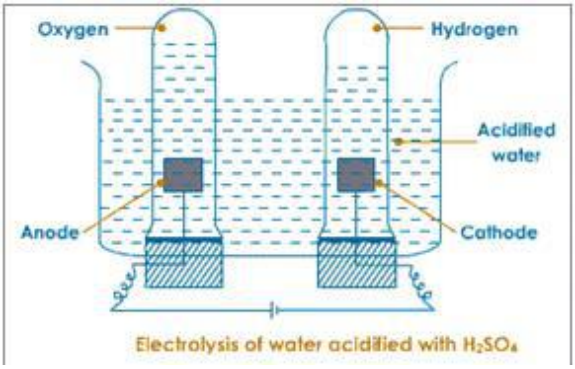
ELECTROLYSIS AND EXPERIMENTS ON FUEL CELLS

Different methods of producing hydrogen

a. Thermo-chemical methods
b. Electrolysis of water
c. Thermolysis of water
d. Biophotolysis
e. Electrolysis of Water Using Solar Panel

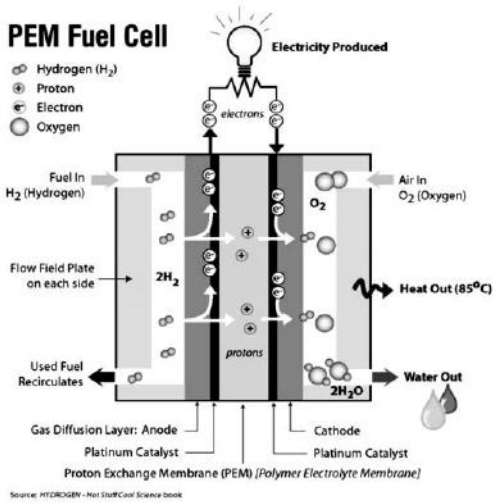


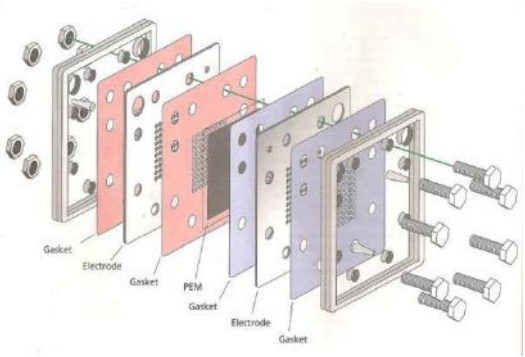




Working of PEM Fuel Cell :

A PEM Fuel Cell converts the chemical energy of hydrogen and oxygen into electrical energy. The fuel cell itself has no moving parts. The heart of a PEM Fuel Cell is a polymer (perflorinated sulfonic acid polymer) called a Proton Exchange Membrane (also known as Polymer Electrolyte Membrane) which acts as an electrolyte. Platinum attached to the membrane as a catalyst. When a hydrogen molecule with one negative electron and one positive proton is introduced to the membrane, the platinum along with the membrane creates an environment that allows the positive proton to pass through the membrane, but the negative electron does not pass through. The electrons begin to move along a path creating electricity that is captured as the electron moves around the circuit through a current collector to the other side of the fuel cell. The electron rejoins a proton and the newly ormed hydrogen atoms join Oxygen to produce water. This reaction also generates heat. So, the output of a hydrogen PEM fuel cell includes 1) electricity,
2) Heat, and 3) pure, clean water.





Disassembly of PEM fuel cell

Boeing phantom works two seater air craft (Cessna)

Honda FCX clarity

Inner layout of Honda FCX clarity

Toyota FCHV-BUS

Honda Solar Hydrogen Station

III. CONCLUSION

1. The fuel cell is reversible. That it can be used for electrolysis as well as production of electricity.
2. The fuel cell has no moving parts.
3. The efficiency of fuel cell is 41% which is greater than gas turbine, steam turbine and diesel motor.
4. The efficiency of solar panel 7.4% which is less when compared to fuel cell.
5. The efficiency of fuel cell working as a electrolytic cell is 83%.
6. From the above results and comparison between the efficiencies gas turbine, steam turbine and diesel motor we can say that PEM fuel cell is best suited for composite drive shaft.

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Effect of Cyclic Prefix in BER Improvement in MIMO-OFDM System

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ABSTRACT

In the last many years in the world as communication has created many type in the general purpose use their transmitting data , In the data transmitting their present & future condition the data transmitting needs the highly speed transmitting them. High speed data communication in the main problem is the ISI(inter-symbol interference).it is created through the highly mobile environment due ISI. A broad wireless communication channel in A multiple input- multiple output(MIMO) and orthogonal frequency division multiplexing(OFDM) combine communication technique is such a highly speedy and accuracy highly data rate. MIMO-OFDM is the 4G technologies likes use wild WI-MAX & LTE. In OFDM system in mostly aspect cyclic prefix. cyclic prefix length increases then interference is reduce. Then finally to the BER (Bit Error Rate) and the interference is the perfect solution find out through the length of cyclic prefix.

Keywords: MIMO-OFDM, Cyclic Prefix, AWGN (Additive White Gaussian Noise) Channel, Rayleigh Fading Channel.

I. INTRODUCTION

Traditional single carrier modulation techniques can achieve only limited data rates due to the restrictions imposed by the multipath effect of wireless channel and the receiver complexity. High data-rate is desirable in many recent wireless multimedia applications. However, as the data-rate in communication system increases, the symbol duration gets reduced. Therefore, the communication systems using single carrier modulation suffer from severe inter-symbol interference (ISI) caused by dispersive channel impulse response, thereby needing a complex equalization mechanism. Orthogonal Frequency Division Multiplexing (OFDM) is a special form of multicarrier modulation scheme, which divides the entire frequency selective fading channel into many orthogonal narrow band flat fading sub channels.

The basic principle of OFDM is to split a high-rate data-stream into a number of lower rate streams that are transmitted simultaneously over a number of sub-carriers. The relative amount of dispersion in time caused by multipath delay spread is decreased because the symbol duration increases for lower rate parallel subcarriers. The other problem to solve is the inter-symbol interference, which is eliminated almost completely by introducing a guard time in every OFDM symbol. This means that in the guard time, the OFDM symbol is cyclically extended to avoid inter-carrier interference. OFDM has several advantages like high spectral efficiency, robustness to channel fading, immunity to impulse interference, uniform average spectral density, capacity to handle very strong echoes and less non-linear distortion. OFDM is the modulation technique used in many new broadband communication systems. In recent years OFDM has emerged as the standard of choice in a number of important high data applications. OFDM is the modulation technique used in many new broadband communication systems. In recent years OFDM has emerged as the standard of choice in a number of important high data applications.

II. METHODS AND MATERIAL

MIMO Overview

Now a days, the most promising technology for that is MIMO in which multiple antenna are used at the

transmitter side as well as at the receiver side shown in fig.1.

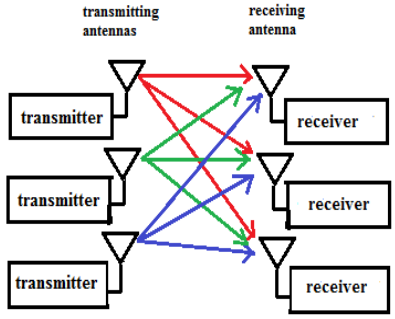


Figure 1. MIMO System[3]

Spatial multiplexing requires MIMO antenna configuration. In spatial multiplexing, a high-rate signal is split into multiple lower-rate streams and each stream is transmitted from a different transmit antenna in the same frequency channel. If these signals arrive at the receiver antenna array with sufficiently different spatial signatures and the receiver has accurate CSI, it can separate these streams into (almost) parallel channels. Spatial multiplexing is a very powerful technique for increasing channel capacity at higher signal-to-noise ratios (SNR). The maximum number of spatial streams is limited by the lesser of the number of antennas at the transmitter or receiver. Spatial multiplexing can be used without CSI at the transmitter, but can be combined with preceding if CSI is available. Spatial multiplexing can also be used for simultaneous transmission to multiple receivers, known as space-division multiple access or multi-user MIMO, in which case CSI is required at the transmitter.[12] The scheduling of receivers with different spatial signatures allows good reparability.

MIMO OFDM System

Different techniques are there to improve the performance of the system in MIMO system. In order to attain a diversity gain to combat signal fading or capacity gain, MIMO system can be implemented in different ways. Spatial Diversity, Spatial Multiplexing, Beam forming. In spatial diversity (SD) techniques, the transmitter sends the multiple copies of the same signal or symbols. SD technique requires a number of signal transmission paths which are known as the diversity paths and each diversity path carries the same information. To multiplex (divide) and transmit a data stream into several paths and transmit via independent channels in space and different bits are transmitted via different antennas is the basic concept of Spatial Multiplexing (SM). At transmitter end in MIMO system, beamforming exploits the knowledge of the channel. Beamforming technique provides gain in between capacity gain and diversity. In single-layer beamforming, same signal is transmitted from each of Transmitting antennas with the appropriate gain and phase weighting such that the signal power at the input of receiver is maximum.

The key advantage of beamforming is to increase the received signal gain, by making signals transmitted from independent antennas add up constructively, and reduce the multipath fading effects. Signal in MIMO system is suffered from the ISI and ICI, which is responsible for the poor BER performance. To improve the BER performance, to get high efficient spectral efficiency and to get high system capacity, MIMO system is combining with the OFDM. In real situation, multipath propagation usually occurs and causes the MIMO channels to be frequency selective.

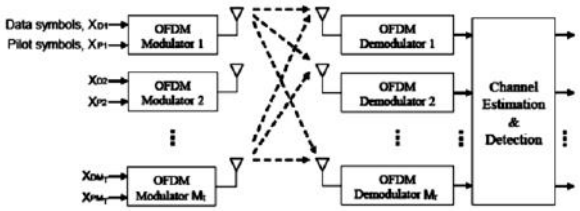


Figure 2. MIMO-OFDM System[3]

Fig.2 shows the MIMO OFDM system. OFDM is simply defined as a form of multi-carrier modulation where the carrier spacing is carefully selected so that each sub carrier is orthogonal to the other sub carriers. Two signals are orthogonal if their dot product is zero. That is, two signals are taken and multiplied together. If their integral over an interval is zero, then two signals are orthogonal in that interval. Orthogonally can be achieved by carefully selecting carrier spacing, such as letting the carrier spacing be equal to the reciprocal of the useful symbol period. As the sub carriers are orthogonal, the spectrum of each carrier has a null at the center frequency of each of the other carriers in the system. This results in no interference between the carriers, allowing them to be spaced as close as theoretically possible. The main idea behind the OFDM

is that since low-rate modulations are less sensitive to multipath, the better way is to send a number of low rate streams in parallel than sending one high rate waveform. It divides the frequency spectrum into sub-bands small enough so that the channel effects are constant (flat) over a given sub-band. Then a classical IQ (In phase Quadrature phase) modulation (BPSK) is sent over the sub-band. A large number of closely spaced orthogonal subcarriers are used to carry data. The data is divided into several parallel data streams or channels, one for each subcarrier. OFDM transforms the frequency selective fading channels into parallel flat fading sub channel, as long as the cyclic prefix (CP) inserted at the beginning of each OFDM symbols is longer than or equal to the channel length.

Inter Symbol Interference (ISI)

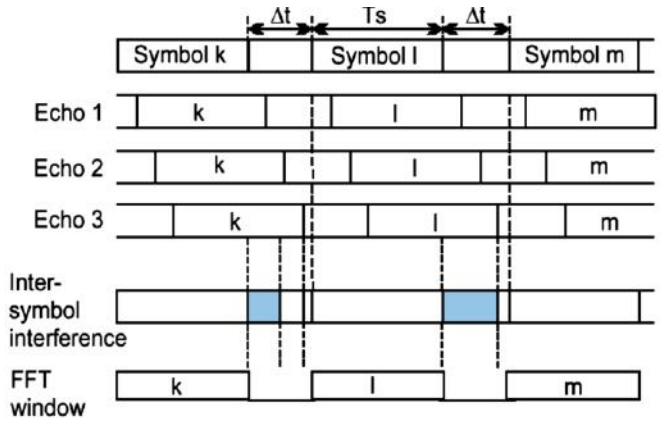


Figure 3. Combating ISI using a guard period[4]

Guard Period

Basically two types are used.
1. Zero padding
2. Cyclic prefix

The Guard Period In OFDM System can be inserted in two different ways. One way is the zero padding (ZP) i.e. pads the guard interval with zeros.

The other way is the cyclic extension of the OFDM symbol (for some continuity) by insertion of CP (cyclic prefix) or CS (cyclic suffix). CP is to extend the OFDM symbol by copying the last samples of the OFDM symbol into its front.

Zero Padding

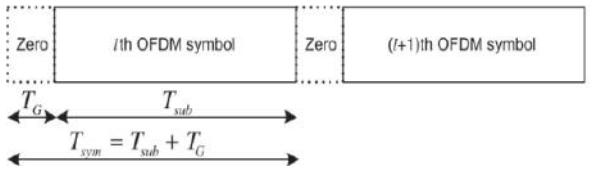


Figure 4. OFDM symbol with ZP[4]

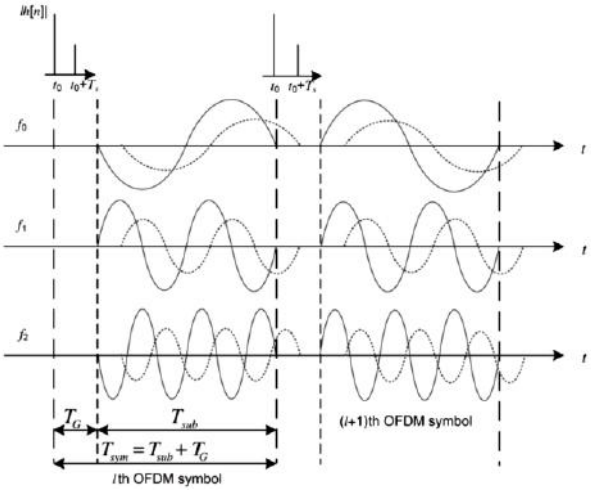


Figure 5. ISI Effect of a multipath channel on OFDM symbols with ZP [9]

We may insert zero into the guard interval, the particular approach is adopted by multiband OFDM (MB-OFDM) in an Ultra Wide-band (UWB) system.

Cyclic Prefix

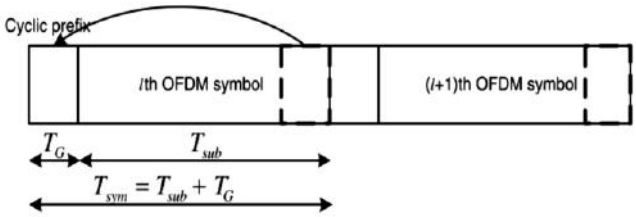


Figure 6. OFDM symbol with CP[4]

Let TG denoted the length of CP in terms of samples. then, the extended OFDM symbol now have the duration of

Tsym= TG + Tsub Eq.(3)

III. RESULTS AND DISCUSSIONS

Parameters Assumptions for the OFDM

Parameter	Assumption
Number of Symbols	10000
FFT size	64
Number of Subcarrier	52

BER Calculation

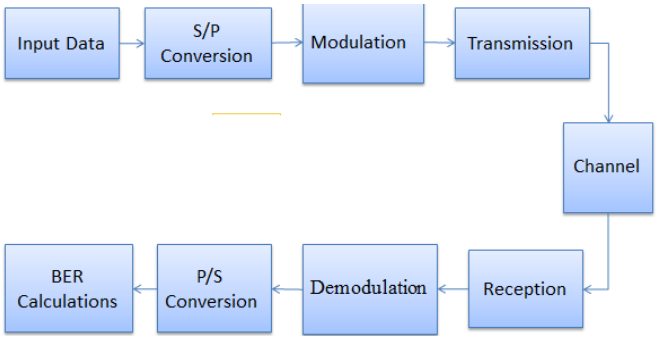
The BER expression for M-ary QAM signalling for AWGN channel is given below

$$P_e = \frac{M-1}{M \log_2 M} \mathrm{Q}\left(\sqrt{\frac{6E_b \log_2 M}{N_0(M^2-1)}}\right) \quad \text{Eq.(1)}$$

Standard Q- function defined as

$$\mathrm{Q}(x) = \frac{1}{\sqrt{2\pi}} \int_x^{\infty} e^{-t^2/2}\, dt \quad \text{Eq.(2)}$$

Flow Chart of the System without OFDM



First serial data is converted into parallel data. After that data is modulated according to modulation scheme (BPSK). After that data is transmitted through channel. When data is received first it is converted from parallel to serial data and then demodulated according to modulation scheme (BPSK). After that BER is calculated by comparing transmitted and received data.

BPSK for AWGN

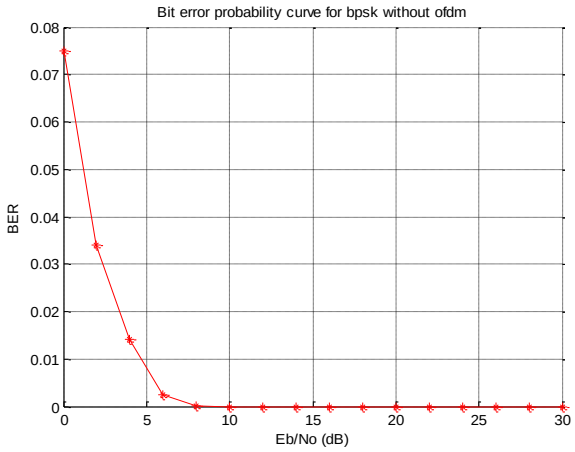
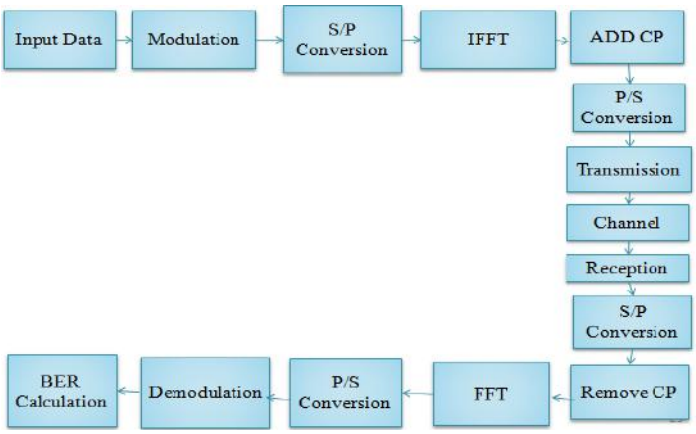


Figure 7. Bit error probability curve for BPSK Without OFDM

Fig.6 shows BER performance of BPSK modulation scheme in AWGN channel. As bit energy/noise is increasing BER is decreasing.

Flow Chart of MIMO with OFDM



First signal is modulated as per modulation scheme than serial data is converted into parallel form and after that IFFT is applied. After this CP is added again parallel data is converted into serial form and transmitted through channel. After reception first serial data is converted into parallel form and CP is removed, after that FFT is applied, again parallel data is converted into serial form and demodulated as per modulation scheme.

BPSK for AWGN

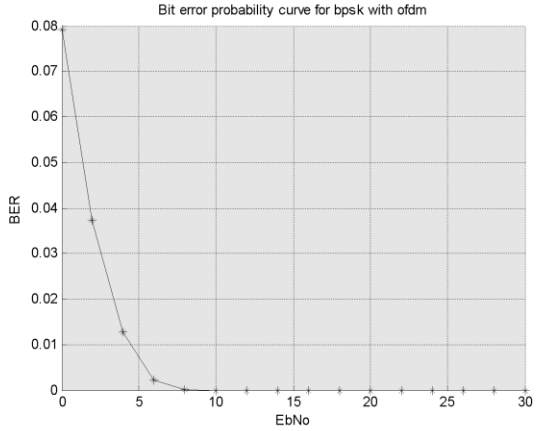


Figure 8. Bit error probability curve for BPSK with OFDM

In system with OFDM BER performance is improved (BER is decreased) as compared to system without OFDM.

COMPARISON

BPSK for AWGN

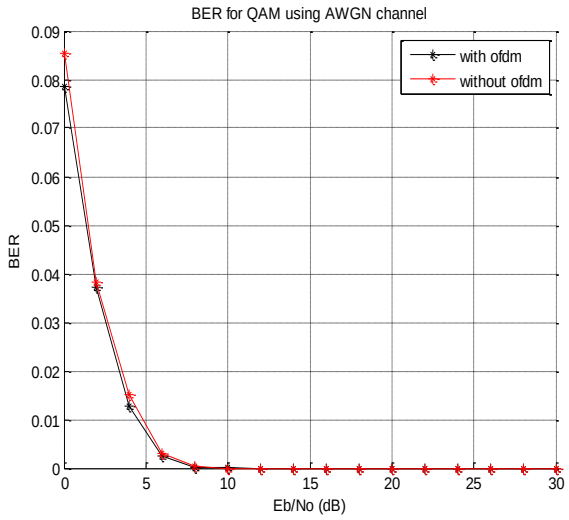


Figure 9. Bit error probability curve for BPSK With and Without OFDM

Fig.9 shows comparison of BPSK modulation scheme under AWGN channel with and without OFDM.

In system with OFDM BER performance is improved (BER is decreased) as compared to system without OFDM.

BPSK for Rayleigth

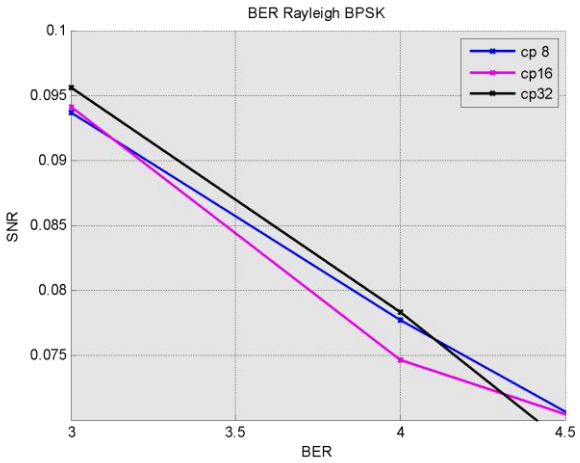


Figure 10. BPSK from Rayleigth fading

Fig.10 shows BER performance of BPSK modulation scheme in Rayleigth channel. With the Cyclic Prefix(CP) value higher is through BER decreseces.

IV. CONCLUSION

The BER Performance of MIMO OFDM system has been without guard period and with guard period. The comparison shows that the performance with guard period is better than without guard period.The best CP length from BPSK in BER less is higher length of CP.

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Digital Memories based Security for Intruder Detection using RFID

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ABSTRACT

A system and method for identifying the intruder through RFID tag who has approached towards the door to access the secured room. The GSM component fixed on the door will send the RFID tag details to android application. This application will be accessed by security administrator and it will have two factor user authentication mechanism to validate the security administrator. In this proposed system, based on the RFID, the security administrator identifies whether the person want to access the door is an employee or intruder. This improves efficiency over intruder detection concept and yields a good result.

Keywords: RFID, Digital Memories, Intruder, Android, IOT, Security Administrator

I. INTRODUCTION

As, the IoT concept continues to grow, the security provided should be highly efficient. This is because it is embedded within our environment in daily life. The communication that takes place between software application and hardware components should establish a secured interaction between them. Even though, many techniques have been used to provide security such as biometrics authentication, single alpha numeric authentication, they are outdated& weak too. The issues with present authentication mechanism will continue to grow until a good feasible approach is developed.

There are wide varieties of strategies to identify a intruder or employee who want to access the door in an organization. But sometimes, the way of identifying leads to false predictions. So, researchers are keen on developing new methods. Moreover, physical security requires the design, implementation and maintenance of counter measures that protect the physical resource of an organization. Generally, the deliberate act of espionage could be a competitor sneaking into physical asset with camera or other resources.

In the emerging era of computing technologies, digital memory security is, the idea of storing user memories such as photograph, videos in to physical memories and validating the user using those digital memories in a given stipulated amount of time. So, these digital memories are highly specific to those user and except the user, it cannot be easily identified by third party people or intruder or hacker.

In this system, we propose a security framework for identifying an intruder through RFID and necessary security action are taken through android application which will be accessed by security administrator. An android application is developed with digital memory security concept to verify the security administrator. The details of the person, who want to access the secured room in an organization, will get notified in the android application. Through this system, the attacker can't able to breach the security asset of organization by any other means such as shoulder surfing, social engineering phishing attacks or other traditional attacks.

II. METHODS AND MATERIAL

A. Related Work

Research in RFID security has gained a lot in recent years. Many publications focused on security and privacy in RFID applications. Rotter el al has provided a detailed description about the possible security attacks in RFID. Researchers have provided various counter

measures to mitigate those attacks. Rieback et al proposed RFID guardian that integrates various security mechanism into a single compact device. Some of the security concept such has auditing are not used earlier. However we use RFID tag to identify the employee and to retrieve the employee details using the tag and pass to application through GSM component which is fixed in the door.

Similarly in digital memories security concept for IoT have many related works for it. In 1945, the idea digital memories were conceptualized by Bush Memex. This concept is implemented in storing books, record etc. But, in today society, the development in technologies has brought this idea in to real time scenario. It showed a way for "life logging" which refers to the process of using the record generated by devices in various aspects of life known as "life logs" or human digital memories. The base technique behind the software is eliminating the threat of passwords being stolen and other phishing attacks happening in organization.

B. Existing System

In existing, the concept of Smart card based physical access system was used. A physical access system is coordinated network of ID cards, electronic readers. This system is developed for protecting the enterprise asset. Each employee of the organization is issued a smart card as ID which has enterprise details along with employee details. Each card stores protected information about the person and the person's privileges. When the person accepts the card, the details of the employee are feed into the card. When the card is placed near the electronic reader access is granted or denied depending upon the employee. So, based on this, the physical access system is secured in the organization. But, there are some drawbacks in this system which may pave the intruder to easily mitigate these security mechanism system .In this System, in case if the card is stolen and misused by intruder ,then the entire security system get breeched. Moreover, the authentication of card is done through electronic reader which is internally connected to Database. In case, if the intruder hack the database and make change over them, the system gets less secured. So, in our proposed concept the drawbacks of this system have been rectified and developed an efficient and secured system.

C. Proposed System

The system for intruder detection in an enterprise consist of: RFID detection, GSM component, android application(Digital memory security concept).These three components work sequentially to identify the person who want to access physical components.

- **RFID Detection**

Initially, the organization will issue a RFID card to their employees with unique 10digit code. So, each unique tag has its own employee details embedded with it. So, when an employee approaches toward the door, he places his RFID card over the RFID reader. It detects the tag and passes the "10digit" tag to the Renesas microcontroller. This controller forwards the tag to GSM component through UART communication channel.

- **GSM Component**

The GSM component receives the information from microcontroller through UART.GSM have also established communication between android application. So, whenever it receives a tag, it will send the tag details to android application. The communication takes place between GSM and Microcontroller over the UART channel. The GSM has configured with properly, so it sends the RFID details in a secured manner to android application which will be further accessed by security administrator. There is a LCD interface which is connected with controller. This LCD interface displays the status of the system. Such as "System Starts", "RFID sent successfully" etc.

- **Security Through Digital Memories**

The Android application is mainly developed with two factor user authentication to validate the security administrator in an effective manner. At first, the application will have alphanumeric login authentication. After that, the digital memories authentication takes place i.e., in the application a number pattern will be generated and group of images will be there. The security administrator should arrange the images according to the number with in short period of time like 15-20 seconds. By completing this authentication, there will be a image and a question related to that. So, by

clearing all these levels only the security administrator gets validated. In the second part of application, he will receive notification with the employee photo, name, designation, privileges and other details, when any employee had come to access the door. By, verifying all the details, the security administrator grants the permission or denies it. If the permission is granted, the GSM receives notification and forward the information to controller. The controller sends the control message to open the door and door gets opened finally. In case if access gets denied, the LCD displays a message as "ACCESS DENIED".

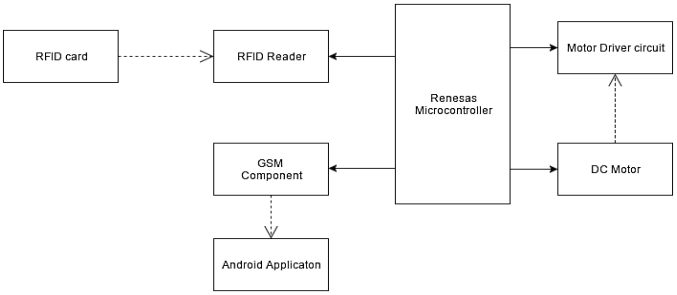

Figure 1. Block Diagram of the System

In this system, the Renesas controller (R5F100LE) is used because it is best suited for communication purpose. This controller has good operating frequency upto 32MHz.There are three communication protocols in it : UART, SPI, I^2C. In this system, UART protocol is used.

III. RESULTS AND DISCUSSIONS

A. System Architecture

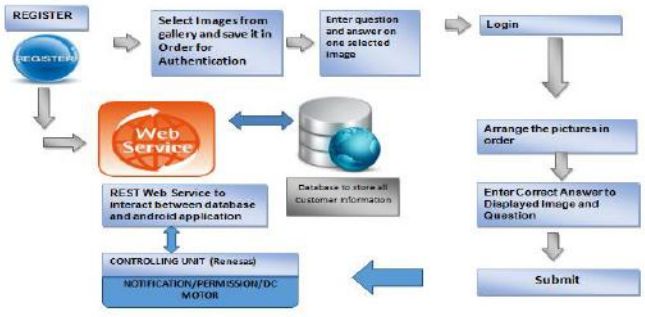

Figure 2 : System Architecture for the Intruder Detection using RFID

Firstly, the security administrator does the registration by selecting the necessary images and other details for authentication. This registration can be done only one time. Once, the administrator finishes the registration he can't undo or make any alteration too. Then Login authentication takes place. After that, based on the notification ,the security administrator takes the action accordingly. This is the overall architecture of the system.

B. Flow Chart

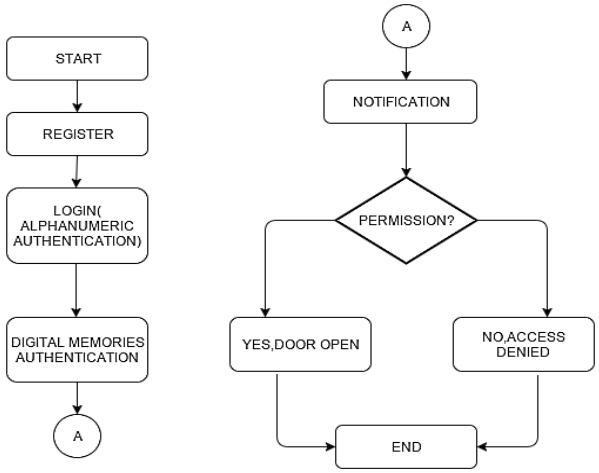

Figure 3. Flow chart Of the Proposed System

Flow chart depicts the order of execution in the system.

C. Comparison With Existing System

In existing system, employees in the organization have smart card to access the physical components such as door. There is a card reader which reads the smart card of the employee and permits them depending on their privileges. But, the same card can be misused by any other person too. This is one of the major drawbacks in the system. But, in proposed system the security administrator verifies the employee through the camera and checks the same employee picture is there on the notification. If both get matched and other details are also verified only, the person is permitted to access the room.

Table 1.Tabular Column for Comparing smard card system

Sr. No	CRITERIA	EXISTING SYSTEM	PROPOSED SYSTEM
1	Card	Smart card	RFID Card
2	Employee Verification	Only by smart card reader	Done by security administrator
3	Background reference	No	Log file maintained and often verified by higher administrator of organization.

IV. CONCLUSION AND FUTURE ENHANCEMENT

In this paper, the concept of digital memories has been developed along with the intruder detection using RFID. So, it provides an enhanced security to identify intruder and them properly. In future enhancement, it can be developed with a camera which is kept in the door. This camera captures the snapshot of the person and sends to the administrator for further verification. So, the effectiveness of security can be enhanced a lot.

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Feasibility Optimal Broadcasting Policy Framework in Wireless Network

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ABSTRACT

This project aims to deal with less reliability of nodes in a wireless network, and study behaviour of each nodes in a dynamic fashion by splitting into pre-defined number of packets and attaching an information with each packet to study the link quality once it reaches the destination, how the data is broadcasted in the network and uses a storage for packet information and once there is a node failure it studies why the failure occurs if due to a technical failure or incapacity of sever to process the request or the client to receive the data it is analysed and resend or if a deliberate rejection from client or some middle man acquiring packets or destination ip and the receivers ip don't match it drops the node and uses optimal grouping to decide the next best linking if a node is dropped to achieve the best throughput rather than a random selection of link and in turn making it very inefficient even for a small round-trip.

Keywords: Multicast, Network framework, Policies

I. INTRODUCTION

For so long the wireless or wired networks have used ping, ICMP messages to test whether the node is active or dead. Whether there has been a link failure or node failure. The demands of clients are specified by allowing each client to require a minimum of throughput for each flow. Furthermore, the wireless network is modelled as one where wireless links are unreliable.

It is a vague process to calculate each path and its efficiency every time and broadcast patterns. Therefore, it is easier to maintain real time efficiency information with link quality in a database so that server studies links. Suppose a failure occurs then the server can analyse why the error has occurred is it due to incapability or due to intentional rejection. If the server finds that node intentionally rejects packets then it drops the node from the network else the link will be repaired. Making trip times lesser and reliable connection so user has less chances of data loss.

II. METHODS AND MATERIAL

Experimental Study

The design is based on Broadcast delay constrained traffic over unreliable wireless links with network coding. This project is designed to be used by server system to study the reliability of the links.

The Registration processes for each node are done through a java JFrame interface, which connect nodes based on socket and port calls. The node program runs on various clients and connects via a main server program. The nodes are connected via links based on user decision and costs are assigned to each link.

Once the computers are connected a register page appears which prompts the user to register his/her system name and password. Once user logs in with the created name and password there is an option to link various nodes and assign the necessary cost to each of

the link created. Here Greedy algorithm is used to construct the graph and search for a efficient route. Once the server identifies a rejection or inability of link to send data it verifies the database. The database contains efficiency information and link quality based on the feedback information received from each packet sent by receiving node. This data is used to analyse and decide whether the link has efficient communication.

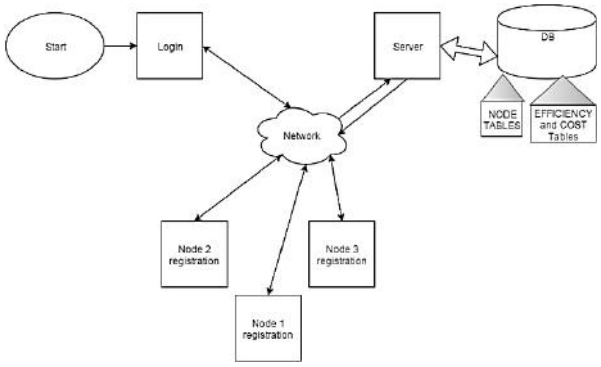

Figure 1. Architecture Diagram

III. RESULT AND DISCUSSION

Experimental Results

The first UI is a node monitoring server node that runs in the background and acts as socket server. The second swing activity of the project is a validation screen that does background initialization of other activities and runs authentication process that checks user detail with existing database storage or the user (node) can register by giving a node name and password. After the login screen the server is moved to background process which runs all the time to monitor client activities. The client process is a separate swing ui that lets user to select their data and number of packets it wants to send the data with then the content is encrypted with an AES key then the respective node destination is selected and broadcasted, the Gkey for the node is shared with the receiving node. Then the same way the receiving node then decrypts the data. This transfer is closely analysed by the server process. When there is a link failure in the network the server analyses the failure. If it is due to an inability of the client to receive the message then it waits till the buffer is free. Else the server drops the node from the network and uses Optimal Grouping algorithm to reconstruct the connection of the network. All these efficiency details are stored in a database and analysed by server in a background state for a reliable communication.

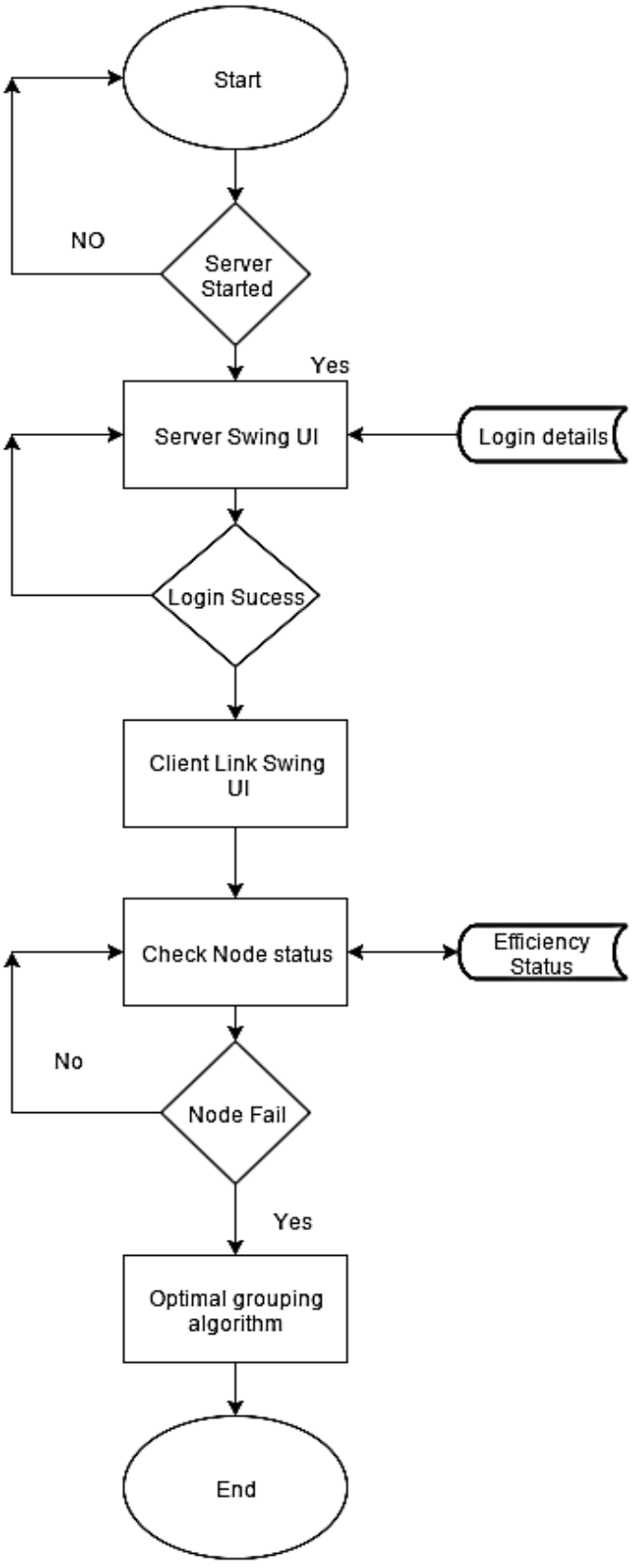

Figure 2. Flowchart

Validation is done by checking the login for characters and the password checked. Then it is verified with remote database. If the response is null, then a "no record found" is displayed. Alternatively, the "credentials invalid" is returned if invalid response is received. For the correct details, the node details and UI is displayed for the user to select files and send it using a key. The server contains all the node details, which is stored in the database. Nodes are viewed or added in the main screen.

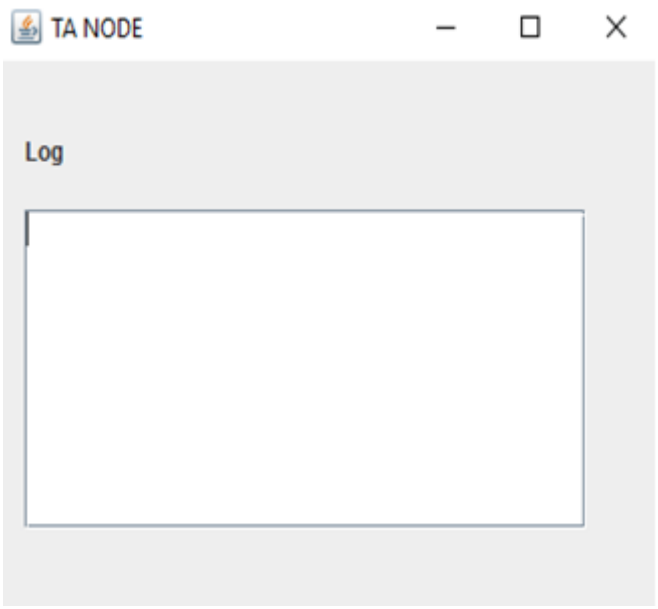

Figure 3. A Server Node

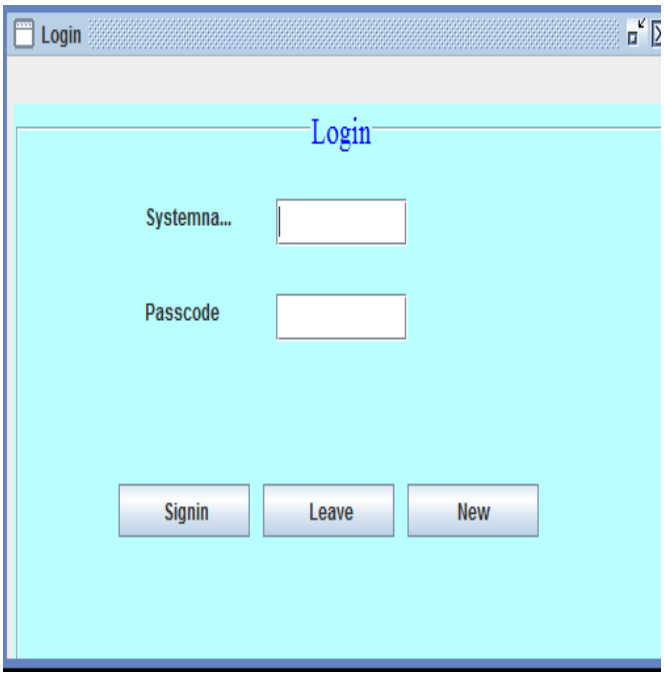

Figure 3. B Login UI

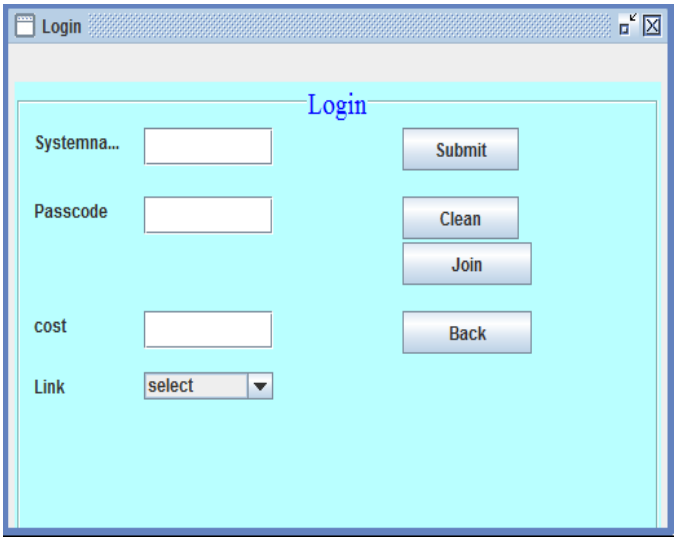

Figure 3. C New User UI

The user can add nodes and register them into the network and form links with the other computers as required there is no reverting mechanism for a client once registered if it wants to get out of the network it has to stop getting data from other nodes so that server identifies and stops the node and regroups the other nodes as a reliable link network. While joining the network user us asked a system name, passcode, cost of the link, the link of the system to other node then the join button is pressed and then submits. Then the user can go back to login and use the ckiebt side UI to send and receive data. While sending a data file to a client or receive a data from some node the AES key is asked as a prompt only after verifying the AES key the data is decrypted and displayed to the user.

IV. CONCLUSION

The number of unreliable connection in any place is undesirable. The freedom in using the wireless network is very much limited by the drawbacks of timeout and link failure and results in dissatisfaction and high failure rates. So this scheme of monitoring and controlling a registered node in a network. Smaller reasons for failure like a timeout or buffer overflow can be separated because it is analysed. So if a node deliberately stops a data transfer then it can be dropped. Which reduces dropping of a working node without any warning?

This can lead to a desirable throughput rate without any packet loss and manual selection of number of packets. And maybe lead to a practical use of WLAN and Wireless network in the future. And usage in networking devices and towers to regulate flow of information through a particular node and particular path instead of brute force pushing of data through a shortest path algorithm or best throughput route an alternative can be achieved to implement the flow of packets as to maintain a reliable link and reduce data loss and jitter in the network during crucial time and when necessity arises.

V. FUTURE ENHANCEMENTS

This is just an initial stage and focuses in implementing the core concepts. This system can be integrated into networking devices to balance load and even maintain a whole of network traffic between nodes and even between subnets so if a subnet fails there might be a different route to reach another part of data quickly and recover the network.

Since the project is in initial stage the linking and server process is a manual work. This can be made as a service and run alongside windows and just a simpler linking of nodes can be done by reducing the complex manual registering UI to simpler UI. By atomizing most of background details like selection of AES key and giving user more options of encryptions.

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Software Maintenance and Resolving the Bugs for Bug Triage

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ABSTRACT

Fixing bugs in software development companies is a big problem which needs a lot of money. A bug repository manages the software bugs. Usually the software projects include many developers. The duty of the project manager is to assign projects to the developers. In the existing system we use text classification technique for assigning projects or bugs which consumes a large space and produces a low quality bug data. To overcome this problem, instance selection and feature selection is introduce to increase accuracy and decrease scale all together. In our work we combine both these techniques in bug repositories to reduce data.

Keywords: Preprocessing of data, managing bugs, instance selection, feature selection, bug triage, bug reduction orders, bug fixing.

I. INTRODUCTION

In current world, software companies maintains a large-scale databases for storing the output of the software project, e.g., source code, bugs, emails, and specifications. Conventional software analysis is not fully suitable for the large-scale and complex data in bug repositories. Hence, Data mining has a promising means to handle bugs. Mining repositories can uncover interesting information in software repositories and solve the real world software problems. A bug repository has a collection of bug repots that plays an important role in managing bugs. Software bugs are always happening and clearing bugs is costly in software development. Huge software projects maintain bug repositories to collect the information and to help developers to handle the bugs. A bug repository maintains a bug report, which records the description the bug and the updates about the status of bug that has to be fixed. A bug repository contains several types of bugs such as fault prediction, bug localization, and reopened bug analysis.

II. METHODS AND MATERIAL

A. Existing Work

In traditional software development, bugs are triaged by human triager, the developer who triages the new bugs manually. Triaging huge number of bugs manually takes more time and cost. To overcome this problem, an automatic bug triage system is introduced in existing system. It uses text classification technique, in which each reported bug is assigned to a developer. Developer is mapped to the label of the document containing bugs that are to be resolved. Bug triage is then converted into a problem of text classification and bugs are automatically solved with text classification techniques, e.g., Naive Bayes. From the results of text classification, a human triager assigns new bugs by incorporating his/her expertise. In text classification techniques accuracy can be increased by investigating some further techniques e.g., a tossing graph approach and a collaborative filtering approach. However, the techniques of automatic bug triage are blocked in bug repositories which are low in quality. As data are a kind of simple text data, the well-processed bug data has to be generated to facilitate the application.

B. Proposed Scheme

In proposed system, the problem of data reduction for bug triage is addressed, i.e., how the bug data is reduced to bring down the labor cost of developers and the quality is improved to facilitate the process of bug triage. Data is reduced by removing bug reports and words, which are redundant or non-informative. Bug triage aims to build an efficient set of bug data .In our work, the bug dimension and the word dimension are reduced simultaneously by combining the techniques instance selection and feature selection. Thus the reduced bug data has lesser number of bug reports and lesser number of words than the original bug data. Although data is reduced it provides similar information as it is in the original bug data. The results of four instance selection algorithms and four feature selection algorithms are examined to avoid the bias of a single algorithm .when an instance selection algorithm and a feature selection algorithm is given, the order of applying these two algorithms may affect the results of bug triage.

In the proposed paper, predictive model is used to determine the order of applying instance selection and feature selection. From the experiments conducted over bug repots, it is identified that applying instance selection technique to the data set can reduce relevant subset of bug reports but the accuracy of bug triage may be decreased; applying the feature selection technique can reduce subset of relevant words in the bug data and the accuracy can be increased. Hence it is found that combining both these techniques can increase the accuracy, as well as reduce bug reports and words.

Contributions of this paper are as follows:

a) To simultaneously reduce the scales of the bug dimension and the word dimension
b) To improve the accuracy of bug triage.
c) Combination approach is proposed to address the problem of data reduction. That is application of instance selection and feature selection in bug repositories.
d) A binary classifier is built to predict the order of applying instance selection and feature selection.

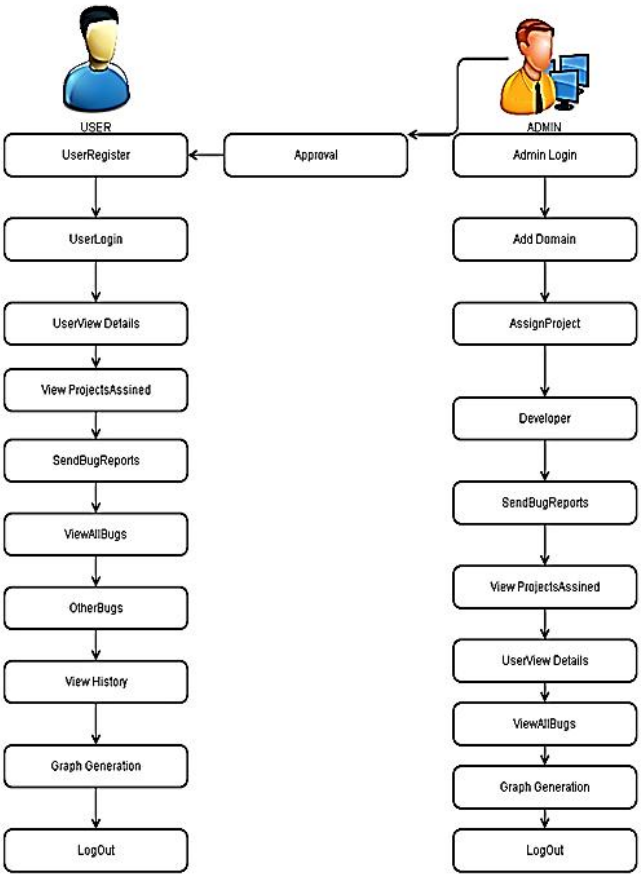

Figure 1. Proposed System

C. Background And Motivation Bug Triage

A bug tiage is a formal process where each bug is priotitized based on its severity, frequency, risk and etc. The bugs are sorted based on the priority. Bugs with high priority will be fixed first. Low priority bugs will be fixed later. To achieve better balance working, important bugs are prioritized first. Three ways of differentiating bugs:

a) bug which is fixed.
b) bug which is fixed later and
c) bug which is not fixed.

A bug triage meeting for developers is held regularly for discussing about project life cycle. The Quality Assurance lead calls these meetings. The number of occurrences of meeting will vary from project to project, based on current status of project.

Motivation

Real-world data consists of noisy and redundant data which leads to increase in the cost factors of data processing. In the bug repository, all the bug reports are filled by developers in normal language. The bugs which are low in quality are collected in the bug repositories with the growth in scale. Such data which are inefficient may worsen the accuracy of fixing bugs.

III. RESULT AND DISCUSSION

A. Experimental Work

Data preparation

Data preparation means manipulating data into a form suitable for further analysis. Data preparation is the process of collecting, cleaning, and consolidating data. It is a process of pre-processing data.

Here, we present the data preparation for applying the bug data reduction. Bug triage predicts developers to fix bugs. The unfixed bugs are assigned to a developer to fix it. In bug repositories, some registered developers may have fixed very less number of bugs. Such in active developers who fixed less than 10 bugs are removed. Applying Instance Selection and Feature Selection.

In our work, we combine instance selection and feature selection to perform data reduction with more accuracy. The original data set is replaced with the reduced data set for bug triage. Instance selection and feature selection are widely used techniques in data processing. Instance selection is to obtain a subset of relevant instances (i.e., bug reports in bug data) while feature selection is to obtain a subset of relevant features (i.e., words in bug data). Instance selection technique reduces the number of instances by removing noisy and redundant instances. An instance selection algorithm can provide a reduced data set by removing relevant instances. Feature selection is a pre-processing technique for reducing relevant features for big scale data sets. When an instance selection algorithm IS and a feature selection algorithm FS is given, the order of applying has to be predicted. We use FS->IS to denote the bug data reduction, which first applies FS and then IS, and in IS->FS first applies IS and then FS.

B. Benefits of Data Reduction

Reducing the Data Scale

Bug dimension: Bug triage is to assign developers for bug fixing. Developers can examine history of fixed bugs to find a solution to the current bug report. If the bug is already fixed then it can be replaced. The labor cost of developers can be saved by fixing bugs from history using instance selection, instead fixing in their own manually. The reduced data set can be handled more easily by automatic techniques (e.g., bug triage approaches) than the original data set.

Improving the Accuracy

Bug dimension: Instance selection can remove uninformative bug reports, while the accuracy may be decreased by removing bug reports. Word dimension: feature selection removes uninformative words, but the accuracy of bug triage is improved. This can recover the accuracy loss by instance selection.

IV. CONCLUSION

A bug triage is a process done by software companies in order to maintain the bugs in their work process. In this project we use techniques such as instance selection and feature selection in order to improve the efficiency and maintenance of the bug. Thus the redundancy in the bug data set will be removed. It also helps us to assign the correct the correct project to the correct developer .The developer fixes less than 10 bugs will be removed by the Quality analyst (QA) during the bug triage process meet.

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Efficient Sort Search on Massive Data

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ABSTRACT

Efficient top-N retrieval of records from a database has been an active research field for many years. The problem from a real world application point of view has the order of records according to some similarity function on an attribute is not unique. Many researchers have same values in several attributes and thus their ranking in those attributes is arbitrary (based on random choice).For instance, in large person databases many individuals have the same first name, the same date of birth, or live in the same city. Existing algorithms are ill-equipped to handle such cases efficiently. We introduce a Dynamic TMS searcher, which retrieves larger chunks of records from the sorted lists using fixed limits, and which focuses its efforts on records that are ranked high in more than one ordering and thus are more promising candidates. We experimentally show that our method outperforms Dynamic Sorting Algorithm (DSA) for top-k retrieval in those very common cases where we used with dynamically scheduling the resources based on the data which are provided with , this efficient short search algorithm along with the massive data retrieval on a very fine tuple data's can be of a different dataset. Here in this project we are going to use these logics for the need of solution in the field of medical research, where there are many manageable databases that are been used in a common path for the end of healthy need and the retrieval of solution for the cause of illness to a human being.

Keywords : Massive data, Indexing, Top-k retrieval, Dataset, Attribute, Sorted list

I. INTRODUCTION

Health care system is the organization of people institutions and resources that deliver health care services to meet the health needs of target populations. This project dea that are currently being formulated for the development of universal healthcare system in is about the plans.

India, which would provide universal health coverage throughout India. The scope of this project is to detect and identify group of moving objects travelling together for a certain time period. Here, we propose a series of techniques which address the searching and updating issues respectively in large databases.

II. METHODS AND MATERIAL

Related Works

A. Rank Aggregation

In Rank Aggregation, we have an approach to perform efficient similarity search and classification in high dimensional data. The database elements are considered as vectors in a Euclidean space and our goal is to find the database elements which are similar to the query. A small number of independent "voters'' rank the database elements similar to the query and these rankings are then combined by a highly efficient aggregation algorithm. This methodology has two techniques: To compute approximate nearest neighbours and to serve as a conceptually rich alternative to nearest neighbours. Nearest neighbours finds the best k matches % and also finds the 10 most similar images.

B. TOP-K Queries

We study the problem of answering top-k queries using views. The view in this context is a materialized version of a previously posed query, requesting a number of highest ranked values according to some monotone combining function defined on subset of the attributes of a relation. Several problems of interest arise in the presence of such views. We start by presenting a new algorithm capable of combining the information from a number of views to answer ad-hoc top-k queries.

C. Optimized Index Access

Top-k queries operate on index lists for a query's elementary conditions and aggregate scores for result candidates. One of the best implementation methods in this setting is the family of threshold algorithms, which aim to terminate the index scans as early as possible based on lower and upper bounds for the final scores of result candidates. This procedure performs sequential disk accesses for sorted index scans, but also has the option of performing random accesses to resolve score uncertainty. This entails scheduling for the two kinds of accesses: 1) The prioritization of different index lists in the sequential accesses, and 2) The decision on when to perform random accesses and for which candidates.

D. Optimal Aggregation

Assume that each object in a database has m grades, or scores, one for each of m attributes. For example, an object can have a color grade that tells how red it is and a shape grade that tells how round it is. For each attribute, there is a sorted list, which lists each object and its grade under that attribute, sorted by grade (highest grade first). Each object is assigned an overall grade that is obtained by combining the attribute grades using a fixed monotone aggregation function, or combining rule, such as min or average. To determine the top k objects, that is, k objects with the highest overall grades, the naive algorithm must access every object in the database, to find its grade under each attribute. Fagin has given an algorithm (''Fagin's Algorithm'', or FA) that is much more efficient. For some monotone aggregation functions, FA is optimal with high probability in the worst case. We analyze an elegant and remarkably simple algorithm (''the threshold algorithm'', or TA) that is optimal in a much stronger sense than FA.

E. Best Position Algorithm

The general problem of answering top-k queries can be modeled using lists of data items sorted by their local scores. The most efficient algorithm proposed so far for answering top-k queries over sorted lists is the Threshold Algorithm (TA). However, TA may still incur a lot of useless accesses to the lists. In this paper, we propose two new algorithms which stop much sooner. First, we propose the best position algorithm (BPA) which executes top-k queries more efficiently than TA. For any database instance (i.e. set of sorted lists), we prove that BPA stops as early as TA, and that its execution cost is never higher than TA. We show that the position at which BPA stops can be (m-1) times lower than that of TA, where m is the number of lists. We also show that the execution cost of our algorithm can be (m-1) times lower than that of TA. Second, we propose the BPA2 algorithm which is much more efficient than BPA. We show that the number of accesses to the lists done by BPA2 can be about (m-1) times lower than that of BPA. Our performance evaluation shows that over our test databases, BPA and BPA2 achieve significant performance gains in comparison with TA.

F. Existing System

The existing application provides query based table scan to retrieve the results. Algorithm used here is T2S-Table scan. It can maintain only a fixed number of tuples to compute results. They also use indexes with specific attributes to build the performance on view. The cost of pre- computing the data structures and update process is a major cost. It is difficult for a user to retrieve data by scanning each and every row from a table. This leads to poor efficiency in terms of time and performance. It is tedious task for the Government to maintain the entire database of the hospitals.

III. RESULT AND DISCUSSION

1. Proposed System

To overcome the disadvantages in the existing system, we proposed a system which will handle huge databases

in efficient manner and it uses "Dynamic sort search algorithm" to search and retrieve the efficient data very easily from databases. For example, the database will help to identify the patient's medical record. In addition, we have introduced a feature which is user-friendly as it depicts the concept of location based search. Here, users are allowed to prioritize his/herown choice of medical centres. This algorithm helps the Government to maintain the database of every patient in a nominal way.

2. Experimental Work

A. Authentication Management

Generally authentication phase involves registration of both users and administrators of medical centres. If an user wishes to register they are supposed to create an account which includes details such as username, password, residential address, contact number, alternative mail id and a special question must be answered for security purpose. The same procedure is applicable for the administrators of the medical centres but it requires additional information such as Registration number and treatments provided in the medical centres. The administrator must login using the registered mail id and password. If it is incorrect, authentication will be failed.

Once the authentication is successful, the admin has the rights to add details about their own medical centres. The user is allowed to access the details based on their need. For example, if the user is in need of any particular blood group, they can be able to check out the availability of blood and use it. The admin have the access to update the information whenever it is necessary.

B. Hospitality and Maintenance

The registration of a new hospital is mandatory to create account. Only after the registration, the admin of the hospital has able to access the system. Every hospital has to login and update the patient details in order to maintain proper database for every patient. Treatment handling process have to be maintain separately, that is every hospital has some certain treatments and that must be applied to facilitate the process. Every hospital has to maintain the record of patient primarily by date of admission and then the details have been feed based upon the type of treatment given to the patients.

At first, list of available blood groups and the available units on each blood group is been listed. Now, any hospital that requires the rare blood from another hospital can get the available unit of blood by a request procedure. Each and every hospital has to update the specialist (Doctor) available in their hospital and also specify the treatment they are handling.

C. Doctor's Schedule

There is no need for each and every specialist (Doctor) to set the limit of patients. The online users are allowed to set their appointment based on their treatment. Each hospital has its own list of specialist based on the treatment. Here, the specialist (doctors) schedules their available date, time for the treatment. This reduces the man power by not going to hospitals miles away. Patients can get their appointment in online. If the patient is in a critical situation then it is mandatory for the doctors to consider them the most and it is obligatory to change their fixed appointments.

D. User Appointment

The user who refers to a particular treatment has to schedule an appointment with the respective specialist (doctor). By doing so a confirmation for the scheduled appointment is also been generated. The User Report has to be collected by the user in physical after the course of the treatment. The user need not go miles away to make appointment. He/She can make it from their own place. They can make their appointments based on their comfort zone. The user should maintain his report for future purpose. The User must produce the report to their doctor periodically. This report will help the doctor to analyse the patient's medical history.

E. Report Generation

The administrator of this application will be having tie-up with government to provide all kind of medicines for registered hospital on demand.

Administrator will be able view and monitor and record of patients on daily basis for providing information for government. The analysed report by the admin must be produced to the Government on time. Future enhancement of medical centres is based on the reports of the admin.

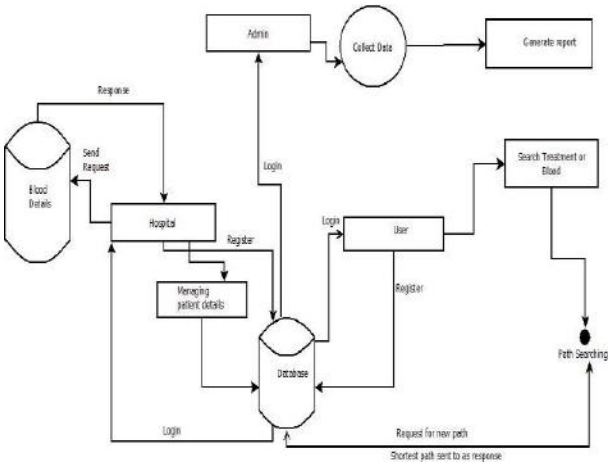
Improved medication can be provided to the patients. This report is substantial for the Government.

3. Algorithm Study

The nature of the search problem can be big in terms of the massive data search to make the efficient results provided for the end user. Each time when the auxiliary index becomes too large, we merge it into the main index. The cost of this merging operation depends on the resource needed and sometimes there may be resource engaged with another process this makes the result to be delay.

Indexing is based on two keys : primary key and secondary key. Primary key has single attribute, no duplicates whereas secondary key has one or more attributes % duplicates are allowed % indexing in M-dimensional feature spaces. Query may be match on exact match, partial match and range queries. In exact match, all attribute values are specified % with example name = "smith" and salary=30,000. Partial match are specified with example % name= "smith" and salary. Here not all attribute values are specified. Range queries have range of attribute values that are not specified as % with example name= "smith" and (20,000<=salary<=30,000) % find images within distance T%. Nearest neighbour finds the K best matches % and finds the 10 most similar images.

4. Architecture Diagram



IV. CONCLUSION

This paper proposes a novel DYNAMIC SORT SEARCH ALGORITHM for top-k retrieval of efficient data from huge databases. It produces rank based results which can be more efficient and effective to the user. In very common cases, we used the concept of dynamically scheduling the resources based on the data which are provided with this efficient sort search algorithm along with the massive data retrieval on a very fine tuple data's can be of a different dataset. Here in this project we used these logics for the need of solution in the field of medical research where there are many manageable databases that are been used in a common path for the end of healthy need and the retrieval of solution for the cause of illness to a human being.

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Themed Section: Science and Technology

Assessment of Toxic Levels of Heavy Metals in Soil in the Vicinity of Auto Mechanic Workshop Clusters

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ABSTRACT

The concentration levels of some selected heavy metal in soil as a result of auto mechanic activities were investigated to ascertain the possible environmental effect on the soil. The results of the study indicated that most of the levels of the heavy metals are higher than the background level, which is the control. The distribution pattern of the heavy metals is in the direction of Pb>Fe>Cu>Mn>Cd>Zn. The pollution status of the metals in the environment expressed in terms of geo-accumulation index indicated that the environment is moderately polluted with Pb and unpolluted to moderately pollute with Fe, Cu, Zn, and Mn and to a lesser degree with Cd. Also the contamination factor showed that soils show highest Cf for Pb, Zn, Mn, Fe, Cu and Cd varying from moderately contamination to very high contamination. The high values of Cf especially for Pb and Zn, is showed that the contamination in the soils in the vicinity of the auto mechanic clusters originates from human activities, most probably in the auto mechanic workshops, and that the pollution is relatively recent on a time scale of years. Moreover, the results indicated that the economic risk factor ranged from low potential risk to considerable potential risk with Pb showing high value of economic risk factor of 122.00. The analysis of nutrient levels of the soil for agricultural purpose is highly recommended to know the extent of pollution.

Keywords: Geo-accumulation index, contamination factor, ecological risk factor, heavy metal

I. INTRODUCTION

Soils may become contaminated by the accumulation of various heavy metals and metalloids through emissions from the rapidly expanding industrial areas, mine tailings, disposal of high metal wastes, leaded gasoline and paints, land application of fertilizers, animal manures, sewage sludge, pesticides, wastewater irrigation, coal combustion residues, spillage of petrochemicals, and atmospheric deposition (Wuana and Okieimen, 2011). Heavy metal is a general term used to describe a collection of metals and metalloids with an atomic density greater than 5.0 g/cm3 (Duffus, 2002). These elements occur naturally in soils and rocks at different concentrations; they are also found in ground, surface water bodies and sediments (Hutton and Symon, 1986). Unchecked industrial and human activities have contributed significantly to pollution levels of these metals, in surface and subsurface soils when compared to those contributed from geogenic or natural processes (Dasaram et al., 2011). Their pollution of the environment even at low levels and the resulting long-term cumulative health effects are among the leading health concerns all over the word (Huton and Symon, 1986). The concern is heightened by their persistence in the soil and their tendency to bioaccumulate, move along the food chain and also poison soil microorganisms (Udousoro et al., 2010).

Soil being one of the repositories for anthropogenic waste, biochemical processes can mobilize the chemical substances contained in it to pollute water supplies and impact food chains thereby causing great harm to man. The high toxic and persistent natures of heavy metals in the environment have made them priority pollutants (Abechi et. al., 2010).

Heavy metal contamination is found in different part in Kumasi mainly as a result of waste from auto mechanic workshop clusters. Auto mechanic workshops are

located in areas such as suame (Magazine), Tafo, Asafo, Asuoyeboah and Kwadaso which was the study area. These places are officially allocated by Kumasi Metropolitan Assembly (KMA) for repairs and servicing of motor vehicles and other machineries.

The sources and mechanism of discharge of heavy metals into the soil and water resource of automobile mechanic site include engine oil and lubricating oil, engine and gear box recycling, battery charging, welding and soldering, automobile body work and spraying painting and combustion processes (Pam et. al., 2013). Waste originating from such activities include spent lubricants, hydraulic fluids, worn-out parts, packaging materials, metal scraps, used batteries, discarded cans and stripped oil sludge (Pam et. al.,2013). The heavy metals most frequently encountered in this waste include copper, lead, cadmium, zinc, manganese and nickel, all of which pose risks for human health and the environment especially soil fertility levels. It has therefore become imperative to monitor the levels of these heavy metals of soil in auto mechanic clusters established in order to assess the pollution risk they pose to the environment and human health (Laurent et. al., 2011)

II. METHODS AND MATERIAL

Study Area Description

The study area is located in Edwenase Kwadaso, a suburb of Kumasi in the Ashanti region of Ghana (figure1). The study area used to be trial grounds for agricultural research activities which have now been converted to auto mechanic workshop clusters (Sadick et al., 2015). The geographical location of Kwadaso lies in Latitude 6.42^{o} N and Longitude 1.34^{o} W with an altitude of 284m above mean sea level as described by Sadick et al., 2015.

The topography of the area is partly flat plane and undulating surface, and lies within tropical rain forest. The soil type is made up of specifically Cutanic Lixisol (WRB, 2006). The presence of the Agricultural College and two research institutes in the town attract a large population of people and presence of many automobile vehicles, which in turn gives a boost to automobile workshop activities (Sadick et al., 2015)

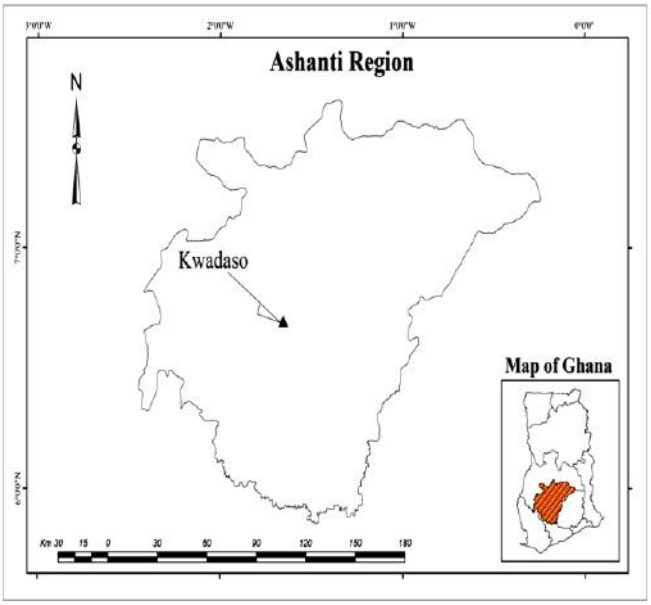

Figure 1 : Location of the study area (Sadick et al,. 2015)

Sample collection and treatment

Top soils are the first locus of input of metals where they tend to accumulate on a relatively long term basis (Abenchi et al., 2010). These pollutants normally contaminate the upper layer of the soil at a depth (0 - 40) cm (Krishna and Grovil, 2007). This implies that, high concentration of these pollutants could be present at this depth if assessed (Pam et. al., 2013). Four different automobile workshops, namely auto body, auto mechanic, auto spraying and auto electrician shops were identified in the study area and soil samples were collected from these selected automobile workshops using soil auger, at the depth of 0-15cm representing the top soil. At each location, the soil samples were taken from four different points making a total of 16 samples. The control samples were collected from about 100m away from the influence of any auto mechanic activities. The location of the control sample was at the same geology (granite) with the study area. The results obtained were discussed in the context of the control results.

The samples were placed in labelled polythene bags and transported to the CSIR-Soil Research Institute laboratory for analysis. All soil Samples were subsequently air-dried to constant weight to avoid microbial degradation (Kakulu, 1993). They were homogenized, made lump free by gently crushing

repeatedly using a pulverizing machine and passed through a 2 mm plastic sieve prior to analysis.

Determination of heavy metals as soil contaminant

One gram of the dried fine soil sample was weighed into an acid washed, round bottom flask containing 10 cm3 concentrated nitric acid (HNO3). The mixture was slowly evaporated over a period of one hour (1) on a hot plate. Each of the solid residues obtained was digested with a 3:1 concentrated HNO_3 and $HClO_4$ mixture for 10 minutes at room temperature before heating on a hot plate. The digested mixture was placed on a hot plate and heated occasionally to ensure a steady temperature of 150°C over 5 hours until the fumes of $HClO_4$ were completely evaporated (Jacob et al., 2009). The mixture was allowed to cool to room temperature and then filtered using Whitman No.1 filter paper into a 50 cm3 volumetric flask and made up to the standard mark with deionized water after rinsing the reacting vessels, to recover any residual metal. The filtrate was then stored in pre-cleaned polyethylene storage bottles ready for analysis. Heavy metal concentrations were determined using an Atomic Absorption Spectrophotometer (AAS) at the CSIR-Soil Research Institute, Ghana. The settings of the instrument and operational conditions were in accordance with the manufacturer's specifications.

Computation of toxic levels in the assessment of the impact of the auto mechanic workshop clusters on the surrounding soil environment

The toxic levels (indices) were estimated to assess the impact of human activities and the extent of environmental pollution based on the contaminants. The indices employed in this study were: Index of geo-accumulation (I-geo), Contamination factor (CF) and Ecological risk factor. The I-geo enables the assessment of contamination by comparing current and pristine concentrations of the contaminants; this index was calculated in equation (1) below (Muller, 1969; Dasaram et al., 2011; Adepoju and Adekoya, 2012).

The next approach was the Contamination factor (Cf) and is calculated by the equation suggested by Håkanson (1980) and Dasaram et al. (2011) in equation (2) below.

Finally the last approach is ecological risk factor which expresses the potential risk of a given contaminant as suggested by Håkanson (1980). This was calculated in accordance with Equation (3) below:

$$I - geo = \log_2 \frac{Cn}{1.5Bn}$$

Where: Cn is the concentration of the heavy metal in the enriched sample; Bn is the concentration of the metal in the unpolluted (control) samples;

The factor 1.5 is introduced to minimize the effect of the possible variations in the background or control values which may be attributed to lithogenic variations in the soil (Fagbote and Olanipekun, 2010). The degree of metal pollution using I-geo is assessed in terms of seven contamination classes in order of increasing numerical value of the index as shown in Table 2 (Fagbote and Olanipekun, 2010; Laurent et al., 2011).

$$Cf = \frac{C^i{}_{0-1}}{C^i{}_n}$$

Where: C^i_{0-1} is the mean content of metals from at least 5 sample sites. $C^i{}_n$ is the pre-industrial concentration of individual metals;

In this study, the concentration of the control samples is taken to represent the pre-industrial concentration as suggested by Victor et al. (2006). Cf can be used to differentiate between the metals originating from anthropogenic activities and those from natural processes and to assess the degree of anthropogenic influence (Fagbote and Olanipekun, 2010). Five contamination categories of contamination factor are recognized in Table 3. High CF values suggest strong anthropogenic influence.

$$Er^i = Tr^i x C^i f$$

Where Tr^i is the toxic-response factor for a given substance, and C^if is the contamination factor (Table 6). The Tr^i values of heavy metals by Håkanson (1980) are also given in Table 4.

III. RESULTS AND DISCUSSION

In order to have an idea about the levels of contamination of the soil which could have been used for agricultural purposes and now used for auto mechanic workshops, data obtained were compared with that from the control sample point. In this study, the

control sample point was used as unpolluted or background value. The background value of an element is the maximum level of the element in an environment beyond which the environment is said to be polluted with the element (Puyate et al., 2007). The average levels of these metals in the soil, in the auto-mechanic clusters indicate that they are not derived from the natural geology of the area as evident from the low level of metals in control samples. The heavy metals showed a distribution pattern of Pb>Fe>Cu>Mn>Cd>Zn as presented in Figure 2.

The geo-accumulation index (I-geo) for the soils are also presented in Table 6. The pollution status of the metals in the environment expressed in terms of this index showed that the environment is moderately polluted with Pb and unpolluted to moderately pollute with Fe, Cu, Zn, and Mn and to a lesser degree with Cd (Table 1). The moderately polluted level of Pb may be due to the activities in the auto mechanic activities resulting in the spillage of waste oil, presence of automobile emission, and expired motor batteries indiscriminately dumped by battery chargers and auto mechanics in the surrounding areas (Pam et. al., 2013).

Contamination factor (Cf) was calculated from the mean concentrations of the heavy metals in the study areas with the control sampling sites taken to represent the background values (Table 6). According to Akoto et al. (2008), Cf values between 0.5 and 1.5 indicate that the metal is entirely from crust materials or natural processes; whereas Cf values greater than 1.5 suggest that the sources are more likely to be anthropogenic. The Cf revealed that soils show highest Contamination factors for Pb, Zn, Mn, Fe, Cu and Cd ranging from moderately contamination to very high contamination (Table 2). High (>1.5) Cf values of a metal indicate significant contribution from anthropogenic origins. Therefore, the high values of Cf in Table 6, especially for Pb and Zn, is a clear indication that the contamination in the soils in the vicinity of the auto mechanic clusters originates from human activities, most probably in the auto mechanic workshops, and that the pollution is relatively recent on a time scale of years(Pam et. al., 2013).

The economic risk assessment results of the toxic metals in the study area are presented in Table 6 below. The results showed that the economic risk ranged from low potential risk to considerable potential risk with Pb showing high value of economic risk factor of 122.00 (Table 3).

Table I : Seven Classes of Geo-Accumulation Index

Class	Value of Soil quality
< 0	Unpolluted
0-1	Unpolluted to moderately polluted
1-2	Moderately polluted
2-3	Moderately polluted to highly polluted
3-4	Highly polluted
4-5	Highly polluted to very highly polluted
> 5	Very highly polluted

Table II: Categories of Contamination Factors (Håkanson (1980); Dansaram Et Al., 2011

Contamination factor	Category
C_f <1	Low contamination factor indicating low
1<C_f<3	Moderate contamination factor
3<C_f<6	Considerable contamination factor
6<C_f	Very high contamination factor

Table III: Categories of Risk Factors (Håkanson (1980)).

Risk factor	Category
Er^i<40	low potential ecological risk
40≤Er^i<80	moderate potential ecological risk
80≤Er^i<160	considerable potential ecological risk
160≤Er^i<320	high potential ecological risk
Er^i≥320	very high ecological risk

Table IV: Toxic Response Factor (Ppm) By Håkanson (1980).

Element	Fe	Cu	Zn	Mn	pb	Cd	As	Hg	Cr
Toxic response factor	-	5	1	-	5	30	10	40	2

Table V: Concentrations of Heavy Metals (Ppm) In The Soils In Auto Mechanic Workshop Clusters In The Study Area.

Location	Fe	Cu	Zn
	ppm	ppm	ppm
AB1	43.88	11.64	1.88
AB 2	90.56	7.89	2.91
AB3	80.11	15.32	1.65
AB4	50.05	12.98	1.89
AM1	112.84	22.59	2.46
AM 2	59.96	20.36	2.93
AM3	94.00	21.36	2.33
AM4	65.34	25.54	1.99
AE1	129.83	12.30	1.43
AE 2	120.38	33.06	2.84
AE3	115.23	20.13	1.89
AE4	120.33	23.14	2.02
AS1	264.09	49.03	33.38
AS 2	125.34	26.91	33.00
AS3	198.23	31.09	2.33
AS4	188.99	38.99	2.85
MF	39.01	10.01	1.03
Mean	116.20	23.27	6.11
SD	58.89	10.86	10.58
Range	220.21	41.14	31.75

Table VI: Concentrations of Heavy Metals (Ppm) In the Soils In Auto Mechanic Workshop Clusters In The Study Area (Continuation)

Location	Mn	pb	Cd
	ppm	ppm	ppm
AB1	6.27	223.53	12.90
AB 2	4.84	225.96	13.50
AB3	5.28	205.21	10.00
AB4	4.99	210.32	10.98
AM1	10.29	250.00	14.00
AM 2	18.49	260.43	17.80
AM3	13.20	233.11	15.00
AM4	14.62	220.98	12.56
AE1	3.80	270.00	12.30
AE 2	10.36	265.33	10.22
AE3	11.31	245.11	11.09
AE4	12.01	247.98	9.99
AS1	32.53	235.03	11.01
AS 2	19.97	230.10	10.90
AS3	10.23	252.33	12.31
AS4	11.20	230.70	9.78
MF	3.90	9.75	7.31
Mean	11.84	237.88	12.15
SD	7.26	19.00	2.16
Range	28.73	64.79	8.02

AB : Auto body, AM: Auto mechanic, AE: Auto electrician, AS: Auto spraying, MF: Management farm (Control)

Table VII: Average Geo- Accumulation Index (I-Geo), Contamination Factors (Cf), Ecological Risk Factor And Background Concentrations (Bc) Of Heavy Metals In Soils Of The Study Area

Sample	Fe	Cu	Zn
I-geo	0.30	0.19	0.60
CF	2.98	2.33	5.93
Er	-	11.65	5.93
BC	39.01	10.01	1.03

Table VIII: Average Geo- Accumulation Index (I-Geo), Contamination Factors (Cf), Ecological Risk Factor And Background Concentrations (Bc) Of Heavy Metals In Soils Of The Study Area (Continuation)

Sample	Mn	pb	Cd
I-geo	0.31	1.21	0.05
CF	3.04	24.40	1.66
Er	-	122.00	49.80
BC	3.90	9.75	7.31

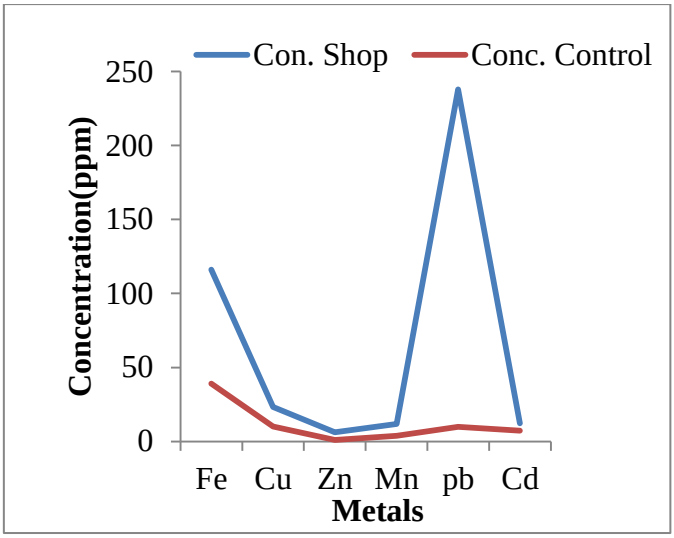

Figure 1: Levels of metals in mechanic shops as compared with control site

IV.CONCLUSION

The investigation in this study indicated that the mechanic workshop clusters are indeed polluted with these metals (Pb, Cu, Zn, Mn, Fe and Cd) as all the indices of contamination considered indicate there is considerable degree of contamination. This contamination has anthropogenic origins which point to the activities in the auto mechanic workshops and this could deteriorate the nutrient level of the soil which could have been used for agricultural purpose. It is therefore concluded that these auto mechanic workshops do have a negative (pollution) impact on the surrounding environment, which calls for relocation of the auto mechanic workshops to an area.

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A Review on Green Wall, Classification and Function

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ABSTRACT

Green walls are self-sustaining garden systems that can be designed on the walls of a building. The purpose of this paper is to review all types of green wall systems so as to classify, organize their main features and investigate the benefits of green wall systems to improve buildings performance. It can be determined that green wall provide great potential in reducing energy intake in buildings, especially in the cooling periods. The study has been conducted on the basis of literature survey with Library, Journals, Internet, Various seminar papers, reports of research organization. In this paper a classification of green wall systems and the main requirements of different green wall systems are investigate. It concludes that some characteristics must be studied in depth, such as classification and benefits of green wall.

Keywords: Living Walls, Vertical Garden, Bio Wall, Green Facade

I. INTRODUCTION

History of green wall

A green wall is a wall partially or completely covered with greenery that includes a growing medium, such as soil. Most green walls also feature an integrated water delivery system. Green walls are also known as living walls or vertical gardens (Wikipedia.com, 2010). The first green wall suggested in 11 century and the Viking's era. The Viking used stones timber and peat's bricks to construct their habitations. Peat is an accumulation of incompletely decayed vegetation matter; it is formed in marshes or equally environment. When the Vikings used peat's brick, grass naturally grew on this organic material. The habitation was covered with vegetation. The grass's roots helped the bricks to join in one huge brick and made the walls durable. These kinds of construction could be found in the north hemisphere wherever went the Vikings: from Canada to Norway via Island, Ireland, Sweden, and Denmark. But there is no evidence found that these early green walls were created on purpose. Natural settlement of walls by plants is happening with or without men's help. Everyone knows a building which is covered or partially covered by vegetation. In humid tropical zones, the plants from the jungle grow on any kind of buildings and covered with vegetation in Central America and South East Asia.

Patrick Blanc's green wall

It is in 1988 that Patrick Blanc filed a patent for the creation of a "device to grow plants without soil on a vertical surface"; the modern green wall was then created. On a bearing wall or support structure is placed a metal frame that supports an expanded PVC plate 10 mm thick, on which are stapled two layers of polyamide felt 3 mm thick each. A network of pipes controlled by valves provides a nutrient solution containing the dissolved minerals needed for plant growth. The felt is soaked by capillary action of the nutrient solution, which descends along the wall by gravity. Plant roots will collect the nutrients they need, and excess water is collected at the urban green space, including the greening of buildings involving both green roofs and green walls, is just one piece of the puzzle. Modern cities provide giant areas of roof and wall space, in many cases extending high above the street. Not all of this space is suitable for growing plants, but much of it

is, certainly much more than has been applied in recent years (Johnston et al., 2004).

II. METHODS AND MATERIAL

The study has been conducted on the basis of literature survey. Library, Internet, Various seminar papers, taskforce reports of research organization, journals and some periodicals on green wall have been surveyed for the purpose of accumulating information. Throughout the years, replacement of vegetated surfaces with paved and impervious surfaces in the urban area have caused the temperature in the area to increase comparing to the surrounding rural area. This is because the paved surfaces absorbs, retain, and reradiate more solar energy than grasses and trees. The ambient temperature in urban area can be as much as 6ºC warmer than the air in rural areas (Loh, 2008). Green walls or also known as vertical greenery is actually introducing plants onto the building facade. Comparing to green roof, green walls can cover more exposed hard surfaces in the built environment where towers are the predominant building style (Jonathan, 2003). If a tower has a plant ratio of one to seven, then the facade area is equivalent to almost three times the area. If the building is covered two thirds of the facade, this have contributed to doubling extend of vegetation on site. A tower can become green, thus increasing the organic mass on the site (Wilmers, 1990). The green walls can be divided into three fundamental types according to the species of the plants; types of growing media and construction method (Sheweka et al., 2011).

A. Wall-climbing Green wall

The wall-climbing type is the very common and old-fashioned green walls method. It is intense process, climbing plants can cover the walls of building naturally. Sometimes they are grown upwards with the help of supporting systems (Wilmers, 1990; Jonathan, 2003).

B. Hanging-down Green Wall

The hanging-down type is also another standard method for green walls. It can easily form a complete vertical green belt on a multi-story building through planting at every story compare to the wall-climbing type (Wilmers, 1990).

C. Module Green Wall

The module type is the latest concept compared to the previous two types. It requires more complicated design and planning considerations before a vertical system can come to place. It is also possibly the most expensive green walls method (Jonathan, 2003).

D. Benefits of Green Walls

Plants in a city can provide quantitative benefits, in the form of financial returns, as well as qualitative environmental, social and aesthetic benefits. Although the benefits are discussed separately, they are actually inseparable and should be appreciated in the built environment (Loh, 2008).

E. Environmental Benefits

Plants can offer cooling benefits in the city through two mechanisms, direct shading and evaporate transpiration. The green walls used plants which provide shading to the building. It is very straightforward and is very much depends on the density of the plants in the green walls. As a result, not only the shaded building, but the ambience also will experience a relatively low temperature. The temperature reduction will not only affect the building, but also to the urban environment. Trees can improve the air quality by filtering out airborne particles in their leaves and branches as well as by absorbing gaseous pollutants through photosynthesis (Loh, 2008; Dwyer et al., 1994). Storm water in the urban area is traditionally routed off impervious surfaces and transported in drainage pipe systems to an adjacent receiving water body. Flooding may occur when the drainage is unable of storing and distributing the storm water from the land. A degraded aquatic ecosystem is usually associated with the discharge of the storm water. Green wall is actually a mulching technique as it covers the waterproof surface of the building with plants and soil or planting medium. The green wall is able to retain water to control the water runoff from the roofs. Urban green area and plants around the buildings can be viewed as an acceptable alternative habitat for urban plants and native wildlife. The presence of wildlife may improve the ecological quality and health of the environment as well as provide additional emotional, intellectual, social and physical benefits to humans

(Johnston and Newton, 1996). Plants also release oxygen to the atmosphere through its unique photosynthesis, which troubles carbon dioxide and water to create sugar and oxygen. This attains not only oxygen generation, but also carbon dioxide reduction. Plants roots also play a role in filtering the impurities in the water before it enters a groundwater aquifer. Impurities, such as nitrogen and phosphorus, will bond together with some type of soil. Plants can reduce the amount of these impurities in the soil by taking up nitrogen and phosphorus to be used in the plant growth (Johnston and Newton, 1996). Plants can be used as sound barrier as the can reduce the noise perceived by the receiver. In the case of green walls, plants in the green walls will absorb the frequencies of the sound. Thus, reducing the noise pollution in the urban area (Dunnet and Kingsbury, 2004).

F. Economics Benefits

All economics benefits are associated with the environmental benefits of the green walls. The ability of the vegetative surfaces to retain storm water and water runoff from the roofs can help in reducing extend of the storm water drainage infrastructure. Plants introduced around buildings can improve construction integrity by decreasing the weather effect. The use of green walls can reduce the climatic stress on building facades and prolong the service and practical life of buildings and also not to mention reduced cost on the painting materials (Johnston and Newton, 1996). Energy saving is another significant economic contribution brought by greenery in the cities. Studies have been done where the energy used for cooling in a building can be vastly reduced. Greenery can also add value to the property. Landscaping is often used to improve the aesthetic value of the urban area. Vegetation can provide visual contrast and relief from the highly built-up city environment (Dwyer et al., 1994).

G. Social Benefits

Plants can fulfil various functions. Plants provide places for playing, sports and recreation, meeting establishing social contacts, isolation and escape from urban life, aesthetic enjoyment, viewing buildings from a distance and so on. It has been proved that visual and physical contacts with plants can result in direct health benefits. Plants can produce medicinal effects leading to reduced stress; improve patient recovery rate and higher resistance to illness. The benefits of vertical greening include noise reduction (Van Renterghemet al., 2013), filtering of airborne dust and pollutants (Ottele et al., 2010; Sternberg et al., 2010), and reduction of temperature close to the area of vertical greening (Onishi et al., 2010; Wong et al., 2010; Perini et al., 2011a). The thermal aspects of vertical greening are, however, still under debate (Hunter et al., 2014). One particular type of green facade is living wall systems, which are vertical green-ing systems where plants are grown without the need for contact with the ground (Koehler, 2008; Francis and Lorimer, 2011; Perini et al., 2011b).Living wall systems can be seen as an alternative way of introducing urban greening in dense urban areas in the same way as e.g. green roofs, which have shown to support a high arthropod diversity (Rumble and Gange, 2013; Madre et al., 2013). Like plants on green roofs (Emilsson and Rolf, 2005; Emilsson, 2008), plants in living wall systems must be able to cope with extreme conditions, such as high irradiation, significant differences in temperature and possible water shortage. According to Wong et al., 2010, green wall involve any way to set plants in a building facade. Traditionally these systems consisted of climber plants that climb directly on the material facade. On a more updated approach, these systems tend to separate the plants from the facade surface in order to avoid potential problems accompanying with linking the building with living organisms. This suggests the need to implement support structures to ensure the whole development of plants throughout the facade surface. With the aim of achieving this goal, different designs have been developed in recent years giving different construction systems. In this regard Perez et al., 2011, proposed a classification of green wall for buildings. In this classification the authors differentiate these systems in extensive and intensive systems according to the requirements of implementation cost and further maintenance. On the other hand, this classification differentiates Green Vertical Systems into two big groups, the Green Facades and the Living Walls. Green facades are green wall in which climbing plants or hanging port shrubs are developed using special support structures, mainly in a directed way, to cover the desired area. The plants can be planted directly in the ground, at the base of the structure, or in pots, at different heights of the facade. Green facades can be divided into three

different systems (Pérez G, et al., 2011) Traditional green facades, where climber plants use the facade material as a support; double-skin green facade or green curtain, with the aim of creating a double-skin or green curtain separated from the wall; and perimeter flowerpots, when hanging shrubs are planted around the building as a part of the composition of the facade to constitute a green curtain. In the case of double skin green facades, the systems used are modular fences, wired, and mesh structures (Pérez G, et al., 2011). Modular fences are very light trellis metal modules mounted on the building wall or on independent structures, which become the support for climbing plants. In wired structures a system of steel cables, anchorages, separators, and other features are used to constitute a light structure that serves as support for climbing plants. Mesh structure consists of a very light structure that provides support for the climbers, made with a steel mesh anchored to the building wall or to the building structure. Living walls are made of geotextile felts and panels, sometimes pre cultivated, which are fixed to a vertical support or on the wall structure (Pérez G, et al., 2011). The panels and geotextile felts provide support to the vegetation formed by upholstering plants, ferns, small shrubs, and perennial flowers, among others. The classification proposed by Pérez et al., incorporates and complements other classifications or system descriptions carried out by other authors as those that can be found in the Building Greener Guidance from CIRIA (Dunnet and Kingsbury, 2008; Kontoleon and Eumorfopoulou,2010); Ottele, 2011).

III. RESULT AND DISCUSSION

- The benefits of vertical greening include noise reduction. Plants can be used as sound barrier as the can reduce the noise perceived by the receiver.
- Green facades are green wall in which climbing plants or hanging port shrubs are developed using special support structures, mainly in a directed way, to cover the desired area.
- Plants provide places for playing, sports and recreation, meeting establishing social contacts, isolation and escape from urban life, aesthetic enjoyment, viewing buildings from a distance.
- Energy saving is a significant economic contribution brought by greenery in the cities.
- Green wall can improve the air quality by filtering out airborne particles in their leaves and branches as well as by absorbing gaseous pollutants through photosynthesis.

IV. CONCLUSION

Green wall can be built outside (green facade, living wall) or inside a building cover in variety country and under various weather. These structure are not limited by their viability, they are well design and quick and easy to create. Green wall are developmental, there is several that can confirm a large variety of functions. Green facades can depend of the system, cover large facade section. A green facade will also bring vegetation into busy spaces. Living walls are modified for both indoor and outdoor living condition. The difference between them is the media use to carry the plant. The structural media is the most common system, the strongest, but also the more expensive. Living walls have the same function as green facades and even more. They are called bio wall when they are used to treat polluted air; they can serve as sound barrier. Green wall benefits consist of Environmental benefits, Economics benefits and Social Benefits.

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Throughput-Delay Analysis for Multicast with Inter Session Network Coding

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ABSTRACT

Here, we characterize the throughput of a broad cast network with receivers using rate less codes with block size. We characterize the system throughput asymptotically. Specifically, we explicitly show how the throughput behaves for different values of the coding block size as a function. We are able to provide a lower bound on the maximum achievable throughput. Using simulations, we show the tightness of the bound with respect to system parameters and find that its performance is significantly better than the previously known lower bounds. The packets are not decidable if any deviation is occurred.

Keywords: Broadcast, network coding, rateless codes, throughput analysis.

I. INTRODUCTION

Broadcast erasure channel (BEC) channels between the transmitter and the receivers are modeled as packet erasure channels where transmitted packets may either be erased or successfully received. This model describes a situation where packets may get lost or are not decodable at the receiver due to a variety of factors such as channel fading, interference, or checksum errors. Instead of transmitting the broadcast data packet one after another through feedback and retransmissions, we investigate a class of coding schemes called rateless codes,[2] Fountain codes are erasure coding schemes which are rateless, in the sense that they adapt to erasure channels with unknown parameters [3].

II. METHODS AND MATERIAL

Experimental Study

Here we have a centralized server and multiple users, user need to get registered, each of them will be provided a unique key. The key that is generated will be unique and complex so that it will not be accessible by any of the users. So files cannot be easily exposable. Any one user will be considered as a main user among them, others will have to get recourses from the main user, with the help of that unique key. Everything will get completed in a synchronous manner, if any deviations occurred, it will be overseen by the user, which will be transparent to the admin. If there is a mismatch in keys the data or content will get automatically erased. It will have response time and throughput. All the requests from the users will queued in coding blocks, called rateless code. The broadcast with discrete queuing model will show the process flow of how the queuing takes place in the coding blocks.

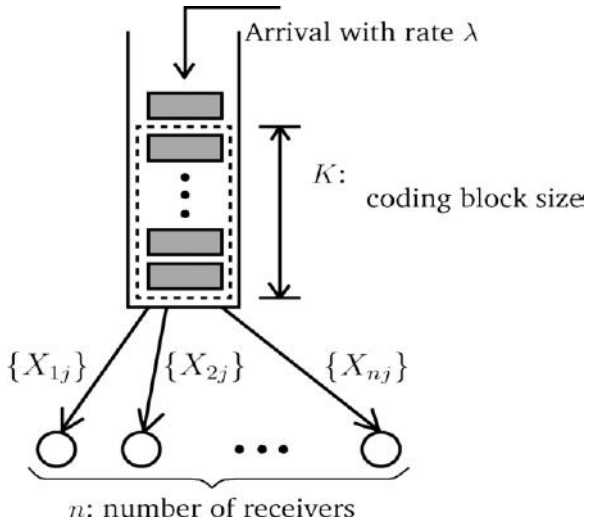

Figure 1. Broadcast with Discrete-Time Queuing Model.

We let denote the packet arrival rate and assume that the encoder waits until there are at least packets in the queue and then encodes the first of them as a single coding block. The largest arrival rate that can be stabilized is equal to the average number of packets that can be transmitted per slot, which we call the throughput.[8] Therefore, we only need to characterize the throughput that can be achieved using rateless codes under parameters. As described in Fig. 1, the channel dynamics for the the receiver are denoted by a stochastic process, $\{X_{ij}\}_{j\in\mathbb{N}}$ where is the index of the time-slot in which one packet can be transmitted and is the channel state of the receiver during the transmission of the packet.[1] We capture a fairly general correlation structure by letting the current channel state to be impacted by the channel states in previous time-slots. As the number of receivers approaches infinity, we show that the throughput is nonzero only if the coding block size increases at least as fast as, the asymptotic throughput is positive whenever c>0 .

III. RESULT AND DISCUSSION

Experimental Results

We model the broadcast channel as a slotted broadcast packet erasure channel where one packet can be transmitted per slot. The channel dynamics can be represented by a stochastic process $\{X_{ij}\}_{1\leq i\leq n, j\in\mathbb{N}}$, where X_{ij} is the state of channel between transmitter and the receiver during the transmission of the packet. If we assume that the erasure network operates on long packets, i.e., packets are either erased or received exactly on each link, then this assumption can be justified by using headers in the packets to convey erasure locations or by sending a number of extra packets containing this information.[4] We consider the simpler problem of achieving optimal capacity for the case where coding is done only across packets of the same session, and give policies that asymptotically achieve optimality in this case. For simplicity, we analyze the case where no restrictions are placed on coding among packets from the same multicast session.[2] When transmitting information using a traditional code, both the sender and the receiver are in possession of a description of the coding method used. For Fountain codes this is not necessarily the case, since the code is being generated concurrently with the transmission. Therefore, in order to be able to recover the original information from the output symbols, it is necessary to transmit a description of the code together with the output symbols.

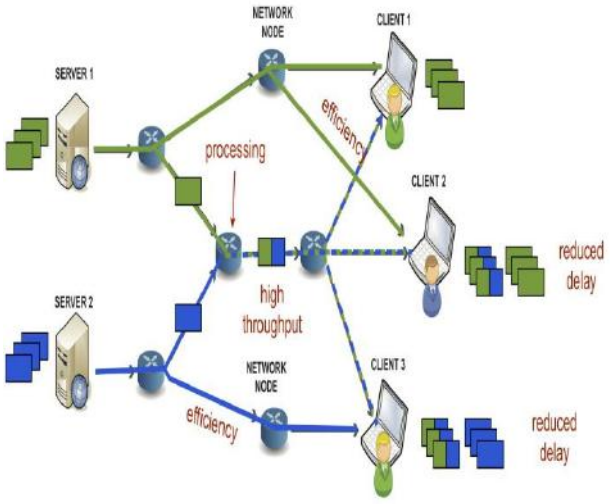

Figure 2. System architecture for throughput rateless code.

For rateless coding schemes, the best encoding and decoding complexity increases linearly in (e.g., Raptor codes [2]), the size of the coding block. Each receiver sends an ACK feedback signal after it has successfully decoded the packets. We assume that the ACK signal is transmitted instantaneously and received without error. In the following context, the terms *packet* and *symbol* are used interchangeably. We further show that similar to the wireline case, for multicast problems over wireless erasure networks, linear encoding at nodes achieves all the points in the capacity region.[12] The sources compress the infor-mation stream and transmit packets into the network at rates limited by the gradients and thus each source in the set of correlated sources transmits at the appropriate rate.

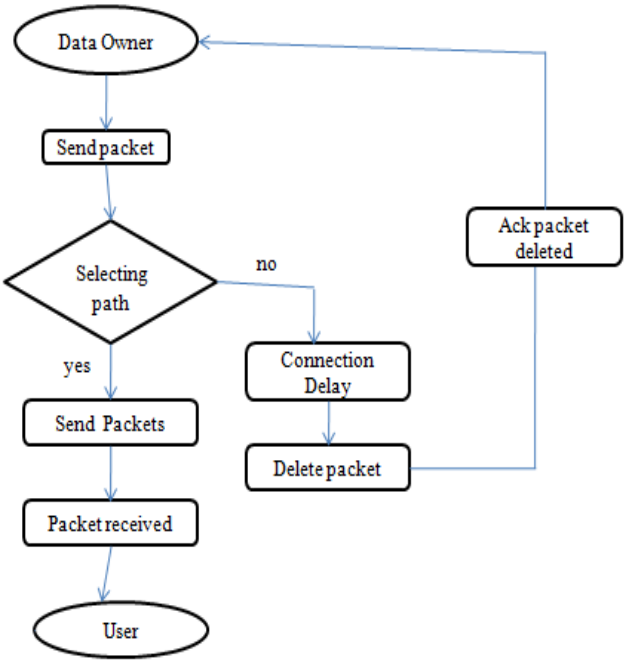

Figure 3. Flow Chart of Throughput Rateless Code.

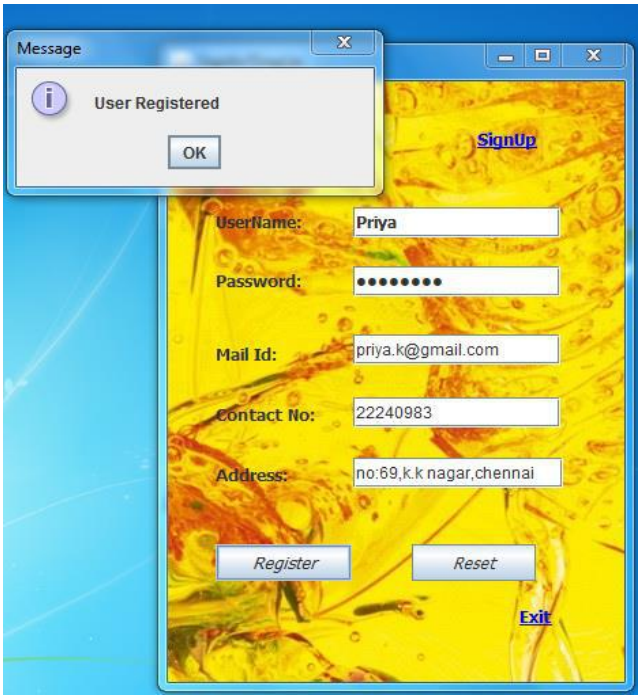

Figure 4. A User Registration

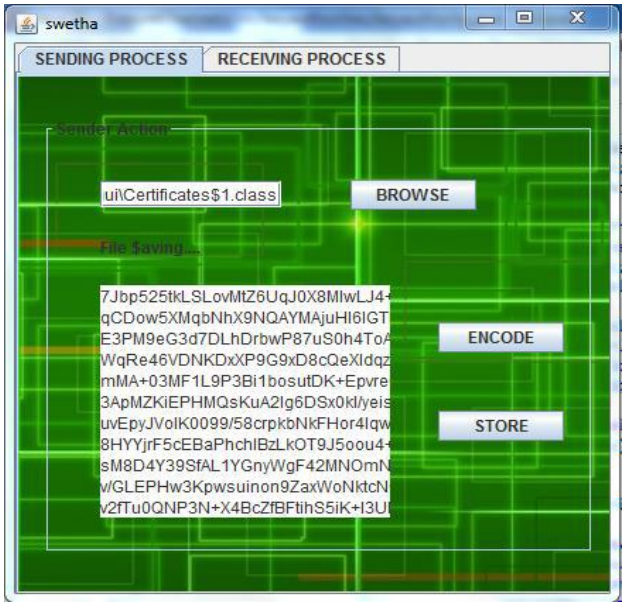

Figure 4.a Source to Send the Data

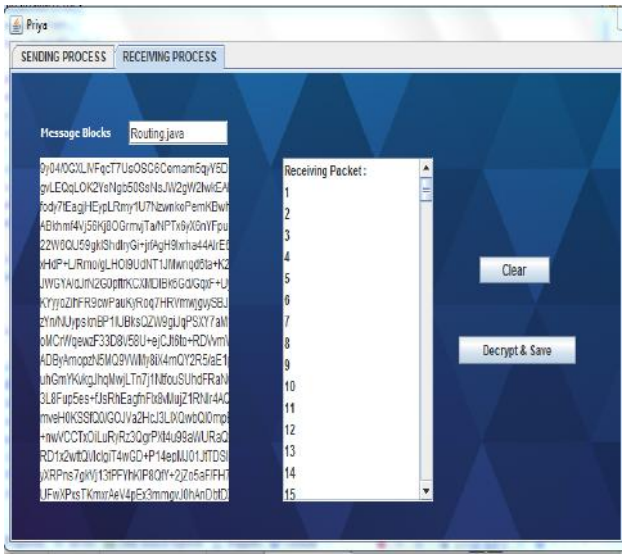

Figure 4.b Destination to Receive The Data

IV. CONCLUSION

We characterize the throughput of a broadcast network using rateless codes. The broadcast channels for each receiver the current channel state distribution depends on the channel states in previous packet transmissions. Furthermore, through numerical evaluations, we show that our bound is significantly better than existing results. We have obtained the capacity for a class of wireless erasure networks with broadcast and no interference at the reception. A throughput optimal rateless coding scheme to relay codes across multiple nodes was described. Its complexity of *packet operations* is close to that of the single channel case.

V. FUTURE ENHANCEMENTS

The broadcast channels for each receiver the current channel state distribution need not to depend on the channel states in previous packet transmissions. A better routing and resource assignment strategy can be provided for each packet flow in order to avoid future contention and decrease the packet loss rate. The essence of the strategy is switching the packet to a route with the most available resources, so that it would have a less chance of encountering future potential contentions.

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Implementation of Multi-Party Key Authentication and Steganography for Secured Data Transaction in Cloud

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ABSTRACT

Cloud security is effective only if the correct defensive implementations are in place. Efficient cloud security architecture should recognize the issues that will arise with security management. Cloud providers either integrate the customer's identity management system into their own infrastructure. We propose an identification system which links the confidential information of the users to store in an encrypted fashion using steganography. Implementation of multi-party key authentication and steganography for secured data transaction in cloud provides the users with security for their data stored in the collaborative environment in a reliable fashion.

Keywords : Steganography, Merkel Hash Tree, Multi Party.

I. INTRODUCTION

The main aim of this paper is to provide a secured data transaction based on hiding a mutual key in an image using steganography technique, basically steganography technique focuses on encrypting the image but here we use specific algorithms to generate the keys which will be used while authenticating the user and then get an access which will grant the data user to get their desired file from the cloud server.

Here we are performing another activity as creating an application in the cloud server using our Google account to store our data more securely in the cloud server each user login and actions performed by the user will be stored in that application in an encrypted format using merkel hash tree algorithm in which data will be integrated and stored using a tree format.

Existing Work

In the existing system, security solutions mainly focus on the authentication cannot be illegally accessed, but neglect a tenuous privacy issue (i.e.) it mainly provides security only for authentication and does not take care of the very tiny issues in the system, as a result a very less security is provided in which the users data can be accessed very easily by the hackers and the content can be changed very easily and hereby they are missing their privacy by which some anonymous request can get all the data from cloud and share them in the collaborative environment. In this case the authorized user should be provided subtle privacy towards their data.

Proposed Scheme

In this proposed system, there will be three entities users, cloud server & trusted third party (TPA). Data users are both data owners & data users. Every user will be registering with the cloud Server. Cloud will be generating pair wise keys, primary and secondary keys for both cloud server & data user. users 1 wants to access the data of users 2 then shared keys are generated and accordingly the data is authorized for usage. As a modification process, an access key is generated while registrations with cloud after that only shared key are generated. Finally a mutual access key is generated by the data owner to the data user without the interaction of the cloud server by using the data owner and the data users mutual understanding and sent via Email or else the data owner can also ignore the request .In case of providing acceptance to the request, the data user will have to hide that mutual key in an image called steganography and sent to the data owner. Data is accessed by only after verifying mutual key using

destaganography and as a result the requested user will be able to view the requested file.

II. METHODS AND MATERIAL

Experimental Work

A. Creating an Application in Cloud

In this work as an initial process the data owner has to create an application in the cloud server using their cloud ccount (they can use any type of cloud such as amazon, one cloud, google drive etc.) here we are using drop box account to create an application in cloud. While creating that application in cloud an app key and a secret key will be generated and those keys will be used to connect our cloud application with our external application which will be visible to the data user.

B. Uploading File Using the Application

This uploading process can be carried out by either data owner and data user who wants to upload the file content into the application, while the user registration into the application by using their user name and password and some specific parameters they will be provided a public key which will plays a main role while uploading of file, the users with the public key can only upload the file into the application. While uploading a certain steps should be carried out first they should browse an image file which is used to steno the file content, and as the second step should browse the file ontent which is very important to be uploaded with much security and as the next step an index key word should be provided for that certain file which will be useful while searching the file for downloading.

C. Downloading the File

While if the data owner as well as data user wants to download any file from the application they must get login into the system and then they start search for the file they need using the key word if any files are found regarding the given key word the system will display the filename and then user will proceed to download the cloud server will asks for the shared key the user will give no and now the cloud server will take any two bits from the data owners primary key and secondary key as well as any two bits from the data users primary and secondary key combines those keys and generate a shared key and sends to the correct requested users mail id with use of trusted third party verification and then the user will provide the shared key plus access key to cloud server and it will proceed to give request to the file.

D. View Request

The data owner will be able to see the request with the status provided for in his account as request is pending either to provide the service or to discard the request, if the owner wants to approve the request the owner will enter a mutual key and browse the image from the server which is stored in an encrypted format using AES algorithm and mutual key is steganography inside the image and sent to the user mail, the user will then decrypt the image and destegano the mutual key and the user will give that to the server and then the cloud server will separate the content file and the image file and then now the user can view the file.

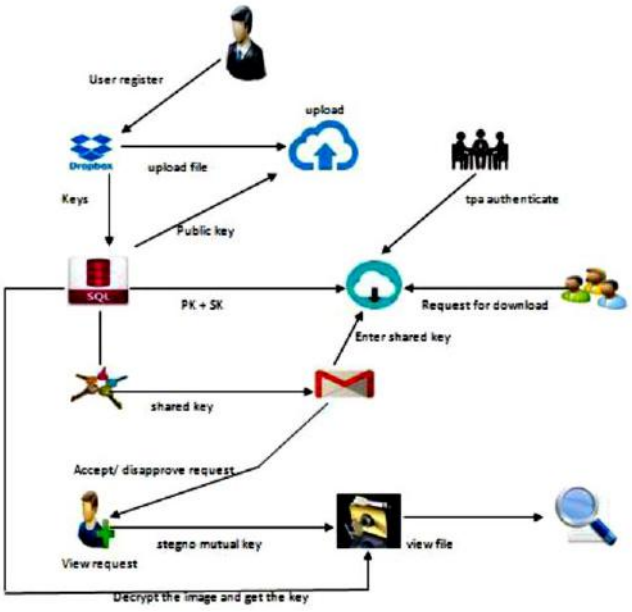

Figure 1. Architecture Diagram

III. RESULT AND DISCUSSION

1. Techniques

A. AES Algorithm

Advanced Encryption Standard is mainly used to encrypt a confidential text into a decryptable format, for example when you need to send sensitive data in e-mail the decryption of the encrypted text it is possible only if you know the right password. AES was designed to be efficient in both hardware and software and supports a block length of 128 bits and key length of 128, 192, 256 bits. It works at multiple network layer simultaneously, AES is one of the most frequently used and most secure encryption algorithm available today. The algorithm is based on several substitutions, permutations and linear transformations, each executed on data blocks of 16 byte-therefore the term block cipher. Those operations are repeated several times, called "rounds". During each round, a unique round key is calculated out of the encryption key and incorporated in calculations. Based on the block structure of AES, the change of single bit, either in the key, or in the plaintext block, results in a completely different cipher text box. Therefore, AES remains the preferred encryption standard for governments, banks and high security systems around the world.

The behavior of the graphs shows that for file size up to 1000 kb, the required is less and it gradually rises when the file size is increased. If the encryption and decryption time is compared with similar systems, it shows that time required by AESS System is significantly less.

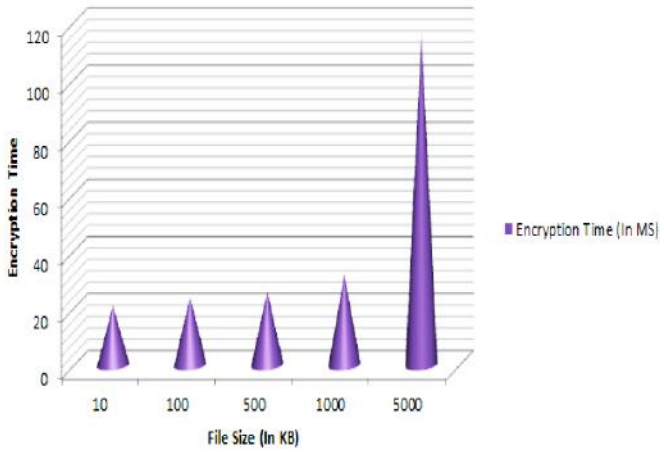

Figure 2. AES Encryption Time Chart

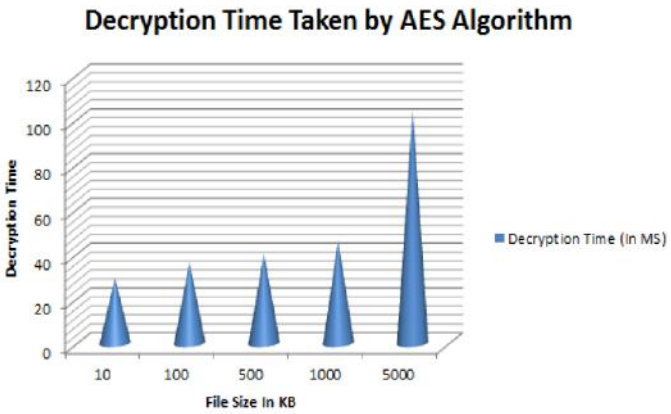

Figure 3. AES Decryption Time chart

B. Steganography

Steganography is a practice of concealing a file, message, image or video within another file, message, image, or video. Generally, the hidden messages appear to be(or be part of) something else: images, articles, shopping lists, or some other cover text. For example, the hidden messages may be in invisible link between the visible lines of a private letter. The advantage of steganography over cryptography alone is that the intended secret message does not attract attention to itself as an object of scrutiny. Steganography includes the concealment of information within computer files. In digital steganography, electronic communications may include Stenographic coding inside of a transport layer, such as document file, image file, program or protocol. Media files are ideal for stenographic transmission because of their large size.

For example, a sender might start with an innocuous image file and adjust the color of every 100th pixel to correspond to a letter in the alphabet, a change so subtle that someone not specifically looking for it is unlikely to notice it.

C. Merkel Hash Tree

Merkel Hash Tree is a well-studied method which is used for authentication structure. It is used efficiently and also proved that set of elements are stayed undamaged and unaltered. It provides great help in server time reduction. It is used by the cryptographic methods to authenticate the file in blocks.

The leaf nodes of the Merkel Hash Tree are the original hash values of file blocks. The idea behind generating MHT is to break the content file into a number of blocks and get combined iteratively. Now, rehashing the result hash nodes and combine like a tree-like fashion and repeat the same procedure till we get a tree with a single root. The MHT is generated by client and get stored at both client and server side.

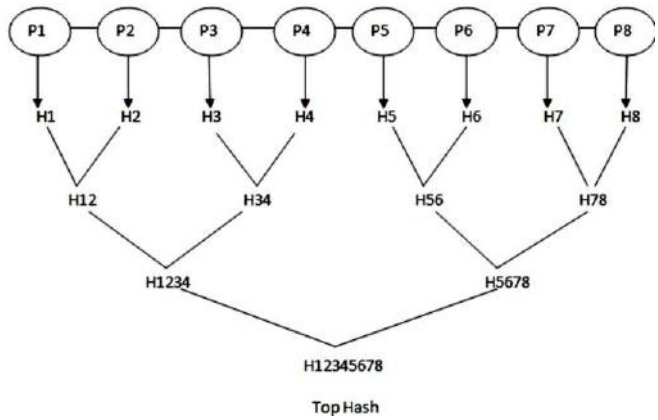

Figure 4. Merkel Hash Tree Structure

D. Key Generation

Key generation is a technique which is used to store the data in a different methodology and mainly the public key algorithm known as RSA plays a vital role in key generation technique such as single shared key uses symmetric key algorithm through which data will be stored very secretly. Since the public key algorithm uses two keys namely public and a private key and that public key is made as visible to one end user so that they can use that public key to encrypt the data and another end user can decrypt the data using their private key. In some conditions they keys have been generated using Random Number Generator technique, and it is very efficient that the hacker cannot easily guess the keys and provides a strong security.

2. Performance Analysis

The existing system of shared based authentication protocol was done by using Attribute Based Encryption of some drawbacks and those where rectified using Advanced Encryption Standard. In the ABE the latency of execution time is comparatively slow when compared to AES. That drawback is rectified by using AES.

Table 1. Comparison of AES and ABE

FEATURES	AES	ABE
Cost incurred	Cost effective	Expensive
Security Rate	Excellent	Comparatively less
Execution time	More fast	Comparatively Slow
Key length	Upto 256 bits	128 bits

And the security rate is comparatively high when compared to ABE, The cost is also considered as a constraint, in which the existing idea uses the logarithm for encryption but here we use keys for both encryption and decryption.

IV. CONCLUSION AND FUTURE ENHANCEMENT

In this work, we have identified a new privacy challenge during data accessing in the cloud computing to achieve privacy-preserving access authority sharing. Authentication is established to guarantee data confidentiality and data integrity. Data anonymity is achieved since the wrapped values are exchanged during transmission. User privacy is enhanced by anonymous access requests to privately inform the cloud server about the users access desires. Forward security is ealized by the session identifiers to prevent the session correlation. It indicates that the proposed scheme is possibly applied for privacy preservation in cloud applications. And as future enhancement, while storing the data into an image using steganography and that image data is integrated into several parts, in such cases if any one part of data is cracked an immediate notification will be sent to data owner through the mail. And so the data owner can prevent the hacking immediately.

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Effect of Cell Potentials on Gas Diffusion Layer Velocity with Serpentine Flow Channel in PEM Fuel Cell

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ABSTRACT

In this work, the influences of various cell voltages on the reactant gases velocity distribution at Gas Diffusion Layer (GDL)with conventional serpentine flow field in Proton Exchange Membrane Fuel Cell (PEMFC) is numerically studied. The six different cell potentials like (0.4, 0.5, 0.6, 0.7, 0.8 and 0.9V) were taken into account to optimize an effective velocity distribution of the reactant gases inside the cell at Gas Diffusion Layer. The numerical results show that the reactant gases distribution at GDL is enhanced with increases in cell potentials. Under the optimal fuel flow rate conditions, the PEM fuel cell with a cell potential of 0.6V provides the better velocity distribution of reactant gases at the Gas Diffusion Layer among the other five cell potentials.

Keywords: PEM Fuel Cell; Serpentine flow fields; GDL velocity; Cell voltages, COMSOL.

I. INTRODUCTION

Efforts in developing various models for PEM fuel cells have been increasing in recent years, and thus creating an urgent need for systematic experimental data on fuel cells with commercially available components [1]. The proton Exchange membrane fuel cell (PEMFC) performance depends not only on many factors including the operation conditions, transport phenomena inside the cell and kinetics of the electrochemical reactions, but also in its physical components; membrane electrode assembling (MEA) and bipolar plates (BPs) [2]. The PEM fuel cell performance is enhanced with increases in cathode inlet gas flow rate, cathode humidification temperature and cell temperature. However, as cell temperature is higher than or equal to anode humidification temperature, the cell performance is deteriorated due to failure in humidification of the cell [3]. Proper water management in polymer electrolyte membrane (PEM) fuel cells is critical to achieve the potential of PEM fuel cells. Membrane electrolyte requires full hydration in order to function as proton conductor, often achieved by fully humidifying the anode and cathode reactant gas streams [4]. Operating parameters that facilitated better water removal by evaporation like higher temperature and stoichiometric flow rates and lower inlet stream humidity resulted in higher net current [5]. The flow field design in bipolar plates is very important for improving reactant utilization and liquid water removal in proton exchange membrane fuel cells (PEMFCs) [6]. The serpentine flow field is the leading type of flow field used today in proton exchange membrane (PEM) fuel cells and for this reason optimization of serpentine flow field design is extremely important [7]. One of the most common types of flow field designs used in proton exchange membrane (PEM) fuel cells is the serpentine flow field. It is used for its simplicity of design, its effectiveness in distributing reactants and its water removal capabilities [8]. The failure in flow distribution among different unit cells may severely influence the fuel cell stack performance [9].The gas diffusion layer (GDL) plays a very important role in the performance of Proton Exchange Membrane (PEM) fuel cells. The amount of compression on the GDL affects the contact resistance,

the GDL porosity, and the fraction of the pores occupied by liquid water, which, in turn, affect the performance of a PEM fuel cell [10].

II. METHODS AND MATERIAL

Modeling & Analysis

The marketable current COMSOL Multiphysics software is used to create and evaluate the complete model of serpentine floe field PEM fuel cell. The entire three dimensional model is shown in figure.1. A fuel cell with 25×25 cm^2 reactive area serpentine flow field model square cross-section was considered. In general the PEM fuel cell was consisting of seven layers like membrane, anode and cathode catalyst layers, anode and cathode Gas Diffusion Layers (GDL), anode and cathode flow channels. The entire three dimensional model generation is taking place with the "PEMFC adding domains" in the COMSOL software. By using "forward-looking description domains", the required modeling terms were produced with respect to the relevant geometry parameters (Thickness, Length, height, width, etc.).

The Cartesian coordinates were used to refer to the whole geometry in the necessary coordinate location. Finally the complete three dimensional model of serpentine flow field PEMFC had been created by reclaiming the data from modeling terms table in the software. Next the different operating parameters like Lumped anode resistance, membrane resistance, Cell temperature, Oxygen reference concentration, GDL Porosity, GDL permeability, membrane conductivity, GDL electric conductivity, Hydrogen molar mass, water molar mass, Oxygen molar mass, inlet mass fraction of H_2, inlet mass fraction of O_2 and inlet mass fraction of H_2O, inlet velocity, fluid viscosity, Nitrogen molar mass, water molar mass, Oxygen molar mass, N_2-H_2O binary diffusion coefficient, O_2-N_2 binary diffusion coefficient, O_2-H_2O binary diffusion coefficient, reference pressure and cathodic transfer coefficient were taken into account for the complete numerical analysis on serpentine flow field PEMFC under six cell potentials. The PEMFCs were functioned at a temperature of 50^{o}C and an operating pressure of 1.0 bar respectively.

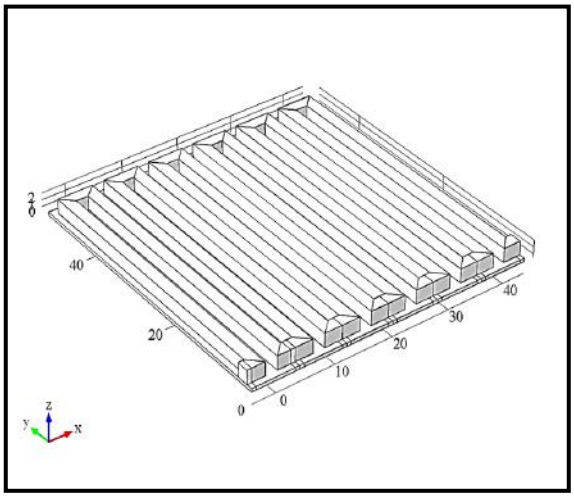

Figure 1: Serpentine Flow Field PEMFC Model

III. RESULT AND DISCUSSION

The overall three dimensional serpentine flow fields PEM fuel cell with several modeling modules like membrane, anode and cathode catalyst layers, anode and cathode GDL, anode and cathode flow channels was operated at the similar operating conditions of 60°C temperature and 1.5 bar pressure.

In the start the serpentine flow field PEMFC with a cell voltage of 0.4V was involved and evaluated at the above mentioned operating parameters to estimate the reactant gases velocity distribution at Gas Diffusion Layer of the cell. The amount of GDL velocity distribution of the reactant gases 5.7302 m/s was obtained corresponding to the cell potential of 0.4 V at a temperature 50°C. Next the serpentine flow field PEMFC with a cell voltage of 0.5V was engaged and analyzed at the above mentioned operating parameters to evaluate the reactant gases velocity distribution at Gas Diffusion Layer of the cell. The amount of GDL velocity distribution of the reactant gases 5.9821m/s was obtained corresponding to the cell potential of 0.5 V at a temperature 50°C. Next the serpentine flow field PEMFC with a cell voltage of 0.6V was engaged and analyzed at the above mentioned operating parameters to evaluate the reactant gases velocity distribution at Gas Diffusion Layer of the cell. The amount of GDL velocity distribution of the reactant gases 9.0892 m/s was obtained corresponding to the cell potential of 0.6 V at a temperature 50°C. Next the serpentine flow field PEMFC with a cell voltage of 0.7V was engaged and analyzed at the above mentioned operating parameters to evaluate the reactant gases velocity distribution at Gas

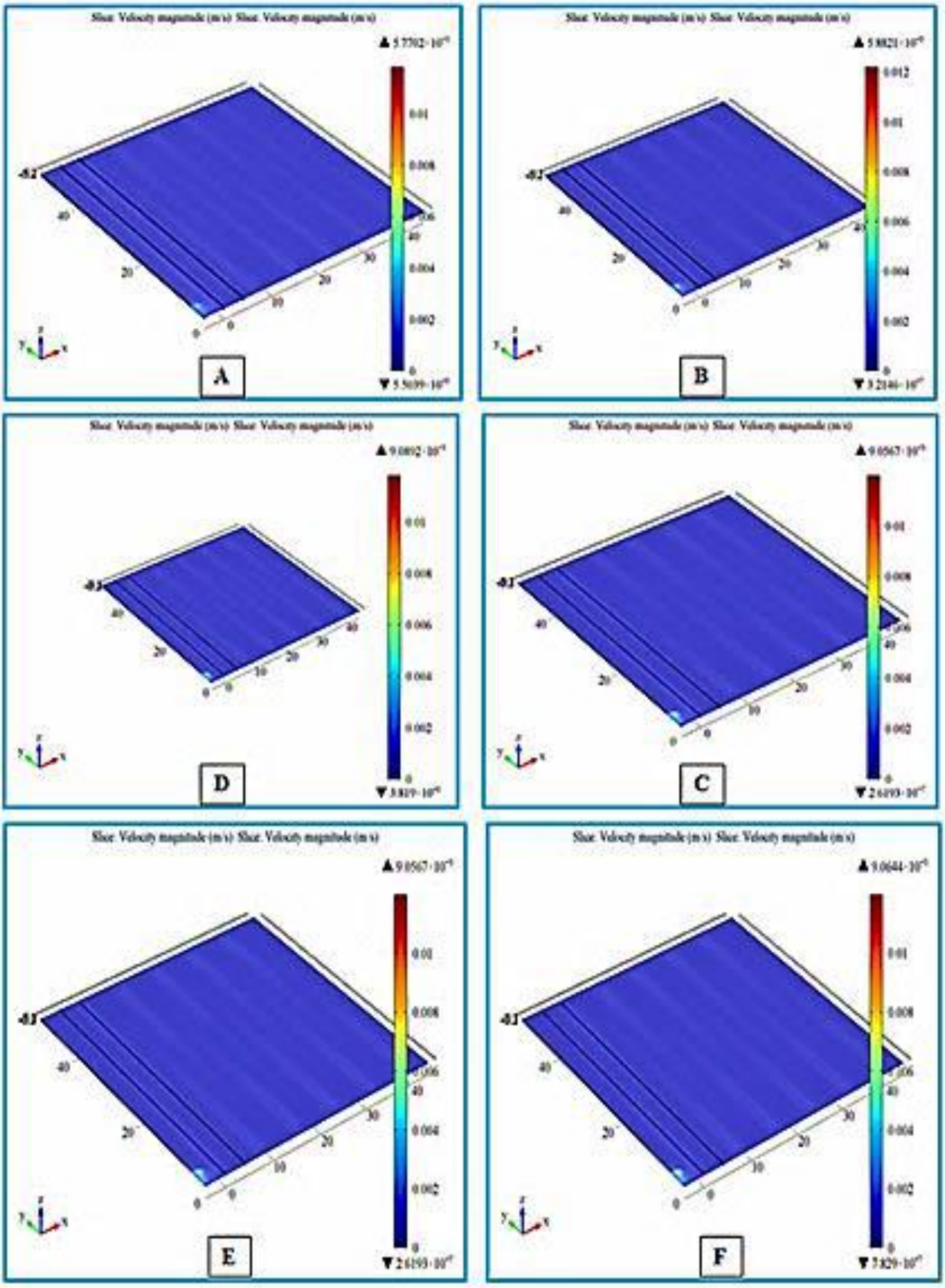

Figure 2: Gas Diffusion Layer velocity at cell potential (a) 0.4V (b) 0.5V (c) 0.6V (d) 0.7V (e) 0.8V (f) 0.9V

Diffusion Layer of the cell. The amount of GDL velocity distribution of the reactant gases 9.0567m/s was obtained corresponding to the cell potential of 0.7 V at a temperature 50°C. Next the serpentine flow field PEMFC with a cell voltage of 0.8V was engaged and analyzed at the above mentioned operating parameters to evaluate the reactant gases velocity distribution at Gas Diffusion Layer of the cell. The amount of GDL velocity distribution of the reactant gases 9.0567m/s was obtained corresponding to the cell potential of 0.8 V at a temperature 50°C. Next the serpentine flow field PEMFC with a cell voltage of 0.9V was engaged and analyzed at the above mentioned operating parameters to evaluate the reactant gases velocity distribution at Gas Diffusion Layer of the cell. The amount of GDL velocity distribution of the reactant gases 9.0664m/s was obtained corresponding to the cell potential of 0.9V at a temperature 50°C. The effect of GDL velocity distribution of the reactant gases in the serpentine flow field PEMFC for all cell potentials were illustrated in Fig.3in which the different cell potentials (V) were taken in x-axis and the GDL velocity distribution were taken in y-axis.

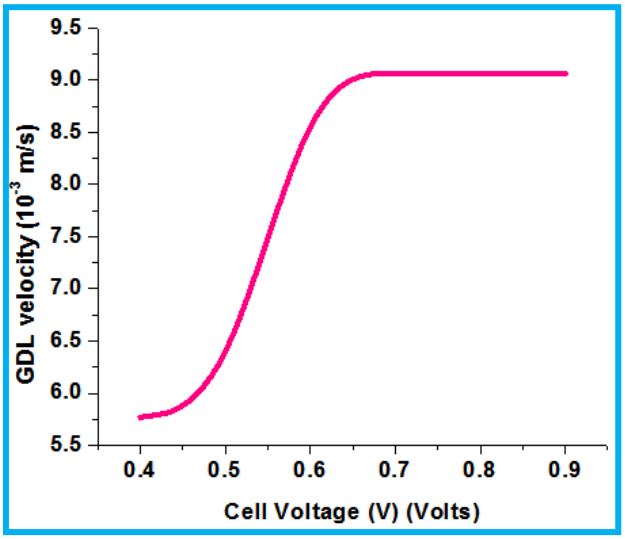

Figure 3: Gas Diffusion Layer velocity for all cell potentials

IV. CONCLUSIONS

A numerical analysis has been carried out on a Serpentine Flow Channel PEM Fuel Cell to investigate the adverse Effect of Cell Potentials on Gas Diffusion Layer Velocity and the results were summarized as follows. The highest gas diffusion layer velocity distribution of the reactant gases was found in the cell at a cell potential of 0.6V. An effective distribution of reactant gases at gas diffusion layer had an adverse impact on the cell performance. The reactant gages velocity distribution at gas diffusion layer inside the cell leads to increases the current density of the entire PEM fuel cell. Therefore, the effective distribution of reactant gases at Gas Diffusion Layer is resulting in higher cell performance especially in the middle cell potentials. This work has demonstrated that velocity distribution of reactant gases inside the cells at middle cell potentials can be used to improve the serpentine flow field PEM fuel cell performance. It was also found that the velocity distribution of the reactant gases at Gas Diffusion Layer indeed improved the cell performances at average cell potentials without modified the operating and design parameters of the serpentine flow channel PEM Fuel cell.

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A Trust-Aware Service Brokering Scheme for Multiple Clouds Collaborative Services

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ABSTRACT

T-broker, a trust-aware service brokering scheme for efficient matching cloud services (or resources) to satisfy various user requests. T-broker acts as the middleware for cloud trust management and service matching. First, the trusted third party-based service brokering architecture is the proposed for multiple cloud and environment. T-broker uses the lightweight feedback mechanism, which can effectively reduce networking risk and the improve system efficiency. Then, T-broker uses the hybrid, adaptive trust model to compute the overall trust degree of service resources.

Keywords: Multiple Cloud Computing, Trust-Aware Service Brokering, Schedule To Resource, Automatic Delete.

I. INTRODUCTION

MULTIPLE cloud theories and the technologies are hot directions in the cloud computing industry, which a lot of companies are putting much concern to make sure that they have benefited from this new innovation. Hence, compared with traditional networks, multiple cloud computing the environment has many unique features such as resources belonging to each of the cloud providers, and such resources being completely distributed, heterogeneous, and totally virtualized; these features indicate that is unmodified traditional trust mechanisms can no longer be used in the multiple cloud computing environments.

II. METHODS AND MATERIAL

A. Motivation

Recently, the cloud brokering system have emerged as a promising concept to offer enhanced service of cloud environment, such as RESERVOIR, PCMONS, RightScale, SpotCloud, Aeolus and OPTIMIS. The cloud brokers can provide intermediation and aggregation capabilities to enable users to deploy their virtual infrastructures across the cloud system. The future of cloud computing will be permeated with the emergence of cloud brokers acting as the intermediary between the cloud providers and users to negotiate, allocate resources among multiple sites.

B. Our Contribution

Based on previous work on trust management [10],[11],[30], [31], [36], this paper presents the T-broker for the efficient matching, computing resources to satisfy various user requests in multi-cloud environment. The main innovations of our scheme go beyond those of the existing approaches in terms of the following three aspects:

- T-broker uses a trust-aware service brokering architecture, in which the broker itself acts as a TTP for the trust management and resource scheduling. Through the distributed soft-sensors, this brokering architecture can be a real-time monitor for both dynamic service behavior of resource providers and feedbacks from users.
- T-broker uses a hybrid and adaptive trust model to compute the overall trust degree of the service resources, in which trust is defined as the fusion evaluation result from adaptively combining dynamic service behavior with the social feedback of service resources.
- T-broker uses a maximizing deviation method to compute the direct trust of the service resource,

which can overcome the limitations of traditional trust models, in which the trusted attributes are all weighted manually or subjectively. At the same time, this method has a faster convergence than other existing approaches.

C. Related Work

The system worked under multiple users and providers that made collaboration issues and more memory storage. The system also faced the non-robustness in this existing approach and it also faced many problems under the delivery of the task because of the lack of scheduling to the resources. The system does not have the delete process to clear the memory which will help to maintain the memory storage.

D. Methodologies and Measures

The proposed system helps the user to get their task completed on time and it also helps the t-broker to analyze the task completed by the resources. The resources are also assembled as per the task given by the t-broker. The proposed system is developed to maintain memory storage and to control the collaboration issues.

III. RESULT AND DISCUSSION

Experimental Work

A. Add Resources

This the first field that we proposed in this approach that is the add resource which is mainly created to add the different types of resources that will be handling the different task that is allotted to the resources by the t-broker to fulfill the user request.

B. Schedule to the Resources

The resource scheduling is the second field in this approach, this field is to schedule the task to the resources which says when to start the task, when to complete the task and when to deliver the task to the user. This is mainly designed to reduce the collaboration issues.

C. View all

The view field is developed to view all the details about the user their request and the allotted task to the resource, the status of the task and the delivery of the task.

D. Delete Process

This is the last field in the proposed approach which is developed to delete the unwanted content. The unwanted datas that are stored in the database will be deleted, that will help to maintain the storage memory in the system.

Techniques

A. Data coloring and Software Watermarking

These techniques safeguard multi-way authentications, enable single sign-on in the cloud, and the tighten access control for sensitive data in both public and private clouds. Data coloring and the software watermarking techniques are used to protect shared data objects and massively distributed software modules.

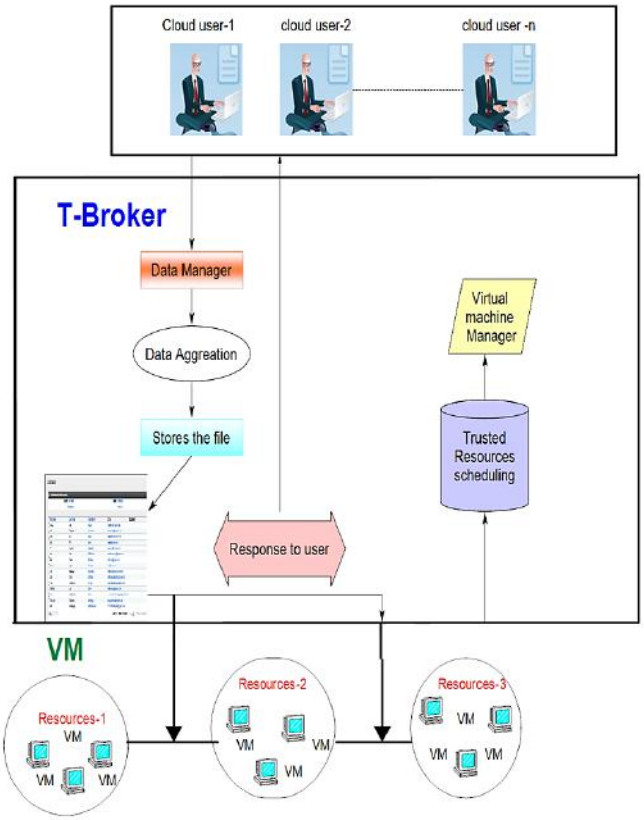

Figure 1. Architectural Diagram

Table 1 QoS Indicators (or Service Behavior)

Trust attributes	QoS indicators(service behavior)
Node spec profiles	CPU frequency, memory size, hard disk capacity, network bandwidth
Average resource usage information	Current CPU frequency utilization rate Current memory utilization rate Current hard disk utilization rate Current bandwidth utilization rate
Average response time	Average response time
Average task success ratio	Average task success ratio
The number of malicious access	The number of illegal connections the times of scanning sensitive ports

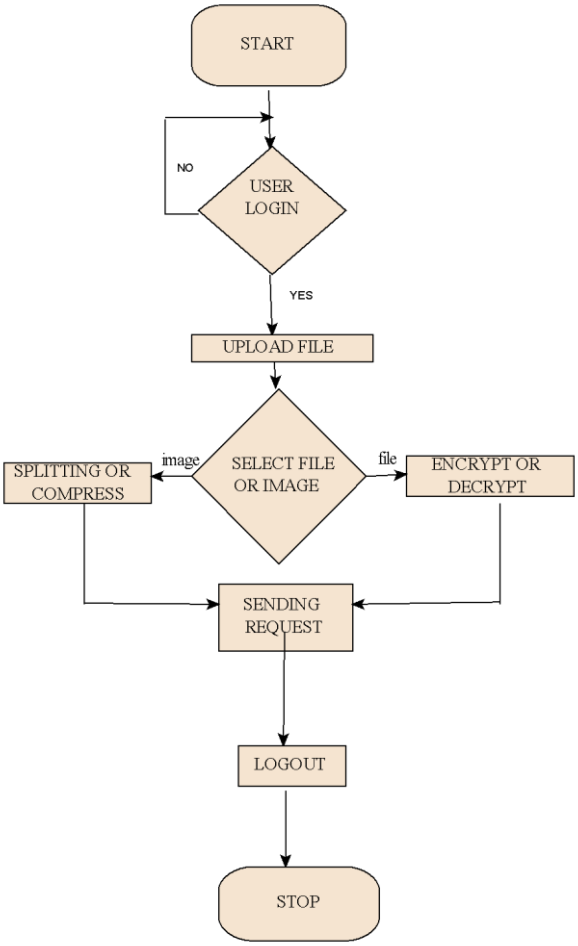

Figure 2. Flow diagram for User activity

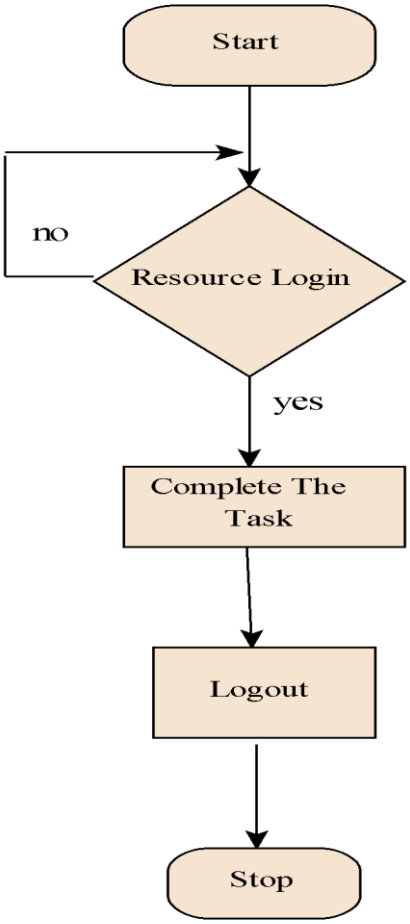

Figure 3. Flow diagram for T-Broker activity

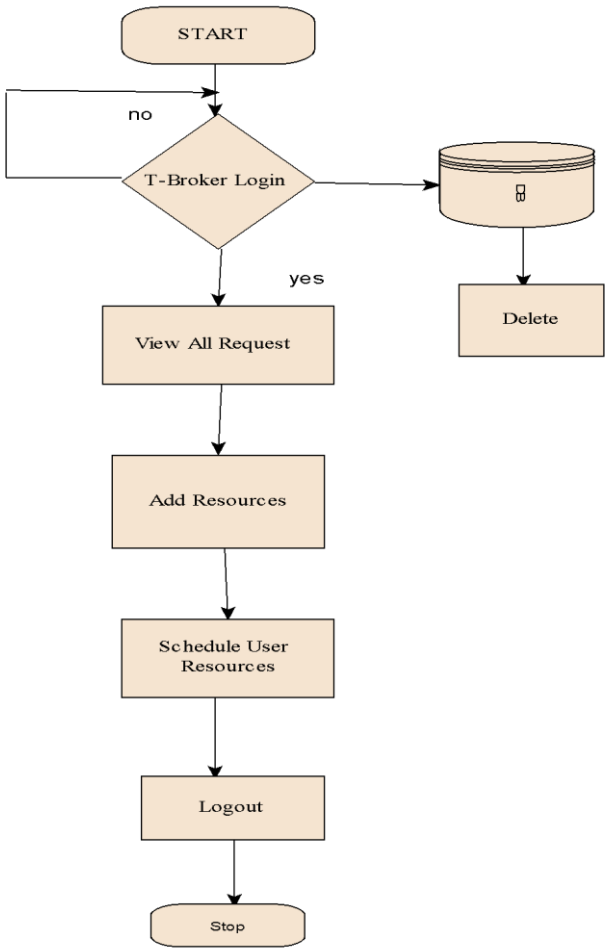

Figure 4. Flow diagram for Resource activity

IV. CONCLUSION

In the future, we will continue our research from two aspects. First is how to accurately calculate the trust value of resources with only few monitored evidences reports and how to motivate more users to submit their feedback to the trust measurement engine. Implementing and evaluating the proposed mechanism in a large-scale multiple cloud system, such as distributed data sharing and remote computing, is another important direction for future research.

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Water Management System Using Dynamic IP based Embedded Webserver in Real-time

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ABSTRACT

The intended system means to create a Water Management System which can result in frequent monitoring of the water quality. System management of water supply using dynamic IP based Embedded Web Servers presented in this paper. To maintain a EWS with static Internet Protocol (IP) is costly and difficult to manage. Dynamic IP is obtained for embedded board by enabling General Packet Radio Service (GPRS) of USB data card through point to point protocol daemon (PPPd). Embedded board having dynamic IP contains in file transfer to server through Bash scripts and C language. The system is meant to be an important tool for evaluating water quality and a valid support to strategic decisions concerning critical environmental issues.

Keywords : Smart Sensor; Real-time Embedded Web Server; Wireless Sensor Networks; GPRS

I. INTRODUCTION

Water, a basic need of any living thing plays a major role for survival. The system should merge communication, network, internet and integrated technology together to bring a proper development in this field. An IP based Embedded Webserver (EWS) is used for this purpose. There is no need of manual labours to monitor. This result is lesser manpower need and higher accuracy of results. Monitoring and controlling of the system using internet based technology makes it easier to get data using a standard web browser[1][2].

There is an IoT device involved to send notifications regularly to a particular assigned to the government officials. Development in integrated technology fulfils requirement of the data acquisition, such as cost, size [3]. If the water pH level increases, the message will reach a common website for the sector as a backup message delivery point to the government if the IoT message does not deliver.

II. METHODS AND MATERIAL

A. Related Works

Another work previously carried out involves use of zigbee which is a disadvantage to the system for the fact that it does not have efficient message delivery properties. This cannot deliver the message to the user assigned anywhere or anytime. EWS with embedded database is used in mobile phone is introduced [7] and most systems uses ethernet to access internet. The message passing can only be done within a particular range of distance. The paper [3] explains real time bidirectional interaction with low cost solution but access data on demand. In available, various low-cost webserver were designed using ethernet and lan, but these are based on static IP with no explanation of real time data [2][3][6]. Hence, cannot allows real time monitoring and controlling of data. The water quality in urban areas is monitored manually. The current system uses zigbee technology for monitoring. This cannot be accessed or can be monitored anywhere or anytime as we perform over the internet. This increases the chance of regular monitoring of the water resources in urban areas

B. Methodology

The methodology carries a sequence of process which first involves the pH scale to be immersed into the water that needs to be tested. The pH scale shows the degree of acidity in the water that is tested. The reading is taken and is sent to the analog and digital converter. This is done because the controller can understand only binary values. The controller acts as a central of medium and passes the pH reading to the Universal Asynchronous Receiver and Transmitter (UART). The UART is used in this system as the IoT can only understand serial signals.

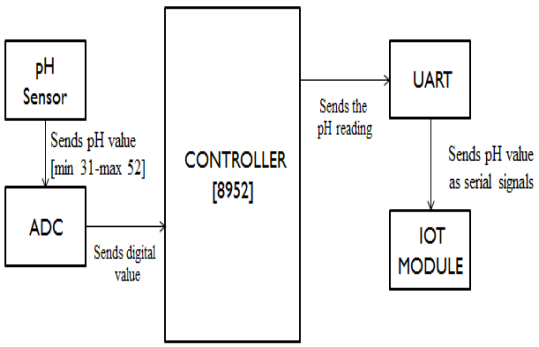

Figure 1. Workflow of the system

The UART sends the pH value to the IoT module. The IoT module is a 2G device. It sends the report of the water quality to the assigned government officials as a text message and also updates the message over the website that is created for this purpose.

Zigbee is an IEEE 15.4 based system which is used for high level communications protocols to create small range of communication network. Zigbee can be easy to implement and also less expensive such as Bluetooth or a WiFi device. It is very powerful when used for wireless light switches, electrical meters with in-home displays, traffic management systems, etc. Zigbee is power saving , reliable, low cost, short time delay, large network capacity and safe but the main disadvantages of zigbee includes short range ,low complexity, low data speed . the short range serves as a major disadvantage as the user cannot access the data whenever or wherever needed. The low data speed is also a problem for users who want to transmit large amount of data.

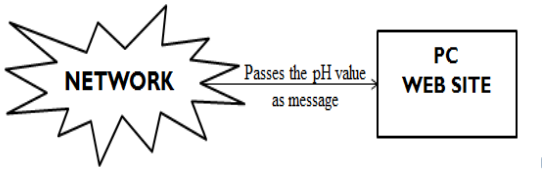

Figure 2. Path of pH value to Website

Internet of Things (IoT) is a network of various devices which is based on embedded systems. The IoT enables these objects to collect and exchange data through a network. These objects are allowed to be sensed and controlled remotely with across a network infrastructure. This creates more direct integration of the physical world to the embedded systems. This will result in improved efficiency, high accuracy and more economic benefits. This is a futuristic technology which connects the internet and the devices for the purpose of communication. The objects or machines will able to exchange messages, eliminating the interference of the humans. These objects which are involved in message exchange contain embedded technology where radio frequency identification, wireless technologies, QR (Quick Response) codes are used as means of communication. Every device consists of a unique IP address over the internet.

The major advantage of IoT is that the automation of daily task leads to better monitoring and transparency with QoS(Quality of Service). It also efficient and saves time. IoT as optimum utilization of energy and maintenance cost is low. Hence, saving money. All the applications of this technology provide better management, increased comfort, improved quality of life. This is why IoT technology is used over the proposed system.

pH is a numeric scale which is used to specify whether the aqueous solution is acidic or basic. pH is defined as the decimal logarithm of the hydrogen ion activity's reciprocation.

$$pH= -\log_{10}(a_H +)=\log_{10}(1/(a_H +))$$

pH value from 0-6 is said to be acidic. The pH value 7 is a neutral value. The pH value is said to be basic when the result is between 8-14.

The message passing happens over a network which can be accessed anywhere an d anytime. This is the main advantage of the system.

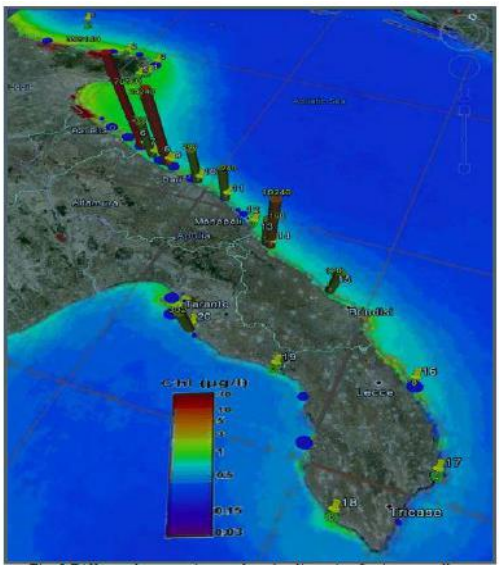

Figure 2. pH reading in the water resource

The above shown is the representation of the pH scale reading over a water resource. The device used to send and receive the IoT message is shown below:

Figure 3. Board of the Water Management System

C. Methods

1. Sensor

The main aim of the sensor module is to convert the physical quantity of work to a digital value. This is done using the analog to digital converter (ADC). The water sample taken from the water resource that is to be tested for quality is tested with a pH scale reader. The reader takes in the degree or acid or basic entities. This will be recorded and sent over to the ADC. This value is converted to digital value and is passed on to the micro controller. Then this value is compared with the standard value to analyse the quality of the water resource.

2. Message

This system involves passing the resultant messages to the necessary officials. The digital message acquired is compared to the standard value and if the result is neutral, this system does not take any action. If the pH scale result is not positive to the quality of the water resource, the notification message is sent from an IoT device in two ways. The first is to send a text message to the government officials and the second is to update the status of the water resource over a common website.

3. Update

After the IoT device sends the result as a message and updates to the website, the assigned government officials will be able to get access to the pH result of the water result that has been tested. Using this, the concerned official will be able to analyse and take the necessary actions to rectify the problem.

D. Techniques

1. OFDM

Orthogonal Frequency-Division Multiplexing (OFDM) is a technique of encoding digital data in multiple carrier frequencies. OFDM is a Frequency-Division Multiplexing (FDM) method used as a digital multi-carrier modulation. A large number of closely spaced orthogonal sub-carrier signals are present. These are used to carry data on several parallel data streams or data channels. Each sub-carrier is modulated with a conventional modulation method at a low symbol rate, maintaining total data rates related to conventional

single- carrier modulation techniques in the same bandwidth.

2. GPRS

GPRS stands for General Packet Radio Service. It is a packet oriented mobile service based on 2G and 3G cellular data communication which uses GSM. It uses packet switching technology and provides high speed wireless IP [6]. GPRS usage is charged based on the amount of data that is transmitted and received. This will involve upload, download, internet usage due to browsing, maps, etc., GPRS supports IPV4 and IPV6, point to point protocol, X.25 connection, TCP/IP communications. The maximum speed of GPRS connection in 2G cellular data is 32-42kbps. GPRS has become more widely available to the users of VPN. GPRS also compliments Bluetooth which is a standard method for transmitting data without any wired connection. AT command send out through serial port receive by processor complete the task of transmitting and receiving data to GSM network.

Figure 4. View of water resource with resultant values

3. DIGITAL

A computer cannot understand the analog data's that a human can understand. This leads to need of an intermediate system which functions understandable to both. This is where digital or binary languages involved. Digital language is a container of binary values. These binary values are arranged in many possible ways to create a proper understandable language. The ADC performs the conversion of analog to digital values of any data that is given by the user.

III. RESULTS AND FUTURE ENHANCEMENTS

The system applies to the officials to know the pH value results anywhere using the IoT message that is being automatically transmitted. This serves as an efficient system to get quicker results. The IoT technology serves as a major advantage of this system as the user will be able to access the data from anywhere. The pH results are updated in both a website and as a text message to every assigned individual.

In future, this can be applied to the air pollution issue to control the pollution due to various resources.

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Smartphone Tracking Application Using Context Information

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ABSTRACT

In this paper, the smartphone are tracked based on the LBS (location based service) using context information. This application is used to track the location of the lost or stolen mobile. Here we design to implement both the logic of finding the theft phone with SIM card and theft phone with changed SIM card. In this application, the thief photo was captured automatically by camera initiation and also voice is recorded both are upload in the server. Location, Photo, Voice sends as an SMS alert of the original user.

Keywords: Smartphone, GPS, Location based service, SIM card.

I. INTRODUCTION

Nowadays, location privacy has become an important topic largely due to the GPS devices, mobile network [1].The Wireless device used for beneficial reasons has been analysed by several researchers [2].Device free passive (DFP) localization [3] DFP system is able to detect, track and identify entities that do not carry any device nor participate actively in the localization process. Tracking the location of a person or an object behind the wall, without a need for an electronic device attaches to the target using radio tomography imaging [4].A mobile without GPS can also send the location information to the operator by radio signal transmission of the base station [5].

Many electronic gadgets such as smart Phones, laptop, wristwatches, TVs etc. use the various sensors like accelerometer, GPS receivers, gyroscopes etc. Availability of internet made localization easier and more effective. Since smart phones the variety of sensors like accelerometer, compass etc. It is possible to track the system not only the location aware but also context aware [6].Context is used to track if the user is moving or if he /she is taking turns etc.. Gathering this information is helping us to track a better way. For example: if the phone is stolen, it could be easy to identify the exact location of the device a future time instant. If the device is static, there is no need to sending the information to the user continuously. The context sensing depends upon the various conditions like if the device is carried by the user or holding the device in hand.

In this paper, tracking the smartphone by creating an application, and that Application will show the exact location of the device, which is stolen and captured the Photo of the thief, the voice is recorded automatically and upload to the server. It is sent as an SMS or an EMAIL alert to an original user.

In the remainder of the paper is organized as follows: In section two implementation of the project was discussed. In section three implementation results are discussed. Finally followed by a conclusion.

II. METHODS AND MATERIAL

The objective is to design a smart phone that is used to track the location based upon the context tracking service. An application is created that is helping us to identify the lost or stolen smart phones. This is implemented using java in android SDK. Proposed system, an android application is deployed with an initial registration of an alternate mobile number if the phone is stolen original user will send the SMS from the alternate mobile number to the original mobile number, The application will track the android phone and verify the location.it is possible only the SIM card is not changed mobile client is an android application which is

created and install in to an user android mobile phone. The first page of an application is a user registration process. This process is consisting of MSIno, IMEIno, EMAILIand Password. I MSI no is used to identify the user of a cellular network and is a unique identification associated with all cellular networks. It is stored as a 64 bit field.

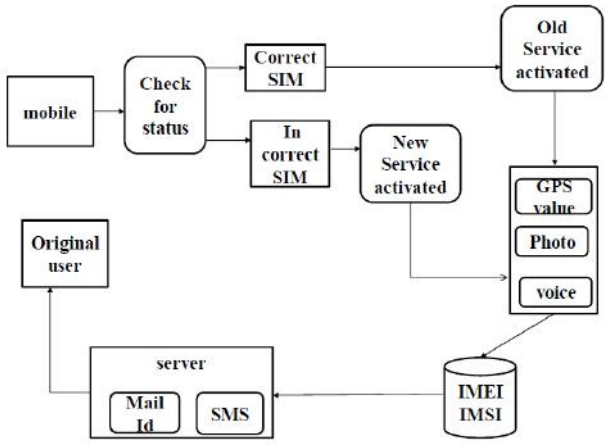

Figure 1. System Architecture Diagram

It is also used for acquiring other details of the mobile in the home location register (HLR) or as locally copied in the visitor location register. IMEI no is the unique serial number of every GSM mobile cell phone. The IMEI number is used by networks to identify valid phones and block stolen or blacklisted phones from accessing the network. Once the mobile application is created, it will generate an APK files. These APK files are installed in mobile phones as an application.

Using this APK user will register with server with alternate EMAIL id. The server is application is used to communicate with mobile client by GPRS and GPS.

Global Positioning System (GPS) is a space-based navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil, and commercial users around the world. Using the phone IMSI number the mobile is tracked through the application. The person tries to change the SIM card means, application will identify the IMSI no, then the camera is initiated and takes the photo of the person and uploaded in the server and also the voice is recorded for better identification of that person. Both the audio and the photo send as an EMAIL to an original user. It is also send as a text message of an original user alternative mobile number. If the original user click the link means, then he/she will able see the photo and

III. RESULT AND DISCUSSION

In this paper, Location service is implemented that is used to track the location of the stolen device. The location is sensed through the accelerometer not by using hungry GPS. Context based updates are send on the base of the context of the device. Performance is measured and the result is found up to the mark. The 3 proposed systems have less power consumption, reliable and highly secure.

IV. FUTURE ENHANCEMENT

Location positioning technologies, query processing, Cache Management Application can be develop on android platform of open handset alliance led by Google. Google stimulated environment and standard development kit for developing android application, we choose android as it is parallel to IOS in terms of facilities it provide and it is also open source just like a GPS device its location will also be updated as soon as user changes his/her position. LBS is use to fine the location of the school, gas filling station, hospitals and other interest of the user within the range.

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Analysing and Detection of Clickjacking Attack

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ABSTRACT

In a clickjacking attack, a lot of effort has been put into researching client-side attacks, including such as cross-site scripting and request forgery, and more recently, clickjacking. Similar to other client-side attacks, clickjacking attacks can use the internet browser to utilize weaknesses in cross domain isolation and the single origin policy. It tricking the clients to click on something that is actually not what the user perceives they are clicking on. In the most severe cases, this vulnerability attack can cause an unsuspecting user to have their account compromised with an only a single click. Although there are some protections available for clickjacking attack, the web applications implementing these mitigations are too far and in middle cases. Additionally, although the possibility for an attacker to frame a page is easy to detect, it is more difficult to demonstrate or assess the impact of a clickjacking vulnerability than more traditional client-side vectors.

Keywords: Clickjacking, Internet Protocol address, Uniform Resource Locator, iFrame, Antivirus, Web Vulnerabilities

I. INTRODUCTION

By the turn of the century, information, including access to the Internet, will be the basis for personal and social economic and political advancement. The Internet supplements the traditional tools you use to gather information, Data, News and other resources correspond with other people .Improvements in the internet also leads to increase a threats and vulnerabilities. When a user wants to surf a live site they should be aware of the website whether it is secure or not. For that we created a tool to check whether the website is secure or not. If the websites contains any iframe tag then it is easy for attackers to attach web vulnerabilities to grab the information of the user. A websites can contain one or more number of iframe tags. If a website can show in the framed content means, it has the operations which lead a clickjacking attack.so we proposed a system which detect the clickjacking attack. Our tool consists of number of antivirus program that will detect the iframe tags and vulnerabilities present in the websites.

Objective

There are two main objectives for this project. First is to point out and illustrate some of these new threats that are accompanied with the implementation of new web standards. The second objective is to describe the derived protection mechanisms and explain how it could help defending against these threats.

II. METHODS AND MATERIAL

Despite wide-range of discussions and articles, click jacking attack still lacks a formal and actual definition. That manipulating the frame is also way of clickjacking attack. A click can also be stolen the details of the user frame. In filtration process easily get is IFRAME is existing in URL or not. If IFRAME is exist in URL that means that particular URL can be affected via Clickjacking attack. Although clickjacking has been the concept of many discussions and alarming reports, it is presently unclear to what extent clickjacking attack is being used by attackers.

In our study, we conducted the following experiment to assess the live web sites that implement called frame

busting technique. First of all, we have been prepared a web page that accepts only the single parameter denoting a URL that should be embedded in an IFRAME. Once the page contents (i.e.IFRAME) are finished loading and rendering, we verified that the IFRAME was still present or not. So it performs a frame busting technique that would alternate the all content in the browser window, thus removing the I-FRAME. To start this experiment, we implemented a Firefox extension that takes a list of URLs to be visited. Once a page is loaded, the extension waits for a few seconds and then verifies the presence of the IFRAME. If the IFRAME is not part of the documents DOM-tree any-more, we conclude that the embedded page performed frame-busting technique and it survive among 500 live websites. Using both known and novel attack techniques, we found that clickjacking defenses have been encountered could be circumvented in one way or another.

The search engine can search the URL of particular website, which needs to scan, and will call the Anti-Malware engines to perform the operations. A URL is a reference to a resource that specifies the resource location of the computer network and a mechanism for retrieving it. Here we are checking weather user giving valid URL or not .Here we are viewing the source code of given url and find the iframe tag is available or not.

I-FRAME: It is an HTML document enclosed inside another HTML document on a website. The HTML element is used to insert the code, such as an advertisement, into a Web Page. We are assimilating the I-frame tag from given URL and find out the domain name.

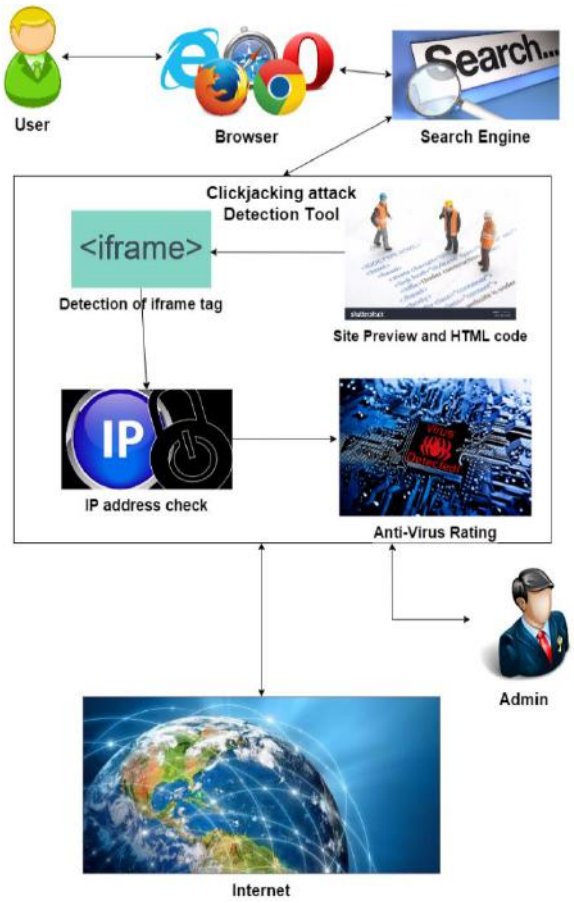

Figure1. System Architecture

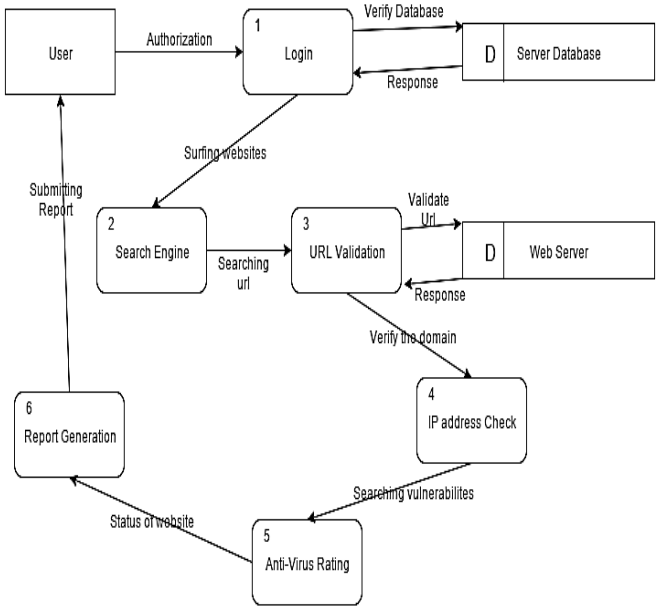

Figure 2. Data Flow Diagram

An Internet Protocol address is assigned to each of the device associate in a computer network that uses the Internet Protocol for communication. Here we are checking IP address because every domain having the ip address it was registered when they were launching the

website. So we scan the IP address whether it was in block list or white list. Then the website was pushed into 29 different kinds of anti-virus program for scanning and generating the report. We have advanced how we assign web reputation to control pace with new types of attacks that can attack very quickly, or try to stay hidden. If we getting the Anti-virus Rating then well get surety of the domain is 100 percentages safe. We also provide protection against DDOS attack which is based on the blocking of particular IP address.

III. RESULT AND DISCUSSION

In our accession we encrypt the user's authentication in-formation from other users by using md5/hash algorithm. We are analyzed the top websites for detection of clickjacking attack and other clickable elements. From our results, most of the website having IFRAME tag for representing their website has look and feel user interface.(i.e)IFRAME tag is used to view the images or videos at perfect scale position.

First we authorize a user for security purpose and also establish a authority to access this tool for particular user.

Figure 3. User Authentication

Here we attach a search bar for entering the URL for particular domain or websites, then it process the URL validation. It checks the URL which is presents in the internet or not. If the URL is presents in the internet, then it processes a IFRAME tag counts and IP address check.

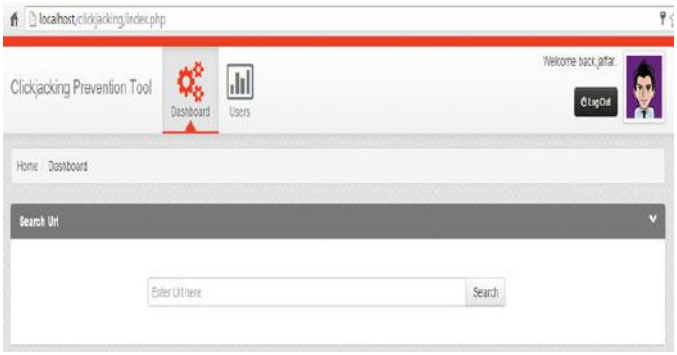

Figure 4. URL Validation & Search Bar

IP address check capturing the domain IP addresses which are specified in the URL. Then it verifies the domain IP address for blacklist or whitelist. If the IP address is in blacklist means that it shows the report deny for user. Otherwise it will push forward to running the anti-virus program.

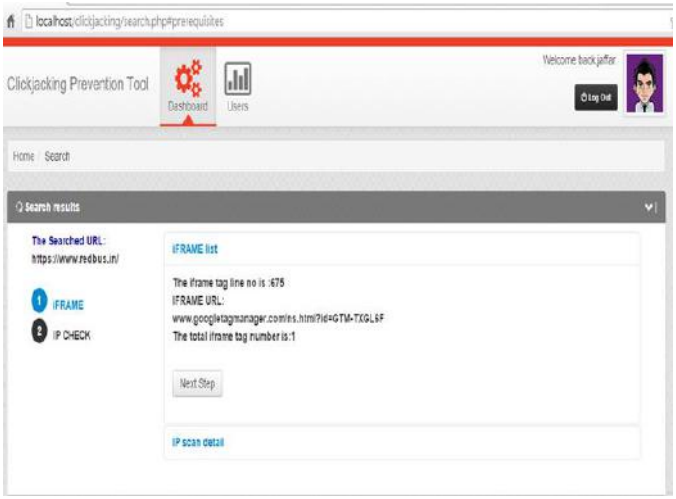

Figure 5. iFrame Tag Counts

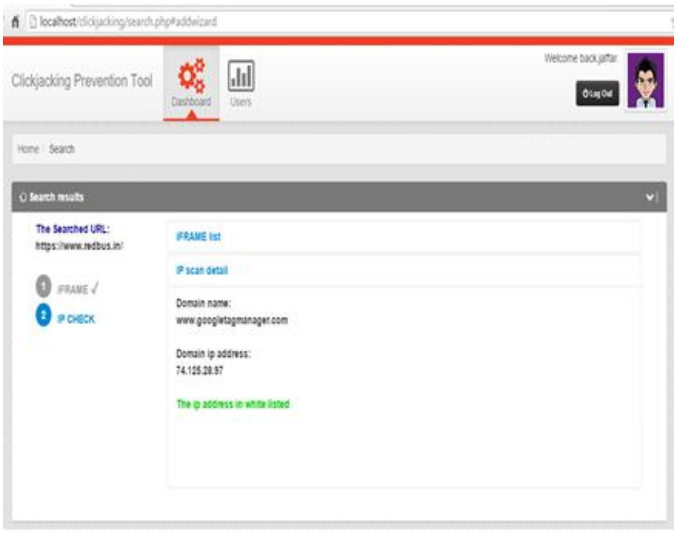

Figure 6. IP Address Check

Finally, the anti-virus program rating generates a report for the particular domain as safe or not. Report describes all the information about the domain and risk factors. From the report user can aware about the domain and threats in the internet.

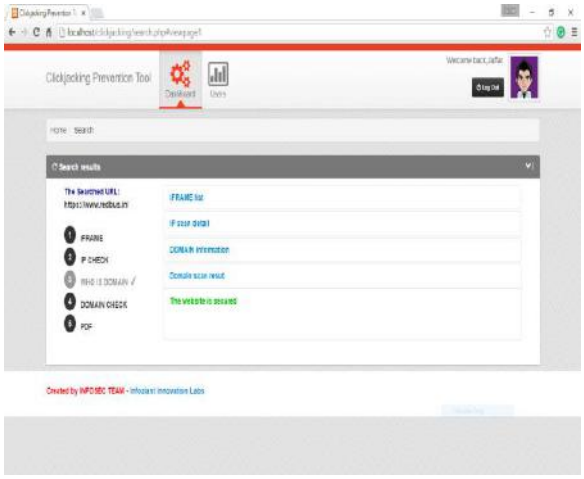

Figure 7. Anti-Virus Check

IV. FUTURE ENHANCEMENT

Click jacking attack is in its initial stage and focuses only on detection technique. This tool can be upgraded in the future for preventing click jacking attack. In future, this tool can also implement in the server side to prevent the web vulnerabilities and also improve the security for their users' information.

V. CONCLUSION

Clickjacking is a web attack that has newly gathered wide media coverage. There have been many news items, discussions, and forums on the topic. In this paper, we conferred our system able to detect the clickjacking attempts on web pages. We validated our tool and we conducted empirical experiments to estimate the prevalence of such attacks on the Internet by automatically testing more than one million web pages that are likely to contain malicious content and to be visited by Internet users. By distributing the analysis on multiple virtual machines we were able to scan up to 15,000 web pages per day. Even though the pages containing these clickjacking attacks have been posted as examples on security-related websites, we found them automatically. Furthermore, in our analysis, we also detected several other interesting cases that we call borderline attacks. Such attacks are difficult to accurately classify as either being real attacks, or false positives.

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The Two Finger Test : Legal and Ethical Issue

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ABSTRACT

The Two Finger Test is used to examine whether a survivor of rape or sexual assault is habituated of such sexual intercourse and determine its laxity and whether the hymen is broken which will signify the history of sexual activity of a victim, although the Supreme Court has said that such tests are inhuman and should be banned. Even after the Delhi gang rape case of Dec. 2013, Justice Verma Committee had also recommended the same thing that two finger tests is like another assault to victim and the test should be stopped. The Delhi Government has conceded in its guidelines that two finger test should be banned for the cases of sexual assault and advised doctors to counsel the victims. Two finger test is not the only methods of determining injury to genitalia and signs of penetration but there are other more scientifically accurate methods. Even after passing the guidelines for banning two finger test, on April 20th 2014, just after the Delhi Gang Rape Case a Dalit girl was gang raped and thrown out of a moving bus in Singrauli and having conducted the two finger test, the Madhya Pradesh police arrived at the conclusion and gave the statement in press media that the girl was habituated of sexual activity. This is a general assumption that is the women habituated of sex may also lie about sexual assault.

This paper will emphasise the need for uniform nationwide guidelines which must strictly force the State Governments to stop the practice of two finger test for forensic examination and mere two finger test will not declare the women history of sexual life and such kind tests are against the Article 21 that is Right To Privacy of Indian Constitution and must respect the survivors health, dignity, consent and there is a urgent need to change the laws and forensic procedures related to sexual assault.

Keywords : Right to Privacy, Hymen, laxity, Two Finger Test, Forensic

I. INTRODUCTION

The Virginity Test popularly known as “Two Finger Test” is the practice of ascertaining Whether a victim of sexual assault is a virgin i.e., whether she has ever engaged in sexual intercourse and it is done by the doctor by inserting two fingers to the victim’s vagina which is used to determine its laxity and also about the victim sexual activity like whether she is sexually active or not. This test involves an inspection to determine the laxity and to find that whether hymen is broken? Which will mark the history of sexual activity of victim and also the report submitted by the doctor in such cases are used by defence lawyer to defend his client which somewhere is injustice to the victim and ethically it’s wrong also. Usually insertion of one finger into the vagina with strain is expounded that the victim was a virgin, whereas easy insertion of two fingers suggests that she is habituated to sexual intercourse.

According to Oxford Dictionary Laxity means “(of the limbs or muscles) relaxed” and Hymen means “A membrane which partially closes the membrane of vagina and whose presence is traditionally taken to be a mark of virginity”.

This test is widely used in India for determining the sexual history of women but have no scientific base and it has been clearly dumped by ministry of Health and family welfare Government of India in its Guidelines And Protocols Medico-Legal Care For Survivors/Victims Of Sexual Violence that “ Per-Vaginum examination commonly referred by lay persons as 'two-finger test', must not be conducted for

establishing rape/sexual violence and also the size of the vaginal introitus has no bearing in cases of sexual violence. Per vaginum examination can be done only in adult women when medically indicated. The status of hymen is irrelevant because the hymen can be torn due to several reasons such as cycling, riding or masturbation etc. An intact hymen does not rule out sexual violence, and a torn hymen does not prove previous sexual intercourse. Hymen should therefore be treated like any other part of the genitals while documenting examination findings in cases of sexual violence. Only those that are relevant to the episode of assault (findings such as fresh tears, bleeding, oedema etc.) are to be documented.

II. METHODS AND MATERIAL

A. Case Column

2012 December was the year of shame for India, for the most brutal gang rape happened at Heart of India i.e. Delhi. On the night of 26th December Jyoti Singh was brutally raped and thrown out of the bus and human rights started to strike and taking out processions in the whole country and this matter was discussed around the world and human rights started its role in reformation of new rape laws for women, the movement triggered and catalysed legal amendments in India.

The apex court of India i.e. The Supreme Court has held that the two-finger test on a rape victim violates her right to privacy, and asked the government to provide better medical procedures to confirm sexual assault. This is a common mind set of people that if the two finger gets easily inserted into the vagina of a victim which proves that she was habituated of sex and this becomes a very strong defence for respondent side and a general assumption is made that the women may also lie about rape.

The country like India who had so biased procedure for deciding the virginity of the victim, there was time when the Indian women's did very less physical work but at 21st century where a modern women does all kinds of physical work there are high possibilities of breaking of hymen.

The Human Rights Watch analysed 160 judgements; of these 153 took a greater emphasis on two finger test while deciding their cases. If the medical report says the two finger test has been passed, the defence can show that the girl or the victim is habituated of sex. The forensics investigation must not be so stereotypic and mere two finger test cannot ascertain the sexual history of the girl.

There are many other reasons for the breaking of the hymen like cycling, horse riding or penetrative masturbation, some women have such wide openings that their hymen remains intact even after becoming pregnant under such circumstances mere Two Finger Test will not declare the virginity of women and such kind of tests is mental as well as physical stress for the women which is legally and ethically wrong.

The second objective of enquiry is laxity of vaginal walls which proves whether the women is habituated of sex or not, usually married women's and women who have a lot of sex have loose vaginas so in this way a mere insertion of two finger will not prove the habituation of sexual intercourse of a victim.

B. Justice Verma's Report

There was a huge outcry of students and people of country after the brutal Delhi Gang rape and murder of Jyoti Singh therefore a panel was setup by Government of India headed by former Chief Justice of India J.S.Verma and the panel took 50 days to send its report on 23rd January 2013 for quicker trial and enhanced punishment for criminals accused of committing sexual assault against women. The other members were of the committee were Justice Leila Seth, former judge of the High Court and Gopal Subhramaniyam, former solicitor general of India.

The committee made necessary recommendations on various topics like Rape, Sexual Assault, Verbal Sexual Assault, Sexual Harassment, Acid Attack, Offences Against women in Conflicted Area, Trafficking, Child Sexual Abuse, and punishment for crime against women, Medical Examination of a Rape Victim, Police Reforms, and Reforms for Management in Cases related to crime against women, Electoral Reforms and lastly Educational Reforms.

For the medical examination of rape The Committee has directed the discontinuation of the Two Finger Test to find out whether the hymen is distensible because the process is hampering the right to privacy of the victim. The Delhi government then initiated on the process of law making, titled "charter of women rights bill" and said that the two finger test must be taken while taking the consent of the victim, but such kind of test hinders the privacy and dignity of the women and which is ethically wrong.

The two finger test is just one of the problems that afflict services for women who have been raped and change must be accompanied by systematic reforms throughout the health system policy and practice. The common use of finger test shows that many doctors, police officers, lawyers, judges and others do not understand what constitutes rape.

Overall the Justice Verma committee stated "The two-finger test which is conducted to determine the laxity of the vaginal muscles. The Supreme Court has through various judgments held that the two-finger test must not be conducted and that the previous sexual experience of the victim should not be relied upon for determining the consent or quality of consent given by the victim."

C. Right To Privacy

A bench of Justice B S Chauhan and F M I Kalifulla was hearing an appeal of an accused who was convicted by the trial court on the rape of a girl of class IV in Haryana in the year 2002 and the high court too agreed on the decision of the trial court and upheld the conviction The counsel of the accused claimed that there was no proof of birth year by the girl and she looked about 17-18 years of age and thus there was clear cut case of consent on the sexual activity happened, the doctor who examined her medically wrote in the report that the girl had no external injury on her body.

The apex court referred various cases and judgements and dismissed the petition of the accused on the ground that Two Finger Test which was happened to the Girl violates her right to privacy, physical and mental integrity and dignity on the basis of a simple test the honourable court cannot decide whether the consent of the girl was there or not.

Now what does Right to Privacy says?

As observed by Khanna J former Supreme Court judge, "Article 21 is not the sole repository of the right to personal liberty…no one shall be deprived of his life and personal liberty without the authority of laws follows not merely from common law, it flows equally from statutory law like the penal law in force in India." According to Article 12 of United Nations Declaration of Human Rights

"No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, or to attacks upon his honour and reputation".

Privacy is civil liberty of the individual and tests like Two Finger Test violates the victims right to privacy and it is also viewed by the doctors that insertion of two fingers into the vagina of the victim will damage the evidences that could be collected around the vaginal hole due to rubber gloves.

According to one of the leading medical jurisprudence i.e. Modi's Medical Jurisprudence it has been stated that if a woman has an intact hymen, yet one, two or more fingers pass easily into her vagina, leaving the hymen intact, then she is a false virgin. He argues that if fingers can pass, then "a body of the size of a penis in erection could perfectly well pass through the hymeneal orifice". When the hymen is intact, Modi asserts that the finger test becomes crucial to assessing a woman's virginity. Thus, the finger test, passing one, two, or even three fingers into the vagina to test its elasticity, becomes the scientific assessment of a woman's virginity. Despite the fact that a woman's virginity is irrelevant to the question of consent and should not be questioned in the medical assessment of the act of rape, the finger test and the medical assessment of the hymen remain common practice across India today. Even the latest edition of Modi mandates conducting the finger test in all rape cases.

Even the leading medical books haven't edited the process of Two Finger Test from their editions, it has to be understood that in ancient India women was considered as a sacred lady of God and was respected and protected and such heinous crime against women

like rape, molestation and other are shameful for a country like India and after such brutal act of any criminal the victim must be protected, respected and rehabilitated instead conducting a test like Two Finger will be like Re- Rape for the victim which will harm her Right To Privacy.

D. Argument In Favor

The Two Finger Test is one of the problems that distress the services which are available for the women so raped. This is one of the major problems which India is dealing with, It was earlier alleged in colonial times i.e. according to French and British jurisdiction classified women into 'true virgin' and 'false virgin' in cases of rape.

Now what Supreme Court's view on Two Finger Test:-
In Lillu @ Rajesh & Anr Vs State of Haryana, A Division Bench of the Supreme Court comprising of Justices B.S.Chauhan, Fakkir Mohamed Kalifulla on April 9, 2013 held that undoubtedly that the two finger test and its interpretation violate the right of rape survivors to privacy, physical and mental integrity and dignity. Thus this test even if the report is affirmative it cannot raise the presumption of consent given to the accused.

In Narayanamma (Kum) v. State of Karnataka & Ors., (1994) 5 SCC 728, Supreme Court held that fact of admission of two fingers and the hymen rupture does not give a clear indication that prosecutrix is habitual to sexual intercourse. The doctor has to find out that the tear of hymen is earlier or an old tear. These where some of the views of Supreme Court on the matter of Two Finger Test, apart from a dehumanizing act this act is an unlawful intrusion into a women's right to privacy and sanctity of a women. It is a severe blow to her self-esteem and dignity as well and it is a kind of a Re-Rape to the women.

III. RESULT AND DISCUSSION

Suggestion

It is the most important responsibility of Government of India as it is party to several International Treaties that bind the Government to follow all the procedures and forensic procedures and criminal justice processes must respect survivors dignity, integrity, physical and mental aspects.

- Hospitals must use rape kits for a sexual assault forensic exam which includes bags and paper sheet for evidence collection, comb, documentation forms, envelopes, instructions, materials for blood samples, swabs.
- Every police station must include a sexual assault cell taking into consideration about the increasing rate of sexual crimes and a special team must be appointed including female doctors, attendants and police officers.
- Forensic examination should only be done by SANE- sexual assault nurse examiners and by SAFE AND SAE – sexual assault forensic examiners and sexual assault examiners and by not any other category of examiners.
- Doctors must not comment or report on whether the victim was habituated to sexual activity or comment upon the sexual history of girl.
- Trial and Appellate courts must not accept any medical opinion about whether the victim is habituated to sex or not.
- The forensic Tests must be conducted by Gynaecologist lady doctor and if the male doctor performs it then it should be done with the help of Lady Nurse.
- In India only Delhi and few other states have amended the procedures and rest of the state still uses old technique for the examination, so there must be a uniform law strictly applied in all over the country regarding the examination.
- There must be strict implementation of the recommendation of Justice Verma committee about Two Finger Test and regarding collection of evidence.
- There must be proper counselling of the victim who so suffered from such brutal act and her future behaviour and activities should be recorded so as to give her better consultation for improving her health and mental status.

- Rehabilitation is one of the important process for improving the condition of the victim so as to take her out from the mental trauma she suffered

IV. CONCLUSION

After my research in this area I came to the conclusion that Rape is heinous inhuman act which condemns the purity of Indian society and a Test like Two Finger Test is another inhuman and unscientific process attacking the right to privacy and it is a severe blow to her mental, physical and ethical status and such tests should be condemned, strictly prohibited by enacting amended laws which are uniformly applied over the country.

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An Efficient Communication Topology using Societal Computing

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ABSTRACT

In the era of mobile development, Social computing technology has reached the next form of getting collaborated. We study a new type of K-Cover Group (KCG) queries that, given a set of query points and giving boundary towards the exploration of view from various users. The idea of collaborative social computing has been widely used in various domains, including location-based social networks (LBSNs), Geo-crowdsourcing, activity planning, group decision making, and disaster rescue. One of the most important applications of collaborative social computing in the database field is social queries, which are attracting increasing interest from both industrial and academic communities. The proposed social queries which take as inputs a set of query location point and certain social acquaintance constraint and return a set of users with minimum location distance while satisfying the social constraint. We formally define a KCG query to capture natural requirements driven by the real-life applications. For the social factor, instead of finding a group whose associated regions jointly cover a set of query points? Here we quantify the desire social relationship within a user group in terms of k-core. And also we propose a novel index structure, known as the Enhanced SaR-tree. It is easy to extend our algorithm to support the case where each user has multiple associated regions. The following branch and bounding process remains the same as the case where each user has exactly one associated region.

Keywords: K-cover group queries (KCG) Queries, Geo-Crowd Sourcing, K-Core, Constraint.

I. INTRODUCTION

Social computing can be helpful to create and empower the employees within an organization and it also creates benefit for the business. It is an interactive aspect of online behavior. In contrast, personal computing describes the behavior of isolated users. The project idea that is currently being formulated in the detection and identification of groups is about the plans. Throughout the world, the social networks share reviews and information between the isolated users. But, we have proposed a concept of exchanging information that gives priority thereby addressing and solving the issues within the location we prefer. The scope of this project is after registering into the application, to detect or identify groups based on the location and the social networks and sharing reviews or sharing the information within the group members about the location and issues which happened in the particular location.

II. METHODS AND MATERIAL

1. Related Works

A. Geo-Social Query Processing

The proliferation of GPS-enabled mobile devises and the popularity of social networking have recently led to the rapid growth of Geo- Social Networks (GeoSNs). GeoSNs have created a fertile ground for novel location-based social interactions and advertising. These can be facilitated by GeoSN queries, which extract useful information combining both the social relationships and the current location of the users. This paper constitutes the first systematic work on GeoSN query processing. We propose a general framework that offers flexible data management and algorithmic design. Our architecture segregates the social, geographical and query processing modules. Each GeoSN query is processed via a transparent combination of primitive queries issued to the social and geographical modules.

We demonstrate the power of our framework by introducing several "basic" and "advanced" query types, and devising various solutions for each type. Finally, we perform an exhaustive experimental evaluation with real and synthetic datasets, based on realistic implementations with both commercial software (such as Mongo DB) and state-of-the-art research methods. Our results confirm the viability of our framework in typical large-scale GeoSNs.

B. Decomposition Of Networks

The structure of large networks can be revealed by partitioning them to smaller parts which are easy to handle. One of such decomposition is based on k-cores proposed in 1983 by Seidman. In the paper an efficient, o(m), where m is the number of lines, algorithm for determining the cores decomposition of a given simple network is presented. An application on the author's collaboration network in computational geometry is presented.

C. Vertex Cover Approach

We propose a novel disk-based index for processing single-source shortest path or distance queries. The index is useful in a wide range of important applications (e.g., network analysis, routing planning, etc.). Our index is a tree-structured index constructed based on the concept of vertex cover. We propose an I/O-efficient algorithm to construct the index when the input graph is too large to fit in main memory. We give detailed analysis of I/O and CPU complexity for both index construction and query processing, and verify the efficiency of our index for query processing in massive real-world graphs.

D. Bridging Of Social Networks And Spatial Networks

Recording the location of people using location-acquisition technologies, such as GPS, allows generating life patterns, which associate people to places they frequently visit. Considering life patterns as edges that connect users of a social network to geographical entities on a spatial network, enriches the social network, providing an integrated socio-spatial graph. Queries over such graph extract information on users, in correspondence with their location history, and extract information on geographical entities in correspondence with users who frequently visit these entities.

In this paper we present the concept of a socio-spatial graph that is based on life patterns, where users are connected to geographical entities using life-pattern edges. We provide a set of operators that form a query language suitable for the integrated data. We consider two implementations of a socio-spatial graph storage one implementation uses a relational database system as the underline data storage, and the other employs a graph database system. The two implementations are compared, experimentally, for various queries and data. An important contribution of this work is in illustrating the usefulness and the feasibility of maintaining and querying integrated socio-spatial graphs.

E. Distance Browsing In Spatial Databases

Two different techniques of browsing through a collection of spatial objects stored in an R-tree spatial data structure on the basis of their distances from an arbitrary spatial query object are compared. The conventional approach is one that makes use of a k-nearest neighbor algorithm where k is known prior to the invocation of the algorithm. Thus if m>k neighbors are needed, the k-nearest neighbor algorithm needs to be re invoked for m neighbors, thereby possibly performing some redundant computations. The second approach is incremental in the sense that having obtained the k nearest neighbors, the k+1st neighbor can be obtained without having to calculate the k+1 nearest neighbors from scratch. The incremental approach finds use when processing complex queries where one of the conditions involves spatial proximity (e.g., the nearest city to Chicago with population greater than a million), in which case a query engine can make use of a pipelined strategy. A general incremental nearest neighbor algorithm is presented that is applicable to a large class of hierarchical spatial data structures. This algorithm is adapted to the R-tree and its performance is compared to an existing k-nearest neighbor algorithm for R-trees .

Experiments show that the incremental nearest neighbor algorithm significantly outperforms the k-nearest neighbor algorithm for distance browsing queries in a

spatial database that uses the R-tree as a spatial index. Moreover, the incremental nearest neighbor algorithm also usually outperforms the k-nearest neighbor algorithm when applied to the k -nearest neighbor problem for the R-tree, although the improvement is not nearly as large as for distance browsing queries. In fact, we prove informally that, at any step in its execution, the incremental nearest neighbor algorithm is optimal with respect to the spatial data structure that is employed. Furthermore, based on some simplifying assumptions, we prove that in two dimensions, the number of distance computations and leaf nodes accesses made by the algorithm for finding k neighbours is O(k + pk).

2. Existing System

In Existing system, the Social graph is un weighted, and here we can't get exact solution. Even though, while creating the group based on location or social network, it will be created approximated only. In this system, the partial results may not identify all the profiles that correspond to the user group. Demerits of the existing system are though it is the single user system it won't have the collaboration with social networks. The main problem of this system is sharing reviews or sharing the information within the group members is not efficient. We cannot organize the user chat according to the names of the persons. The time consumption has not been maintaining here.

3. Proposed System

To overcome the disadvantages in the existing system, we have proposed a weighted Social graph so that we can get exact solution while creating the group based location on social network. The proposed system can be used to improve an efficient approximation bound as it serves user's needs in a consistent and transparent manner and it caters the needs of information sharing. The main objective of this system is to detect or identify groups based on the location and the social networks and sharing reviews or sharing the information within the group members. It allows the users to exchange their reviews in efficient manner to reduce accident risks and it helps to protect the conversations of relatively tight social relations in order to make their chat more trustful and more harmonious. It has all traditional things such as chat, comment, etc. Most importantly, the admin has the whole rights to remove the users from the database registry. In this system the users can view the conversation by name wise for the need of an effective maintenance of the time consumption process.

III. RESULT AND DISCUSSION

1. Experimental Work

A. Authentication Management

The authentication part consists of two phases : registration and login. The registration of user is mandatory to create the account. Only after the registration, the user can able to access the system. If an user wishes to register they are supposed to create an account which includes Name, User Name, Password, Gender, Email ID, Location, Mobile Number, Social network from users. Here, in this project, the registration process is only for the users and it is not necessary for the admin. If the user fails to enter their details, while submitting the form, the validation takes place over the registration. Once the validation is completed without any corrections, the user can be allowed to move on to login phase.

Admin and user panels have individual login type. If there is a problem in login, a start over registration is allowed in the registration form. If the username and password is incorrect or unregistered, the user and admin can't able to access this system. Based on the type of login the access control will be differing.

B. User Interaction

The user has the rights to post image, to chat, to comment, and to raise a query. Once the login phase is over, the user can be directed to news feed page. Here, the users can post their images. It will be visible to all the users who all are in the group. Whereas if he/she wishes to chat, they can share their reviews and the information within the group members about the location and issues which happened in the particular location and the users can be allocated automatically in the group which is created by the admin. The group is based on the input named social network which is getting from the user while registration. The user is also

allowed to comment on a page so that they can send their reviews to the particular photo which is uploaded by the admin. The sent comment will be displayed like a table which will be visible to the users who all are in the group. Through this, the user can interact with the admin. If the user has any queries he/she can raise it to the admin.

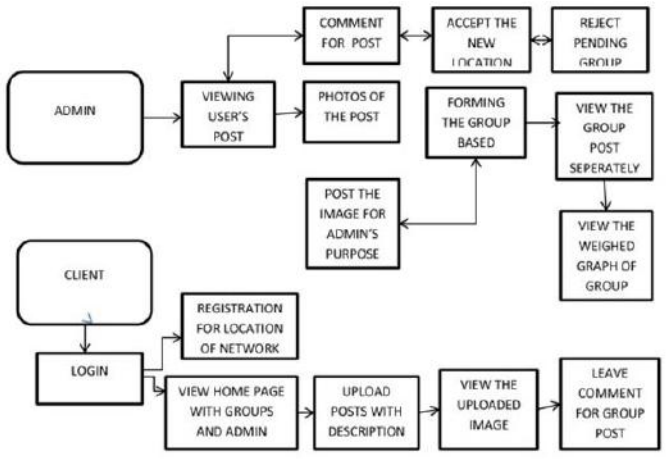
C. Admin's Specialization

The admin has the power to upload image, to manage group, to view user queries and details. After login phase, the admin uploads the image which will be visible to all the users in the group and the user can also send their comments to that image. Based on the input i.e., the details provided by the user in the registration phase, the admin has a speciality to manage the group effectively. In user's point of view, the admin always remains user-friendly as he not only views the user queries but also renders solutions to their queries and the registration details can also be viewed by the admin.

D. Algorithm Study

To satisfy the minimum cardinality requirement of KCG query, it is necessary to process the user groups in increasing order of group size and return the current group as soon as it is valid. It is to find the relationship between the users and their locations whereas social aware based R-tree algorithm is used to index both spatial locations and social relations and also it is used to find the optimal solution.

2. Architecture Diagram



IV. CONCLUSION

Here we implemented data integration with the combination of social and location data from different sources. As we insisted the implementation of Geo social collaboration is the task of identifying the groups and sharing information across different entity profiles. In this paper, we implement the Geo Social collaboration using spatial Computing. The splitting of user profiles by their name implies reducing duplication. In this system we enhance some features like we can able to chat with the users and can see others comments in the user part. Admin has privilege to delete that user account.

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Psychological Stresses among Pregnant Women and their Relation with Some Variables (Khartoum State)

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ABSTRACT

This research aimed at investigating the general characteristics of psychological stresses among pregnant women in Khartoum State, as well as identifying the differences in psychological stresses according to the variables of age and number of pregnancies. The sample consisted of (100) pregnant women whose ages ranged between (17-40) years. The sample was selected by the Purposive Sampling method from the population. The researchers used the Psychological Stress Scale and the following statistical equations were used for the statistical treatment of the data: T-test and Analysis of Variance. The study found out following results that the psychological stresses among pregnant women can generally be described as being high, and that there are no differences in psychological stresses according to the age variable, but there are differences according to the number of pregnancies and the type of the female circumcision in favor of the pharaonic circumcision.

Keywords: Stresses, Psychological, Pregnant Women, Emotional, Mental Health.

I. INTRODUCTION

Pregnancy is a distinctive period in women's life as it is usually accompanied by several physiological changes and symptoms of different physiological and biological disorders. Also there is some kind of psychological depression due to different factors such as thinking about the health of the fetus, the delivery, loss of interest in sex, loss of attractiveness and the woman's effect in her family and society as well as the accompanying symptoms such as fatigue, back pain and heart beats. The pregnancy is the most important event in woman's life that has psychological, emotional and social impacts on woman which depend on a number of factors such as: the woman's nature as some woman are easily affected by it, and the way of responding to pregnancy and thinking about birth whether natural or caesarean section. The researchers found that the incidence of congenital malformation rate among babies of women subjected to the stress is of twice the rate for others, (Mahdi: 2005). Hacks (2000) found that psychological and neurological stress on pregnant women leads to inflation of the placenta responsible for the relationship between mother and fetus which causes diseases for both. In addition, he notifies that the maternal psychosocial stress during pregnancy can be a significant factor of risk of premature birth, referring to the important of social support in alleviating this. Al-Jabaly (2009) notifies a group of psychological stresses experienced by pregnant mothers, and negative tensions such as anxiety and mental suffering caused by the burdens of everyday life. Psychology researchers showed increasing interest in recent years in studying the psychological stresses and the coping factors that can maintain the psychological and physical health of individuals. Social support is considered an important source of security that the individual receives from his world. Researchers also notify the significance of turning to God Almighty when feeling threatened and in need of help from an external source. This has important effects in time of distress in mitigating the consequences of the stresses and the difficult situations (Desouki: 2000). The psychological stresses faced by pregnant woman affect her behavior in many cognitive, emotional and personal aspects, and

may also lead to a lot of mental disorders. Hence the researchers concerned themselves with the study of the subject of psychological stress among pregnant women, as pregnancy may be the hardest period for women.

Research Problem

Some people can't maintain their physical health and psychological performance when subjected to mental stress; this necessitates paying special attention to the ways of resisting these pressures, i.e. the psychological and social changes that can alleviate the negative effects of the mental stress. This represents a strengths point for individuals that help to retain physical and psychological health in time of inevitable pressures. One of these factors is social support available for individuals such as social interaction and inter-relations with the social environment surrounding the individuals, and the support they get when subjected to mental stresses (Salama: 2001). The researchers notify the importance of studying the psychological and social sources of support that makes individuals more aware and realistically assess psychological stresses and deal with them successfully. There is no doubt that pregnancy is often accompanied by some mental pressures as a result of the physiological and psychological changes in addition to the troubles and hardships associated with pregnancy. This manifests clearly through several symptoms of the tendency of pregnant women toward indolence, anxiety, tension and fear, as well as feeling tired and nervous when doing the least effort. Also there's the pregnancy craving that might be accompanied by vomiting, hate or strong desire for certain types of food or fruits. Therefore, the mental pressures can make pregnant woman live through difficult days instead of the excitement of expecting a newborn that should fill her life with joy and happiness. This calls for contemplation, research and study hence pregnant woman is exposed to these pressures and needs a large deal of attention and empathy to relieve her of suffering and give her a sense of support. The research problem can be presented by the following questions:

1. What is the general characteristic of psychological stress among pregnant women?
2. Are there any statistically significant differences among pregnant women in the psychological stress due to the variable of age?
3. Are there statistically significant differences among pregnant women in the psychological stress due to number of pregnancies?
4. Are there any statistically significant differences among pregnant women in the psychological stress due to the variable of the type of female circumcision?

Research Significance

1. Humans, since the dawn of time, have always lived a life that's characterized by suffering and hardship from different sources and with different severity. One of these difficult situations is the pregnancy with its social and psychological effects. It can lead to severe and constant response that might represent an obstacle standing in the way of a normal pregnancy.
2. This research is a new scientific addition that may help researchers in this field.
3. The results of this research can contribute to the alleviation of psychological stress experienced by pregnant women.
4. The results of the research can benefit health care providers in designing guidance and psychological programs for pregnant women and how to deal with pregnancy.
5. Shed light on the nature of the relationship between psychological stress and pregnancy.

Research Objectives

1. Identify the general characteristic of psychological stress among pregnant women.
2. Identify the differences among pregnant women in psychological stress due to difference in age.
3. Identify the differences among pregnant women in psychological stress due to the number of pregnancies.
4. Identify the differences among pregnant women in the psychological stress due to the type of female circumcision.

Hypotheses

1. The psychological stress among pregnant women is generally characterized as high.

2. There are significant differences among pregnant women in the psychological stress attributed to age variable.
3. There are significant differences among pregnant women in the psychological stress attributed to the variable of number of pregnancies.
4. There are significant differences among pregnant women in the psychological stress attributed to the variable of the type of female circumcision.

Research Boundaries

1. Spatial boundaries: Khartoum State.
2. Temporal boundaries: 2015.

Research Terms

1 - Psychological stress: Defined as a the state in which the human is subjected to constant hardship both material and moral, and which he often overcomes in his daily life by means of coping with environmental conditions that lead to equilibrium (Al-Gurair: 2009).
The researchers define it operationally as: the sum of scores that the pregnant woman obtains in the Psychological Stress Scale used in this study.
Pregnancy definition: is the fertilization of the egg cell by the sperm, the fertilized egg is then settles inside the uterus cavity in case of normal pregnancy or outside it in case of ectopic pregnancy (Al-Mahdi: 2005).

Theoretical Framework

Psychological Stress: stress is a common human phenomenon since the beginning of man's life. It has become a common and widespread phenomenon that features today's life. Human's life depends on the general survival principles and on maintaining a state of internal balance of individual with his environment. We find that every human has a limited energy and limited extent of compatibility. Some people have better abilities to cope with and adapt to their outside surroundings while some are less likely to handle any change or emergency experience that is more than what they are used to. Human life doesn't always allow psychological balance as it expose individual to various obstacles and hardships that require adaptive necessities that might be above their tolerance and hence lead to psychological stress. The sources of crisis and psychological stress are frustration, conflict and social pressures (Al-Ashwal: 1999).

Stress is a feeling of strain and pressure. Small amounts of stress may be desired, beneficial, and even healthy. Positive stress helps improve athletic performance. It also plays a factor in motivation, adaptation, and reaction to the environment. Excessive amounts of stress, however, may lead to bodily harm. Stress can increase the risk of strokes, heart attacks, ulcers, and mental disorders such as depression.

Stress can be external and related to the environment, but may also be created by internal perceptions that cause an individual to experience anxiety or other negative emotions surrounding a situation, such as pressure, discomfort, etc., which they then deem stressful Humans experience stress, or perceive things as threatening, when they do not believe that their resources for coping with obstacles (stimuli, people, situations, etc.) are enough for what the circumstances demand. When we think the demands being placed on us exceed our ability to cope, we then perceive stress.

David Fontana (1998) defines stress as 'a demand made upon the adaptive capacities of the mind and the body. If these capacities can handle the demand and enjoy the stimulation involved, then stress is welcome and helpful', this definition is useful for several reasons. First, remind us that stress can be both good and bad. Second, it isn't so much pressure that determines whether we are stressed or not, it is our reaction to it. Third, if our body's capacities are good enough, we respond well to stress, if they aren't we give way. Typically, too little stress results in boredom and frustration, a moderate level of pressure is stimulating and actually improves performance, whereas too much pressure becomes debilitating and reduces performance (Fontana: 1998).

Causes of Psychological Stress:

The situations and pressures that cause stress are known as stressors. We usually think of stressors as being negative, such as an exhausting work schedule or a rocky relationship. However, anything that puts high demands on you or forces you to adjust can be stressful. This includes positive events such as getting married, buying a house, going to college, or receiving a

promotion. The four principal sources of stress may be grouped as follows:

Environmental: Includes physical stressors that impinge upon the five senses, such as weather, traffic, noise, pollution, and disturbing images.

Social: Includes psychological stressors triggered when demands are made on our time, attention and skills, such as in job interviews, public speaking, work presentations, interpersonal conflict, competing priorities, financial problems, and loss of relationships and loved ones.

Physiological: Includes physical stressors that are produced at various stages in our life, such as during growth spurts in adolescence, menopause, and lack of exercise, poor nutrition, insufficient sleep, illness, injuries, and aging. Included in this category is also the physical stress produced by psychological stressors, which produce muscle tension, headaches, stomach upsets, anxiety attacks, and bouts of depression.

Cognitive-emotional: The principal source of this type of stress is our own thoughts. Our brain interprets changes in our environment and body and conducts an automatic "threat assessment" to decide whether a danger is present and thus mobilize the body's defenses. The good functioning, or poor functioning of our threat assessment mechanism determines whether we become alarmed appropriately or inappropriately, and whether to remain stressed or relax.

Types of Stress

1. **Acute stress:** is the more common form of stress and is associated with things to do with our everyday lives such as losing bills, rushing to meetings or making deadlines. These kinds of demands and pressures tend to be short term stress related issues that don't have time to do any damage that long term stress could.
2. **Episodic Acute stress:** is the stress which affects those who suffer from acute stress more frequently. People that tend suffer from this always seem to be in a rush, they take too much on and tend not to be able to organize themselves to deal with demands and pressures**.**
3. **Chronic stress:** is the stress that can wear a sufferer down making them feel "burned-out". Chronic stress is stress that someone can feel when they can't see a way out of the demands and/or pressures that are making them feel depressed, miserable and disheartened on a continual basis.
4. **Post-traumatic stress disorder (PTSD):** is the stress associated with frightening or distressing events. These can be traumatic experiences from someone's childhood, wars, poverty, sexual or violent abuse. Sufferers of PTSD tend to feel on edge and can relive traumatic events through nightmares and flashbacks. They struggle with concentration and have trouble sleeping (Zuccolo: 2013).

The Impact of Stress:

Steve (2015) finds that stress often is accompanied by an array of physical reactions. These symptoms can be characteristic of other physical or mental disorders. A health care professional can rule out other causes after you have undergone a physical examination. Signs of stress can include the following: sleep disturbance (insomnia, sleeping fitfully), clenched jaw, grinding teeth, digestive upsets, lump in your throat, difficulty swallowing, agitated behaviour, like twiddling your fingers, playing with your hair, increased heart rate, general restlessness, sense of muscle tension in your body, or actual muscle twitching, non-cardiac chest pains, dizziness, light-heartedness, hyperventilating, sweaty palms, nervousness, stumbling over words, high blood pressure, lack of energy, and fatigue.

Cognitive signs of stress include mental slowness, confusion, general negative attitudes or thoughts, constant worry, your mind races at times, difficulty concentrating, forgetfulness, difficulty thinking in a logical sequence, the sense that life is overwhelming; you can't problem-solve. Emotional signs of stress include irritation, no sense of humour, frustration, jumpiness, over excitability, feeling overworked, feeling overwhelmed, and sense of helplessness, apathy. Behavioural signs of stress include decreased contact with family and friends, poor work relations, sense of loneliness, decreased sex drive, avoiding others and others avoid you because you're cranky, failing to set aside times for relaxation through activities such as hobbies, music, art or reading. When stress and anxiety escalate without a means to cope with the stress, they often are linked to many troublesome psychological and physiological conditions. Since prolonged stress can

affect your health, it is important to develop positive coping mechanisms to manage the stress in your life (Steve: 2015).

Stress management: Paul (2013) points out that the process of stress management is one of the keys to a happy and successful life in modern society. The treadmill of pressures of existing and performing in contemporary society is quick to dislodge the inner peace necessary for optimum physical and mental health and the ability to be at our highest level of productivity and happiness. In order to function at an optimal level, stress management must reduce or control emotional distress and the consequent physical symptoms that sometimes occur from prolonged feelings of being overwhelmed or "stressed out". The uncomfortable feelings which we associate with stress may eventually lead to chronic forms of anxiety, or anxiety disorders such as generalized anxiety disorder, phobias and panic attacks. Also, chronic stress may cause depression in addition to the more easily recognized feelings associated with stress (Paul 2013).

Pregnancy:

Pregnancy definition: Al-Mahdi defines it as the fertilization of the egg cell by the sperm, the fertilized egg is then settles inside the uterus cavity in case of normal pregnancy or outside it in case of ectopic pregnancy (Al-Mahdi: 2005).

Length of gestation: Hashim (2005) points out that the length of gestation is typically 280 days, {The carrying of the (child) to his weaning is (a period of) thirty months} (Quran, Al-Ahqaf: 15). Ibn Hazm mentioned that the pregnancy should not exceed 9 months or be less than 6 months, {The mothers shall give such to their offspring for two whole years, if the father desires to complete the term} (Quran, Al-Baqarah: 233).

Medical Aspects of Pregnancy: Pregnancy is measured in trimesters from the first day of the last menstrual period, totalling 40 weeks. The first trimester of pregnancy is week 1 through week 12, or about 3 months. The second trimester is week 13 to week 27. And the third trimester of pregnancy spans from week 28 to the birth.

First trimester: During the week after fertilization, the fertilized egg grows into a microscopic ball of cells (blastocyst), which implants on the wall of the uterus. This implantation triggers a series of hormonal and physical changes in the body.

The third through eighth weeks of growth are called the embryonic stage, during which the embryo develops most major body organs. During this process, the embryo is especially vulnerable to damaging substances, such as alcohol, radiation, and infectious diseases.

Having reached a little more than 1 in. (2.5 cm) in length by the ninth week of growth, the embryo is called a fetus. By now, the uterus has grown from about the size of a fist to about the size of a grapefruit.

Second trimester: for the first pregnancy, the fetus move at about 18 to 22 weeks after the last menstrual period. Although the fetus has been moving for several weeks, the movements have not been strong enough to notice until now.

During this time, the fetus is still building up body fat and starting to put on a lot of weight. By the end of the second trimester the fetus is about 10 in. (25.5 cm) long and weighs about 1.5 lb. (680 g).

Third trimester: The third trimester of pregnancy spans from week 28 to the birth. Although the due date marks the end of the 40th week, a full-term pregnancy can deliver between week 37 and week 42. During this final trimester, the foetus grows larger and the body organs mature. The foetus moves frequently, especially between the 27th and 32nd weeks. After week 32, a foetus becomes too big to move around easily inside the uterus and may seem to move less. At the end of the third trimester, a foetus usually settles into a head-down position in the uterus. The woman will likely feel some discomfort as she gets close to delivery. Health wise, Incorporated (2014).

Effects of psychological stress on pregnancy:

Stress experienced by a woman during pregnancy may have an effect on her unborn child, most likely mediated by the transfer of stress hormones across the placenta. Research published in May's edition of Clinical Endocrinology shows that from 17 weeks of age, the amount of stress hormone in the amniotic fluid surrounding the foetus is positively related to that in the mother's blood. (Society for Endocrinology - Media Release, Thursday 31 May 2007).

Katrina points out that maternal stress and anxiety during pregnancy has been associated with:

1- shorter gestation & higher incidence of preterm birth
2- smaller birth weight and length
3- increased risk of miscarriage

Prospective studies have shown that maternal stress and anxiety during pregnancy are related to infant outcomes such as:

1- temperamental problems and increased fussiness
2- problems with attention, attention regulation, and emotional reactivity
3- lower scores on measures of mental development

A recent large-scale epidemiological study confirmed some of the infant outcomes above and showed associations between prenatal stress and anxiety and:

1- hyperactivity and inattention in boys
2- emotional problems in girls and boys
3- conduct problems in girls

A number of retrospective and epidemiological studies have linked severe stress during pregnancy (such as experiencing famine, a major earthquake, or other natural disasters) to higher incidences of mental illness in adult offspring, such as schizophrenia and severe depression.

Importantly, studies are beginning to examine what factors might help buffer the effects of stress during pregnancy. One important factor seems to be the mother's level of social support. Other protective factors may include: gaining some control of stressful situations, consistent prenatal care, regular light exercise, adequate rest, healthy eating habits, and avoiding alcohol, tobacco, and other drugs. (Katrina C. Johnson, 2007).

II. METHODS AND MATERIAL

Research Method:

The researchers used the descriptive method, which is used to describe characteristics of a population or phenomenon being studied.

Study population:

Consisted of pregnant women in hospitals of Khartoum State; Omdurman Maternity Hospital, Mohammad Ali Fadl Hospital (Saudi Hospital) and Omdurman Friendship Hospital**.**

Research Sample:

Consisted of (100) pregnant women. Their age ranged between (17 - 40 years). The sample has been selected using the random simple method from among the study population. The sample characteristics can be described as follows:

Table No. (1) Shows the age range of research sample

Age	**Number of women**	**Percentage %**
17 - 25 years old	60	42.76%
26 -40 years	40	38.76%
Total	100	100%

Table No. (2) Shows the distribution of research sample by number of pregnancies

Number pregnancies	**Number of women**	**Percentage %**
Once to four times	42	42%
More than four times	58	5 8%
Total	100	100%

Table No. (3) Shows distribution of research sample by type of circumcision

Circumcision Type	**Number of women**	**Percentage %**
Pharaonic	65	65%
Sunni	35	35%
Total	100	100%

Research Tools:

Psychological Stress Scale:

The researchers used the Psychological Stress Scale designed by Fontana (1993) and translated into Arabic by Ridda Abu-Sarie and Ramadan Mohammed. The researchers rephrased and modified the scale to suit the Sudanese environment and the study sample. The scale consisted in its initial form of 35 phrases.

Apparent truth of the scale:

The researchers showed the first draft of the scale to a number of arbitrators and specialists to find out its apparent truth. The researcher benefited from their comments and guidance in rephrasing and rearranging the scale.

Validity and reliability of the scale:

To find out the scale validity and reliability the researchers carried out an explanatory study on a sample of 30 pregnant women selected randomly from the

original study sample. The scale validity factor was found to be 0.855 and the reliability factor 0.778.

III. RESULTS AND DISCUSSION

After the data were entered to the computer, the researchers found the following results.

First hypothesis:
The psychological stress among pregnant women is characterized as high. To verify this hypothesis the researchers used the T-test to find out the general characteristic, as shown in the following table.

Table No. (4) Shows single sample T-test to find out the general characteristic of psychological stress on pregnant women.

N	Mean	St. D	T	probability value
150	4 8. 8	12 .4	8. 12	0.001

Hypothetical mean= 39
Key: St. D= stander deviation, T= T value.

From the above table, the researchers noted that the value of the hypothetical mean was (39), the arithmetic mean (48.8), T value (8.12) and it's probability value was found to be (0.001) which is less than the significance value (0.05). These results indicate that the psychological stress among pregnant women is characterized as high. The researchers found that the psychological stress arises from the psychological troubles when there are deficiencies in the defence mechanisms and satisfaction of needs, and when there is a state of conflict, anxiety, frustration and lack of adaptation and coping. Hence, psychological stress is a complicated phenomenon that has different biological, psychological, economic and social aspects. Pregnancy with its associated troubles and difficulties brings about mental disorders such as depression and anxiety as a result of the physiological changes. This is evident through several noticeable symptoms such as the tendency of the pregnant woman towards introversion, feeling tired and exhausted when doing any effort, as well as the craving period accompanied by morning vomiting and craving certain types of food. These symptoms might be an expression for defence mechanisms towards unconscious desires of the pregnant woman. As the due date approaches the woman starts to imagine the pain of labour which makes her anxious and worried, at this stage depression is usually the prominent characteristic of the behaviour of the pregnant woman, which leads to more stress on the pregnant woman who tends to become more vulnerable and violent. Al-Zarad points out that the persistent chronicle stresses causes more psychological and psychosomatic disorders than the temporal and short-term ones. The individual's physiological response during stress depends on their own perception of the situation and their personalities. Different forms of stresses produce different responses and the same psychological stress may have different responses among individuals. All this explains the result of this hypothesis.

Second hypothesis:
There are statistically significant differences among pregnant women in the psychological stress due to the variable of age. To verify this hypothesis the researchers used Two Sample T-Test to find out the significance of the differences. The following table shows that:

Table No. (5) Shows T-test to find out differences among pregnant women due to age variable.

Age	N	Mean	St. D	T	P	SIG
17. 25	60	34 .9	13 .6	0.56	5.8	No differences
26-40	40	34 .2	13 .8			

Key: N= number of sample, St. D= stander deviation, P= Probability value, T= T value, SIG= significant.

From the above table, the researchers note that arithmetic mean for the elder group was (34 .9) and standard deviation (13.6) and the mean and standard deviation for the younger group were (3 4.2) and (13.8) respectively. The (T) value to compare the two groups was (0.56) which indicates that there are no differences between the two groups in psychological stress. The researchers attribute the result to the fact that the age variable is not directly linked to the psychological and physiological effects of pregnancy as the women organs have a certain degree of maturity and they carry out their functions in a normal and healthy manner, also pregnant women undergo different kinds of sufferings at all age levels. Furthermore, the researchers pointed out that pregnancy is considered as a heavy burden on the

shoulders of all pregnant women regardless of their age due to the social and familial responsibilities and roles from which women are not exempt during pregnancy especially for working women living in lower living standards. On the other hand, there is a lack of support from the husbands who look at their wives according to the prevalent social norms which negatively affects the psychological state of the pregnant women who feels treated with lack of interest and indifference. However, recently there's an increasing interest in health and biological aspects of pregnancy among families and husbands; periodic check-up's on pregnant women and their foetus is now obligatory, this helps alleviate the several types of stresses associated with pregnancy. It's noticeable that in Sudanese societies the majority of births are in the age range that's usually accompanied by health difficulties and troubles, in case of mothers older than 40 years old the children are often exposed to several psychological and biological disorders that affect their mental capacities and behavioural skills.

Third Hypothesis:

There are statistically significant differences among pregnant women in the psychological stress due to the variable of number of pregnancies. To verify the validity of the hypothesis the researchers used ANOVA test as shown in the following table:

Table No. (6) Shows the Analysis of Variance to find out differences among pregnant women in the psychological stress due to number of pregnancies

variance	Total	D.F	M	F	P.V	SIG
Groups variance	168.4	2	84.2	1 .3	2.8	No differences
within groups	3783	147	257.			
Total	3800					

Key: D.F= Degree of free, M= Mean of squares, F= F Value, P.V= probability value, SIG= Significant.

From above table, the researchers noted that (F) value and its probability value were (5.327) and (0.719) respectively, which indicated that there are differences in psychological stress due to the number of pregnancies. This finding is explained by the fact that for women who gave birth before pregnancy and its psychological and bodily effects is a repetitive process that they are used to. Previous pregnancies give the woman confidence and ability to confront and cope with psychological stress and troubles which lead to the differences in their responses for different times of pregnancies. The experience gained from previous pregnancies helps develop problem solving and coping techniques and hence alleviate the stress imposed on women, (Askar: 2011). All this explains this hypothesis.

Fourth Hypothesis: There are statistically significant differences among pregnant women in the psychological stress due to the variable of type of circumcision. To verify this hypothesis the researchers used T-test for Two Independent Samples to find out the significance of differences, as shown in the following table:

Table No. (7) Shows T-test for two independent samples to find out differences in psychological stress among pregnant women due to the type of circumcision.

CT	**N**	**M**	**St.d**	**T**	**PV**	**SIG**
Pharaonic	65	25.9	20	3.87	0.001	No differences
Sunni	35	22.3	17			

Key: CT= Circumcision type, N= number of sample, M= Arithmetic mean, St.d= Standard deviation, T= T Value, DF= Degree of freedom, PV= Probability value. SIG= Significant.

From the above table the researchers noted the mean and standard deviation for pharaonic circumcision were (25.87) and (19.87) respectively, as compared to (22.32) and (16.97) for the Sunni circumcision. The (T) value to compare the two types of circumcision was (3.87), which indicates the existence of differences in psychological stress among pregnant women due to the type of circumcision in favor of Pharaonic circumcision. This result is attributed to the different natures of the two types of circumcision. The Pharaonic circumcision (Infibulation) which is more complicated that the Sunni is the removal of the clitoris and labia and the sewing up of the vagina, leaving only a small opening for urine and menstrual blood. Gabrawy (2000) points out that the delivery process is more difficult for the Pharaonically infibulated women than for the Sunni circumcised ones,

particularly at the second stage of delivery because the vagina may lose elasticity as a result of healing of the circumcision wound with a fabric that prevents the vagina from expanding at the right time which leads to rupture in the perineum and tear in the tissue surrounding the urine opening. Makki (1990) notifies that infibulation cause's obstructed labor that might lead to fatal death during birth or to the birth of mentally retarded children as a result of the excess pressure on the head due to the elongation in the delivery process or of the intervention to ease the obstructed labor. There's no doubt that the inhumane female circumcision accompanied by enormous pain in the female genital organs has serious repercussions on these organs and their functions such as trauma during pregnancy.

IV.CONCLUSION

The researchers summarize the results as follows:

1. The psychological stress among pregnant women is general characterized as high.
2. There are no statistically significant differences among pregnant women in the psychological stress due to age difference.
3. There are statistically significant differences among pregnant women in the psychological stress attributed to the variable of number of pregnancies.
4. There are statistically significant differences among pregnant women in the psychological stress due to the variable of type of female circumcision in favor of Pharaonic circumcision.

Recommendations:

1. Increase interest in health education for girls in marriage age with all aspects of pregnancy and childbirth and encourage wives to give birth.
2. Educate pregnant women on how to deal with pregnancy and its accompanying psychological difficulties and stress.
3. Provide medical and psychological services in clinics and provide health cadres to early discover and treat psychological disorders among pregnant women.
4. Establish psychological units and centers inside maternity hospitals.

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Passive IP Traceback : Disclosing the Locations of IP Spoofers from Path Backscatter

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ABSTRACT

It is long known attackers may use forged source IP address to conceal their real locations. To capture the attackers, a number of IP trackback mechanisms have been proposed. However, due to the challenges of deployment, there has been not a widely adopted IP trackback solution, at least at the Internet level. As a result, the mist on the locations of hackers has never been dissipated till now. This paper proposes passive IP trackback (PIT) that bypasses the deployment difficulties of IP tracers techniques. PIT investigates Internet Control Message Protocol error messages (named path backscatter) triggered by spoofing traffic, and tracks the hackers based on public available information (e.g., topology). In this way, PIT can find the attackers without any deployment requirement. This paper illustrates the causes, collection, and the statistical results on path backscatter, demonstrates the processes and effectiveness of PIT, and shows the captured locations of hackers through applying PIT on the path backscatter data set. These results can help further reveal IP spoofing, which has been studied for long but never well understood. Though PIT cannot work in all the spoofing attacks, it may be the most useful mechanism to trace hackers before an Internet-level trackback system has been deployed in real.

Keywords: Spoofing, Path Back Scatter, PIT

I. INTRODUCTION

People Computer security (Also known as cyber security or IT Security) is information security as applied to computers and networks. The field covers all the processes and mechanisms by which computer-based equipment, information and services are protected from unintended or unauthorized access, change or destruction. Computer security also includes protection from unplanned events and natural disasters. Otherwise, in the computer industry, the term security -- or the phrase computer security -- refers to techniques for ensuring that data stored in a computer cannot be read or compromised by any individuals without authorization. Most computer security measures involve data encryption and passwords. Data encryption is the translation of data into a form that is unintelligible without a deciphering mechanism. A password is a secret word or phrase that gives a user access to a particular program or system.

Working conditions and basic needs in the secure computing:

If you don't take basic steps to protect your work computer, you put it and all the information on it at risk. You can potentially compromise the operation of other computers on your organization's network, or even the functioning of the network as a whole.

1. **Physical security:** Technical measures like login passwords, anti-virus are essential. (greater about the ones beneath) but, a comfortable bodily space is the primary and more important line of defence .Is the vicinity you hold your place of job pc cozy enough to prevent theft or access to it whilst you are away? whilst the safety department offers insurance throughout the scientific centre, it most effective takes seconds to scouse borrow a laptop, mainly a portable device like a laptop or a PDA. A computer ought to be secured like some other treasured possession while you aren't gift. Human threats are not the handiest issue. computers may be

compromised with the aid of environmental mishaps (e.g., water, espresso) or bodily trauma. ensure the physical place of your laptop takes account of these dangers as nicely. . Human threats are not the best situation. computer systems may be compromised by using environmental mishaps.

2. **Access of the passwords:** The college's networks and shared facts systems are protected in component by using login credentials (person-IDs and passwords). get entry to passwords also are an essential safety for personal computers in most instances. places of work are generally open and shared spaces, so bodily get entry to to computers cannot be absolutely managed. To protect your pc, you ought to do not forget putting passwords for the specifically touchy applications resident on the laptop (e.g., records analysis software program), if the software offers that functionality**.**
3. **Prying eye protection:** because we cope with all sides of clinical, research, academic and administrative facts right here on the clinical campus, it's miles critical to do the whole lot viable to decrease publicity of information to unauthorized people..
4. **Anti-virus software:** updated, properly configured anti-virus software program is essential. even as we have server-side anti-virus software program on our network computer systems, you still need it at the consumer side (your laptop).
5. **Firewalls**: Anti-virus products investigate files in your pc and in e mail. Firewall software program and hardware display communications among your computer and the outside world. this is vital for any networked computer.
6. **Software updates**: It is essential to hold software program up to date, particularly the working gadget, anti-virus and anti-adware, e-mail and browser software program. The newest versions will comprise fixes for found vulnerabilities.
7. **Keep secure backups:**Maintain relaxed backups :Even in case you take these types of protection steps, bad things can still show up. Be organized for the worst by using making backup copies of crucial records, and preserving the ones backup copies in a separate, secure region. as an instance, use supplemental hardrives, CDs/DVDs, or flash drives to save critical, tough-to-update data.
8. **Report problems :** if you agree with that your pc or any data on it's been compromised, your should make a records protection incident file. this is required through university policy for all facts on our systems, and legally required for fitness, education, monetary and any other type of file containing identifiable personal information.

II. METHODS AND MATERIAL

System Architecture

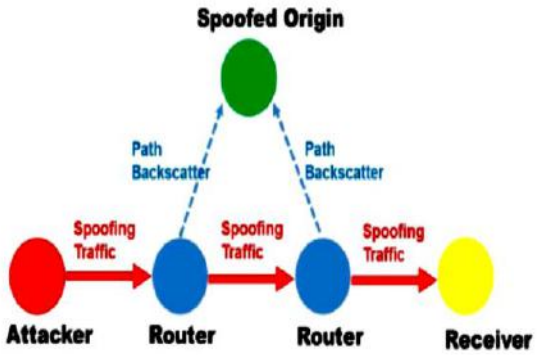

Figure 1: System Architecture

System Overview

This section formalizes our system model, assumptions and desiderata. Our principal symbols are summarized in table 2.

A. Network topology Construction:

A community Topology may include the no of routers which might be related with neighborhood location networks. therefore, a router can either get hold of facts from the closer router or from the nearby vicinity community. A border router receives packets from its local community. A center router gets packets from other routers. The no of routers connected to a single router is referred to as as the degree of a router. this is calculated and saved in a table. The Upstream interfaces of each router also have to be located and saved inside the interface table. A network packet technique is the standard system..

B. Path Selection

The route is stated to be the way wherein the selected packet or record needs to be sent from the supply to the

vacation spot. The Upstream interfaces of every router need to be discovered and it's miles stored within the interface table. With the assist of that interface desk, the desired route between the selected supply and destination can be described.

C. Packet Sending

The route is stated to be the way wherein the selected packet or record needs to be sent from the supply to the vacation spot. The Upstream interfaces of every router need to be discovered and it's miles stored within the interface table. With the assist of that interface desk, the desired route between the selected supply and destination can be described.

D. Packet Marking and Logging

Packet Marking is the phase, where the efficient Packet Marking algorithm is applied at each router along the defined path. It calculates the Pack mark value and stores in the hash table. If the Pack mark is not overflow than the capacity of the router, then it is sent to the next router. Otherwise it refers the hash table and again applies the algorithm.

E. Packet reconstruction

Once the Packet has reached the destination after applying the set of rules, there it exams whether it has sent from the correct upstream interfaces. If any of the attack is determined, it request for the path Reconstruction. Path Reconstruction is the manner of finding the brand new direction for the equal supply and the vacation spot in which no attack may be made

III. LITERATURE SURVEY

1. Efficient packet marking for large-scale IP trackback

We gift a new technique to IP trackback based totally on the probabilistic packet marking paradigm. Our approach, which we name randomize-and-link, uses big checksum cords to "link" message fragments in a way that is extraordinarily scalable, for the checksums serve both as associative addresses and statistics integrity verifiers. The primary gain of those checksum cords is they unfold the addresses of possible router messages throughout a spectrum this is too big for the attacker to easily create messages that collide with legitimate messages. Our methods therefore scale to attack trees containing masses of routers and do no longer require that a victim recognize the topology of the assault tree a priori. in addition, by using utilising authenticated dictionaries in a singular manner, our strategies do not require routers signal any setup messages individually.

2. Dynamic probabilistic packet marking for efficient IP trackback

Trackbackthese days, denial-of-provider (DoS) assault has turn out to be a urgent problem due to the dearth of an efficient approach to find the real attackers and simplicity of launching an assault with effectively to be had supply codes on the internet. Trackback is a diffused scheme to tackle DoS assaults. Probabilistic packet marking (PPM) is a new manner for practical IP trackback. Even though PPM allows a victim to pinpoint the attacker’s starting place to inside 2–5 equally viable websites, it has been shown that PPM suffers from uncertainty below spoofed marking assault. Furthermore, the uncertainty thing may be amplified drastically under disbursed DoS attack, which may also decrease the effectiveness of PPM. in this work, we gift a new method, called dynamic probabilistic packet marking (DPPM), to in addition enhance the effectiveness of PPM. in preference to using a fixed marking possibility, we propose to deduce the touring distance of a packet and then choose a right marking chance. DPPM may completely dispose of uncertainty and enable victims to exactly pinpoint the attacking starting place even below spoofed marking DoS attacks. DPPM supports incremental deployment. Formal analysis shows that DPPM outperforms PPM in maximum components.

3. A stateless trackback technique for identifying the origin of attacks from a single packet

Anonymity is one of the most important motivations for carrying out denial-of-carrier attacks. Currently, there is no mechanism to both become aware of the genuine supply of an IP packet or to show its authenticity. On this paper we propose a stateless IP trackback method that identifies the origin network of every man or woman packet. We show that the proposed trackback

machine is the simplest one which scales with the variety of attackers and also satisfies practical necessities, consisting of no state saved at routers and a header overhead (25 bits) that may be allotted in IPv4 header. The proposed system exploits the patron-company hierarchy of the internet at self-sustaining device (AS) level and introduces the concept of checkpoints, which are the two most crucial nodes in an AS-degree direction. Simulation effects using a actual-international topology trace show that the proposed device narrows the source of an attack packet right down to much less than candidate ASes on average. Further, considering a partial deployment state of affairs, we show that the proposed gadget is capable of correctly hint more than ninety% of the attacks if best 8% of the ASes (i.e., simply the center ASes) enforce the gadget. The accomplished fulfillment rate is quite better than using the classical hop-by using-hop path reconstruction.

4. Novel hybrid schemes employing packet marking and logging for IP trace back

DoS attacks that hire source deal with spoofing is an important and hard hassle. traditional trackback schemes provide spoofed packets trackback capability either by augmenting the packets with partial course records (i.e., packet marking) or by storing packet digests or signatures at intermediate routers (i.e., packet logging). Such approaches require both a big range of assault packets to be accumulated through the victim to deduce the paths (packet marking) or a tremendous quantity of assets to be reserved at intermediate routers (packet logging). We undertake a hybrid trackback approach in which packet marking and packet logging are incorporated in a unique way, as a way to acquire the quality of each worlds, that is, to acquire a small wide variety of assault packets to behavior the trackback method and a small amount of sources to be allotted at intermediate routers for packet logging functions. based totally on this notion, two novel trace lower back schemes are provided. the first scheme, known as dispensed hyperlink-listing hint back (DLLT), is based totally at the idea of preserving the marking statistics at intermediate routers in such a manner that it could be accumulated the use of a link list-primarily based technique. the second one scheme, known as probabilistic pipelined packet marking (PPPM), employs the concept of a "pipeline" for propagating marking information from one marking router to another in order that it eventually reaches the vacation spot. We evaluate the effectiveness of the proposed schemes towards diverse performance metrics through a aggregate of analytical and simulation studies. Our research display that the proposed schemes offer a drastic reduction in the wide variety of packets required to conduct the trackback process and an affordable saving in the storage requirement.

5. Defence against spoofed IP traffic using hop-count filtering

IP spoofing has often been exploited by means of disbursed Denial of provider (DDoS) assaults to: 1)conceal flooding resources and dilute localities in flooding visitors, and 2)coax valid hosts into turning into reflectors, redirecting and amplifying flooding traffic. for that reason, the potential to clear out spoofed IP packets close to victim servers is essential to their personal safety and prevention of turning into involuntary DoS reflectors. although an attacker can forge any field within the IP header, he cannot falsify the wide variety of hops an IP packet takes to reach its vacation spot. extra importantly, because the hop-depend values are diverse, an attacker cannot randomly spoof IP addresses while keeping steady hop-counts. Alternatively, a web server can without problems infer the hop-count number statistics from the Time-to-stay (TTL) discipline of the IP header. the usage of a mapping between IP addresses and their hop-counts, the server can distinguish spoofed IP packets from valid ones. based totally on this commentary, we gift a singular filtering approach, called Hop-depend Filtering (HCF)-which builds an accurate IP-to-hop-remember (IP2HC) mapping desk-to come across and discard spoofed IP packets. HCF is simple to install, because it does no longer require any aid from the underlying community. through analysis using network dimension records, we show that HCF can pick out near ninety% of spoofed IP packets, after which discard them with little collateral harm. We put in force and evaluate HCF inside the Linux kernel, demonstrating its effectiveness with experimental measurements. on the other hand, a web server can effortlessly infer the hop-depend facts from the Time-to-live (TTL) area of the IP header. using a mapping among IP addresses and their hop-counts, the server can distinguish spoofed IP packets from

legitimate ones. Primarily based in this commentary, we gift a singular filtering method, referred to as Hop-remember Filtering (HCF)-which builds an accurate IP-to-hop-be counted (IP2HC) mapping desk-to come across and discard spoofed IP packets. HCF is straightforward to install, because it does not require any assist from the underlying community.

IV. CONCLUSION

We try to deplete the mist on the the locations of spoofers based on investigating the path backscatter messages. In this newsletter, we proposed Passive IP Trackback (PIT) which tracks spoofers based totally on route backscatter messages and public available statistics. We illustrate causes, collection, and statistical results on path backscatter. We particular a way to apply PIT whilst the topology and routing are each recognized, or the routing is unknown, or neither of them are recognized. We presented two effective algorithms to use PIT in massive scale networks and proofed their correctness .We established the effectiveness of PIT primarily based on deduction and simulation. We confirmed the captured locations of spoofers via applying PIT on the route backscatter dataset. These outcomes can help further screen IP spoofing, which has been studied for lengthy but never properly understood

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Effective Progressive Algorithm for Duplicate Detection on Large Dataset

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ABSTRACT

Effective progressive algorithm for duplicate detection on large dataset is the process of detecting unwanted files in the document in very short time.It does not affect the file without any quality change and also it used for cleaning process. The main advantage is very efficient and very speed.It has unlimited large data sets. The system alerts the user about potential duplicates when the user tries to create new records or update existing records. To maintain data quality, you can schedule a duplicate detection job to check for duplicates for all records that match a certain criteria. You can clean the data by deleting, deactivating, or merging the duplicates reported by a duplicate detection. We propose two novel, progressive duplicate detection algorithms namely progressive sorted neighborhood method (PSNM), which performs best on small and almost clean datasets, and progressive blocking (PB), which performs best on large and very dirty datasets. Both enhance the efficiency of duplicate detection even on very large datasets. which expose different strengths and outperform current approaches. We exhaustively evaluate on several real-world datasets testing our own and previous algorithms.

Keywords : Data cleaning, Duplicate detection, Entity Resolution, Progressiveness

I. INTRODUCTION

Data are among the most important assets of a company. But due to data changes and sloppy data entry, errors such as duplicate entries might occur, making data cleansing and in particular duplicate detection indispensable. However, the pure size of today's datasets renders duplicate detection processes expensive. Online retailers, for example, offer huge catalogs comprising a constantly growing set of items from many different suppliers. As independent persons change the product portfolio, duplicates arise. Although there is an obvious need for deduplication, online shops without downtime cannot afford traditional deduplication. Progressive duplicate detection identifies most duplicate pairs early in the detection process. Instead of reducing the overall time needed to finish the entire process, progressive approaches try to reduce the average time after which a duplicate is found. Early termination, in particular scheme.

II. METHODS AND MATERIAL

A. Literature Survey

A Survey: Detection of Duplicate Record

The problem of identifying approximately duplicate record in database is an essential step for data cleaning & data integration process. A dynamic web page is displayed to show the results as well as other relevant advertisements that seem relevant to the query. The real world entities have two or more representation in databases. When dealing with large amount of data it is important that there be a well defined and tested mechanism to filter out duplicate result. This keeps the result relevant to the queries. Duplicate record exists in the query result of many web databases especially when the duplicates are defined based on only some 21of the fields in a record. Using exact matching technique Records that are exactly same can be detected. The system that helps user to integrate and compares the query results returned from multiple web databases matches the different sources records that referred to the

same real world entity. In this project, we analyze the literature on duplicate record detection. We cover similarity metrics which are commonly used to detect similar field entries, and present an extensive set of duplicate detection algorithms that can detect approximately duplicate records in a database also the techniques for improving the efficiency and scalability of approximate duplicate detection algorithms are covered. We conclude with coverage of existing tools and with a brief discussion of the big open problems in the area.

A Generalization of Blocking and Windowing Algorithms for Duplicate Detection

Duplicate detection is the process of finding multiple records in a dataset that represent the same real-world entity. Due to the enormous costs of an exhaustive comparison, typical algorithms select only promising record pairs for comparison. Two competing approaches are blocking and windowing. Blocking methods partition records into disjoint subsets, while windowing methods, in particular the Sorted Neighborhood Method, slide a window over the sorted records and compare records only within the window. We present a new algorithm called Sorted Blocks in several variants, which generalizes both approaches. To evaluate Sorted Blocks, we have conducted extensive experiments with different datasets. These show that our new algorithm needs fewer comparisons to find the same number of duplicates.

Creating Probabilistic Databases from Duplicated Data

A major source of uncertainty in databases is the presence of duplicate items, i.e., records that refer to the same real world entity. However, accurate deduplication is a difficult task and imperfect data cleaning may result in loss of valuable information. A reasonable alternative approach is to keep duplicates when the correct cleaning strategy is not certain, and utilize an efficient probabilistic query answering technique to return query results along with probabilities of each answer being correct. In this project, we present a flexible modular framework for scalably creating a probabilistic database out of a dirty relation of duplicated data and overview the challenges raised in utilizing this framework for large relations of string data. We study the problem of associating probabilities with duplicates that are detected using state-of-the-art scalable approximate join methods. We argue that standard thresholding techniques are not sufficiently robust for this task, and propose new clustering algorithms suitable for inferring duplicates and their associated probabilities. We show that the inferred probabilities accurately reflect the error in duplicate records.

Real-world Data is Dirty: Data Cleansing and The Merge/Purge Problem

The problem of merging multiple databases of information about common entities is frequently encountered in KDD and decision support applications in large commercial and government organizations. The problem we study is often called the Merge/Purge problem and is difficult to solve both in scale and accuracy. Large repositories of data typically have numerous duplicate information entries about the same entities that are difficult to cull together without an intelligent "equational theory" that identifies equivalent items by a complex, domain-dependent matching process. We have developed a system for accomplishing this data cleansing task and demonstrate its use for cleansing lists of names of potential customers in a direct marketing-type application. Our results for statistically generated data are shown to be accurate and effective when processing the data multiple times using different keys for sorting on each successive pass. Combing results of individual passes using transitive closure over the independent results, produces far more accurate results at lower cost. The system provides a rule programming module that is easy to program and quite good at finding duplicates especially in an environment with massive amounts of data. This project details improvements in our system, and reports on the successful implementation for a real-world database that conclusively validates our results previously achieved for statistically generated data.

A survey of indexing techniques for scalable record Linkage and Deduplication

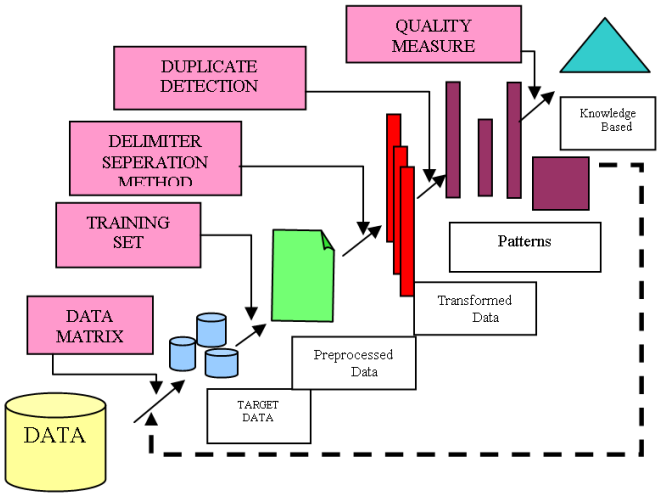
Record linkage is the process of matching records from several databases that refer to the same entities. When

applied on a single database, this process is known as deduplication. Increasingly, matched data are becoming important in many application areas, because they can contain information that is not available otherwise, or that is too costly to acquire. Removing duplicate records in a single database is a crucial step in the data cleaning process, because duplicates can severely influence the outcomes of any subsequent data processing or data mining. With the increasing size of today's databases, the complexity of the matching process becomes one of the major challenges for record linkage and deduplication. In recent years, various indexing techniques have been developed for record linkage and deduplication. They are aimed at reducing the number of record pairs to be compared in the matching process by removing obvious nonmatching pairs, while at the same time maintaining high matching quality. This project presents a survey of 12 variations of 6 indexing techniques. Their complexity is analyzed, and their performance and scalability is evaluated within an experimental framework using both synthetic and real data sets. No such detailed survey has so far been published.

B. Related Works

Databases play an important role in today's IT-based economy. Many industries and systems depend on the accuracy of databases to carry out operations. Therefore, the quality of the information (or the lack thereof) stored in the databases can have significant cost implications to a system that relies on information to function and conduct business. Much research on duplicate detection, also known as entity resolution and by many other names focuses on pair selection algorithms that try to maximize recall on the one hand and efficiency on the other hand. Adaptive techniques are capable of estimating the quality of comparison candidates. The algorithms use this information to choose the comparison candidates more carefully. In the last few years, the economic need for progressive algorithms also initiated some concrete studies in this domain. For instance, pay-as-you-go algorithms for information integration on large scale datasets have been presented. Other works introduced progressive data cleansing algorithms for the analysis of sensor data streams. However, these approaches cannot be applied to duplicate detection.

C. Architecture Diagram



Dataset Collection

To collect and/or retrieve data about activities, results, context and other factors. It is important to consider the type of information it want to gather from your participants and the ways you will analyze that information. The data set corresponds to the contents of a single database table, or a single statistical data matrix, where every column of the table represents a particular variable. After collecting the data to store the Database.

Preprocessing Method

Data preprocessing or Data cleaning, Data is cleansed through processes such as filling in missing values, smoothing the noisy data, or resolving the inconsistencies in the data. And also used to removing the unwanted data. Commonly used as a preliminary data mining practice, data preprocessing transforms the data into a format that will be more easily and effectively processed for the purpose of the user.

Data Separation

After completing the pre-processing, the data separation to be performed. The blocking algorithms assign each record to a fixed group of similar records (the blocks) and then compare all pairs of records within these groups. Each block within the block comparison matrix represents the comparisons of all records in one

block with all records in another block, the equidistant blocking; all blocks have the same size.

Duplicate Detection

The duplicate detection rules set by the administrator, the system alerts the user about potential duplicates when the user tries to create new records or update existing records. To maintain data quality, you can schedule a duplicate detection job to check for duplicates for all records that match a certain criteria. You can clean the data by deleting, deactivating, or merging the duplicates reported by a duplicate detection.

Quality Measures

The quality of these systems is, hence, measured using a cost-benefit calculation. Especially for traditional duplicate detection processes, it is difficult to meet a budget limitation, because their runtime is hard to predict . By delivering as many duplicates as possible in a given amount of time, progressive processes optimize the cost-benefit ratio. In manufacturing, a measure of excellence or a state of being free from defects, deficiencies and significant variations. It is brought about by strict and consistent commitment to certain standards that achieve uniformity of product in order to satisfy specific customer or user requirements.

III. RESULT AND DISCUSSION

A. Proposed System

In this work, however, we focus on progressive algorithms, which try to report most matches early on, while possibly slightly increasing their overall runtime. To achieve this, they need to estimate the similarity of all comparison candidates in order to compare most promising record pairs first.We propose two novel, progressive duplicate detection algorithms namely progressive sorted neighborhood method (PSNM), which performs best on small and almost clean datasets, and progressive blocking (PB), which performs best on large and very dirty datasets. Both enhance the efficiency of duplicate detection even on very large datasets. We propose two dynamic progressive duplicate detection algorithms, PSNM and PB, which expose different strengths and outperform current approaches. We introduce a concurrent progressive approach for the multi-pass method and adapt an incremental transitive closure algorithm that together forms the first complete progressive duplicate detection workflow. We define a novel quality measure for progressive duplicate detection to objectively rank the performance of different approaches. We exhaustively evaluate on several real-world datasets testing our own and previous algorithms.

Advantages of Proposed System

Improved early quality and same eventual quality and our algorithms PSNM and PB dynamically adjust their behavior by automatically choosing optimal parameters, e.g., window sizes, block sizes, and sorting keys, rendering their manual specification superfluous. In this way, we significantly ease the parameterization complexity for duplicate detection in general and contribute to the development of more user interactive applications.

B. Proposed Algorithm

Progressive SNM

The algorithm takes five input parameters: D is a reference to the data, which has not been loaded from disk yet. The sorting key K defines the attribute or attributes combination that should be used in the sorting step. W specifies the maximum window size, which corresponds to the window size of the traditional sorted neighborhood method. When using early termination, this parameter can be set to an optimistically high default value. Parameter I defines the enlargement interval for the progressive iterations. For now, assume it has the default value 1. The last parameter N specifies the number of records in the dataset. This number can be gleaned in the sorting step, but we list it as a parameter for presentation purposes. Progressive Sorted Neighborhood Require: dataset reference D, sorting key K, window size W, enlargement interval size I, number of records N

Step 1: procedure PSNM(D, K, W, I, N)
Step 2: pSize← calcPartitionSize(D)
Step 3: pNum ←[N/pSize-W + 1)]
Step 4: array order size N as Integer

Step 5: array recs size pSize as Record
Step 6: order ←sortProgressive(D, K, I, pSize, pNum)
Step 7: for currentI← 2 to[W/I]do
Step 8: for currentP ←1 to pNum do
Step 9: recs← loadPartition(D, currentP)
Step 10: for dist belongs to range(currentI, I, W) do
Step 11: for i ←0 to |recs|_ dist do
Step 12: pair←<recs[i], recs[i + dist]>
Step 13: if compare(pair) then
Step 14: emit(pair)
Step 15: lookAhead(pair)

Progressive Blocking

The algorithm accepts five input parameters: The dataset reference D specifies the dataset to be cleaned and the key attribute or key attribute combination K defines the sorting. The parameter R limits the maximum block range, which is the maximum rank-distance of two blocks in a block pair, and S specifies the size of the blocks. Finally, N is the size of the input dataset.

Progressive Blocking Require: dataset reference D, key attribute K, maximum block range R, block size S and record number N

Step 1: procedure PB(D, K, R, S, N)
Step 2: pSize ← calcPartitionSize(D)
Step 3: bPerP ← [pSize/S]
Step 4: bNum ← [N/S]
Step 5: pNum ← [bNum/bPerP]
Step 6: array order size N as Integer
Step 7: array blocks size bPerP as <Integer; Record[]>
Step 8: priority queue bPairs as <Integer; Integer; Integer> Step 9: bPairs ←{<1,1,->, . . . ,<bNum, bNum,->}
Step 10: order ←sortProgressive(D, K, S, bPerP, bPairs) Step 11: for i ←0 to pNum - 1 do
Step 12: pBPs ← get(bPairs, i . bPerP, (i+1) . bPerP)
Step 13: blocks ← loadBlocks(pBPs, S, order)
Step 14: compare(blocks, pBPs, order)
Step 15: while bPairs is not empty do
Step 16: pBPs← {}
Step 17: bestBPs← takeBest([bPerP/4], bPairs, R)
Step 18: for bestBP € bestBPs do
Step 19: if bestBP[1] − bestBP[0] < R then
Step 20: pBPs← pBPs U extend(bestBP)
Step 21: blocks ←loadBlocks(pBPs, S, order)
Step 22: compare(blocks, pBPs, order)
Step 23: bPairs ←bPairs U pBPs
Step 24: procedure compare(blocks, pBPs, order)
Step 25: for pBP € pBPs do
Step 26: <dPairs,cNum> comp(pBP, blocks, order)
Step 27: emit(dPairs)
Step 28: pBP[2] ←|dPairs|/ cNum

IV. CONCLUSION

This work introduced the progressive sorted neighborhood method and progressive blocking. Both algorithms increase the efficiency of duplicate detection for situations with limited execution time; they dynamically change the ranking of comparison candidates based on intermediate results to execute promising comparisons first and less promising comparisons later. To determine the performance gain of our algorithms, we proposed a novel quality measure for progressiveness that integrates seamlessly with existing measures. Using this measure, experiments showed that our approaches outperform the traditional SNM by up to 100 percent and related work by up to 30 percent. For the construction of a fully progressive duplicate detection workflow, we proposed a progressive sorting method, Magpie, a progressive multi-pass execution model, Attribute Concurrency, and an incremental transitive closure algorithm. The adaptations AC-PSNM and AC-PB use multiple sort keys concurrently to interleave their progressive iterations. By analyzing intermediate results, both approaches dynamically rank the different sort keys at runtime, drastically easing the key selection problem. In future work, we want to combine our progressive approaches with scalable approaches for duplicate detection to deliver results even faster. In particular, Kolb et al. introduced a two phase parallel SNM [21], which executes a traditional SNM on balanced, overlapping partitions. Here, we can instead use our PSNM to progressively find duplicates in parallel.

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Data Security in Cloud Using Semi Trusted Third Party Key Manager

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ABSTRACT

In our project Off-site data loading is an request of cloud that releases the clients from focusing happening data storing scheme. However, subcontracting facts to a third-party directorial switch involves grave security concerns. Data leak might occur owing to bouts by additional operators and tackles in the cloud. Wide of facts by cloud ability worker is yet another problem that is met in the cloud location. Thus, top of security events is requiring. In this paper, we offer Data Safety for Cloud Setting with Semi Trusted Third Party (DaSCE), a data security system that provides (a) key management (b) access control, and (c) file assured deletion. The DaSCE utilizes Shamir's (k, n) threshold scheme to manage the keys where k out of n shares are required to generate the key.

Keywords : ABE, RSA, Diffie-Hellman, Elgammal, DES, Shamir(k,n) Techniques

I. INTRODUCTION

Cloud computing is a promising evaluating standard and has shown large potential for managing hardware and software placed at third party, Which relieves the customer from managing complex infrastructure [1, 10] Storing Data in cloud has many advantages as Cloud has efficient access mechanism of data and an efficient retrieval mechanism. In addition, Attribute Based Encryption (ABE) has proved to be efficient in data security. As the name suggests this encryption makes The data available to users whose attributes satisfy the access policies defined by the data owners. Currently when access policies are changed, cloud has to upload the data in it to the local site, change the access policy and then add back the data. This involves heavy communicational and computational load.

II. METHODS AND MATERIAL

A. Related Work

Firstly, in this user has to register to become a member in cloud, and the registration process is in java. Once they registered user has to choose some attributes (e.g. name, email, address etc..,) and also give some user defined attributes to encrypt their policy file which is created while the process of uploading. This Attribute Based Encryption performed using Elgammal algorithm. Attribute Based Encryption is used while policy setting. After finishing the above procedure, authentication process takes place between user and the key manager with the help of Diffie-Hellman algorithm. Then the user will encrypt their file using secret key provided by Cloud to the user based, on user attributes and then it will upload into cloud and the policy file is generated concurrently and it contains username, filename and access permission by default user will be allowed for the process. Now user breaks up secret key into n shares (S1,S2...Sn) using Shamir key sharing technique and user encrypts their i-th key share with public key if i-th key manager.

In addition, the keys are splitted and given to the key manager in the encrypted form. If users need to download their file, then they will send request to key-manager with appropriate attributes. Key- manager will check their attributes and decrypt the appropriate users policy file and check the users file admit approval validate user, now key- manager will decrypts user secret key by using their own private key and provide decrypted i-th share to the requested user. The secret key will be reformed by shamir secret scheme only if the attributes and credentials are proven. Now user will

receive their secret key, download their file, and decrypt using their secret key.

In this phase user will set revocation and renewalling of policies, for policy revocation user send revocation request to the key manager. Revocation is nothing but user will remove all the policies that he/she set before. User policy revocation request send to key manager, they delete all the policies of the user, in policy renewal key manager will allow to renew the user existing policy. Once he/she got approval from key manager user will renew their policy. Now key manager will generate new set of keys and encrypt the user's policy file by using user's new policy.

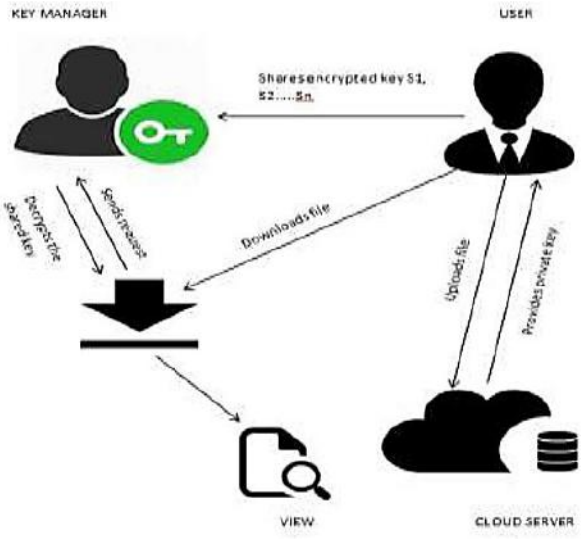

Figure 1. Architecture Diagram

Now, the above architecture diagram explains how the app works. The user has to Login by their default, user defined attributes, and policy file is created simultaneously. While uploading the file, secret key will be generated and is provided to the user. User breaks the secret key and encrypts their key share with public key of key manager. Now key manager will decrypt user secret key by using their own private key and they provide decrypted share to the user. If users need to download their file, then they will send request to Key-Manager with appropriate attributes. Key-Manager will check their attributes and decrypt the appropriate user policy file and check the user's file access permission for authenticate user. User policy revocation request send to key manager, they delete all the policies of the user, in policy renewal key manager will allow to renew the user existing policy.

B. DaSCE

The DaSCE makes usage of both symmetric and asymmetric keys. The privacy and honor services for fact are providing through symmetric key that are protected by expending asymmetric keys.

For secure show of keys, a conference key is recognized between client and KM through STS protocol. To evade man-in the middle attack. Together client and KM are genuine by using cardinal signatures.

1. User starts term formation and needs for asymmetric keys.
2. User and Key manager validate each other and create term.
3. Key manager makes asymmetric keys and sends open part to client.
4. User makes encryption actions over facts and symmetric keys.
5. User sends encrypted keys to the cloud.
6. Eradicates duplicate of keys.

III. RESULT AND DISCUSSION

Experimental Results

The first screen is a register screen wherein we can register ourselves. After registering, we have to upload a data in cloud for security .Then it will generate secret keys to user and shared to key manager in encrypted form the user can download as long as he is defined to be a user who can download by the policy. The user is verifies whether authorized by with the help of ABE key. If he is a user who tries to download, send request to key manager with appropriate points. Key manager checks and provide permission to user.

IV. CONCLUSION

Hence, we proposed and developed the DaSCE protocol, a cloud storage security system that provided key-management, access control, and file deletion. The key management was accomplished using (k, n) threshold secret sharing mechanism.

V. FUTURE ENHANCEMENTS

Policy File Encryption Policy files are generated When user upload their files in cloud. Inside the policy file contains username, filename that is upload by the user and access permission then Key Manager will encrypt the policy file by using user attributes.

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Detecting File Repeatation Using Convergent Encryption Scheme on Cloud

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ABSTRACT

Detecting repeatation of data in a cloud is technique of removing duplicate copies of data. It is widely used in cloud to save space and bandwidth. However, single copy of each file stored in cloud server even if many number of users owns that single copy. As a result, the de-duplication technique increases the storage usability while decreasing the reliability. By which the every user encrypt the file before uploading. The confidentiality on data is made by using convergent encryption algorithm, which also detects data repeatation. In convergent encryption scheme a user or data owner derives the key from the file content and encrypts the file with that key. In addition the user generate the tag for that file copy and put it into the data center, such that the tag is used for detecting repeatation of data on cloud.

Keywords: De-Duplication, Proof of Ownership, Convergent Encryption, Confidentiality.

I. INTRODUCTION

Cloud storage is a model of networked enterprise where data or files are stored in virtualized pools .It motivates enterprises and organizations to storage of the outsource data to cloud service provider. Detecting data repeatation is a technique where a single copy of data or file is stored on cloud and it provides data link to the user. The user needs to check whether the file is existing or not on cloud when they are uploading the file into the cloud. Here the concept of detecting repeatation of data is used to whether the data or file is already exists or not. Now day's continuously increasing number of user and the size of their data, de-duplication technique to greater extent for cloud storage.

There are two levels of de-duplications are take place. One is file level de-duplication and another one is block level de-duplication. The file level de-duplication refers to the entire data or file content and the block level de-duplication method refers to the fixed or variable size of data.

To make secure de-duplication we need to use a few security mechanisms. In normal encryption, different files and different keys are producing different cipher text and same file with different keys producing different Cipher text.

This will create problems for storage server, they will have to save these different cipher texts for the same file it will create a memory problem. The convergent encryption scheme algorithm [1] [5] providing better solution for that problem. Using any hash function such as SHA, the hash value for the files is generated. Since, both files are same they will produce same cipher text. Convergent key encryption uses this hash value as key to encrypt the files. The simple idea behind convergent encryption is same file producing same cipher text since, keys and files are same.

II. METHODS AND MATERIAL

Related Work

The client side de-duplication enables to send data to directly to the cloud storage. In client side de-duplication the user can check whether the data is duplicate or not. If the data is not duplicate then the user can be directly send the data to the cloud storage. If the

data or file is already present on the cloud storage the proof of ownership protocol is performed. The proof of ownership protocol [2] [6] [8] provide the solution to keep the security on client side de-duplication check. Here the client and server can act as prover (i.e., user) and verifier (i.e., storage server). In the proof of ownership protocol a client can prove to the server that the client has exactly target files.

By using proof of ownership protocol [2] [6] to keep the security on client side de-duplication [3]. The verifier (i.e.,storage server) derives the short value from a file and generates set of challenges and sends them to the client. The prover (i.e., client) responds with the proof of file ownership. It is passing to the server if and only that are same and the proof is correct.

In our de-duplication mechanism, we deploy both file and block level de-duplication. Uploading a file to the storage server the user initially, examine the file level de-duplication. If the file is already, present then the all its blocks must be duplicated. Otherwise the user further checks the block level de-duplication before uploading to the cloud storage. The tag generation algorithm which helps to the client to generate set of tags and put it into the file content before uploading a file into the storage server.

III. RESULT AND DISCUSSION

1. Implementation Details

A. Existing System

In the previous work the computational load at cloud server and cloud user is too huge for tag generation. The security considered in the previous work prevention of leakage of side channel information.in order to prevent the leakage of side channel information we use the tradition of proof of ownership protocol between client and cloud server.

The using of traditional algorithms will create the problem for storage server, because of in traditional algorithm the same file producing the different cipher text.

Disadvantages

- Data loss and lots of duplicate files.
- Huge computational load at client side.
- Data confidentiality is not achieved.

B. Proposed System

In our proposed system the data confidentiality is achieved in client side data or file de-duplication by performing the proof ownership protocol .which allows the user to directly examine the data de-duplication. By using convergent encryption algorithm the user can encrypt the file content before uploading. The challenges of de-duplication on encrypted data or file is prevention of dictionary attack.

Advantages

- Data confidentiality can be achieved.
- Duplicate files are mapped with single copy of existing file in the cloud.
- Data integrity including tag consistency, can be achieved

C. Convergent Encryption Algorithm

Convergent encryption also known as content hash keying is a cryptosystem that produces identical cipher text from identical plain texts. Which used for removing duplicate files from storage server without the provide having access to the encryption keys

Convergent encryption [1] [5] provides data or file confidentiality in de-duplication mechanism. In convergent encryption scheme, if both files are same they will produce the same cipher text. The convergent encryption scheme algorithm uses the hash values as a key to encrypt the files. The user or data owner derives the convergent key [1] [5] [7] from the file content and encrypts the file content with the convergent key. In addition, the user extract the tag (i.e., hash key) for the file content, such that the tag will be used for the detect the repeatation (i.e., duplicate) of data file.

- KeyGen(M) : The key generation algorithm takes file content M as input and outputs the convergent key ckM of file M.
- Encrypt(ckM,M) : The encryption algorithm takes the convergent key ckM and file content M as input and outputs the cipher text ctM.

- Decrypt(ckM,ctM) : The decryption algorithm takes the convergent key ckM and cipher text ctM as input and outputs the plain text M.
- TagGen(M) : The tag generation algorithm takes file
  Content M as input and produce the output as tagM of M. We allow TagGen to generate tag from the corresponding cipher text by using tagM = TagGen(ct), Where c = Encrypt(ckM,M).

Before uploading a file, the client can duplicate check with cloud server to verify if such a file content is already stored on cloud storage or not. If there is duplicate proof of ownership (POW) protocol [8] [9] [10] execute between cloud client and cloud server. Before uploading the file content to the cloud server, tag generation algorithm, which helps to the user to generate tags (i.e., TagGen(M) and put it into the file content and send them to the cloud server. Tag generation is used to detect the duplicate files. If no duplicate is found the user will processed further steps.

If user need to download a file M from cloud storage. The user downloads the encrypted file (i.e., ckM, M) from cloud storage. It needs to decrypt the file by recovering the convergent key (i.e, ckM) and using these key the user can decrypt file to obtain the original plain file (i.e., M).

2. Security Analysis

The file has been encoded (i.e., cipher text) by using encryption key before stored on the cloud storage. Thus, make the data confidentiality in cloud. In our construction the key server generate the convergent key and hash value for the duplicate check. If any adversary cannot generate valid convergent key without the private key.

Even if the file is predictable by the adversary cannot guess the file with brute- force attack. If the adversary cannot allowed to collude with the key server.

By using the security mechanism of proof of ownership protocol [2][8][9] scheme, any adversary without the file cannot convince to the cloud storage.

D. System Model

Cloud Clients

The cloud clients or user outsource the data to the cloud server and can access the data from cloud storage server. The user or client can be upload a unique file or data but does not upload the duplicate file.

Cloud Storage Server

The cloud storage provide the facility of outsource the data service to the user. Where, data's are stored in the virtualize resource of storage pools. Only the single copy of these files is stored on cloud storage. All data copies and tags of these files are stored in the cloud storage. These tags used for duplicate check.

3. Architecture

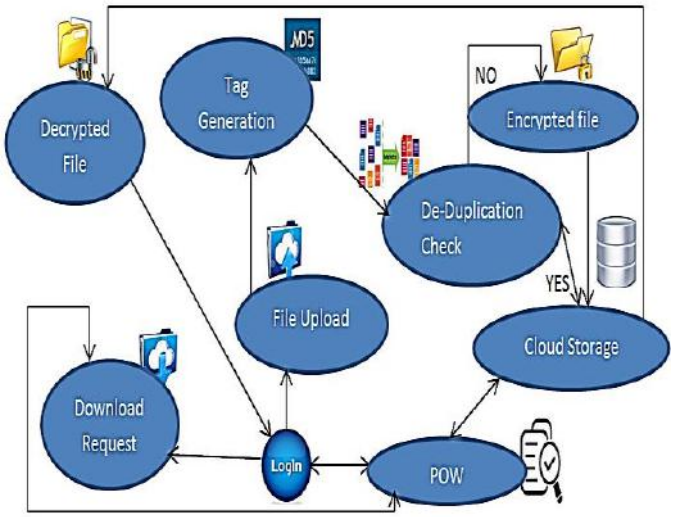

Figure 1: System Architecture

IV. CONCLUSION

We proposed the de-duplication system to increase the Data confidentiality and improving the data reliability while outsource the data to cloud storage. In addition it enables secure de-duplication through the proof of ownership protocol to prevent the leakage of side channel information. In our advanced construction motivated by the fact that the user always need to encrypt their data before uploading on the cloud.

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ECA Based Device Automation Using Internet of Things

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ABSTRACT

The automation industry has experienced rapid growth over the last decade. The aim of the proposed work is to automate appliances in Home/Industry using Internet of things (IoT). The system focuses on human-friendly technical solutions for easy control of appliances. Embodied conversational agent (ECA) based Android application is used to receive speech input from the user. Simple object access protocol (SOAP) is used to transfer the information from client to server. The remote server processes the commands received and translates them into actions of switching particular appliances ON or OFF. A novel embedded system has been designed, implemented and a small-scale prototype is developed and tested.

Keywords: Internet of things (IoT), Embodied conversational agent (ECA), SOAP,ARM7 controller, Embedded system.

I. INTRODUCTION

With the advancement of Science and technology people's standard of living has improved and people are moving towards automated and intelligent home control systems. At present, blue tooth is used to control devices in remote location which has limited monitoring range, energy consuming, suitable for indoor localization and so on. Therefore, a device control system is built with user friendly Android application.

The proposed system is aimed at designing a device which can control the home appliances through smart phones using Android application. An ECA based android application is developed which enables us to control device through passing voice as input signal and it is transmitted to a remote server. Micro controller is connected to the server which in turn is connected to a relay to which the devices are directly connected. User can switch on/off the appliance through the application and the message is transmitted to the server, server on receiving the command checks the existing database and generates corresponding interrupt signal. The interrupt is received by the micro controller and it controls the relay which indirectly controls the devices.

In existing system, the devices will be controlled either by manual operation or Bluetooth which has limited range of control over the device. The relay acts as a switch and one end of relay is connected to the AC supply and another is connected to the appliance. Thus based on the command sent the appliance is switched on/off .We have used ARM 7(LPC 2148) micro controller. The proposed system is independent of monitoring range after logging into the control interface, users can control any home appliance connected to relay such as lights, TVs and air conditioners from remote location from anywhere and at any time thereby improving the quality of life.

II. METHODS AND MATERIAL

The system has been designed for measurement of electrical parameters of appliances. Important functions to the system are the easy to model, setup, and use. Managing electrical power consumption of various appliances along with supply voltage and current is the key parameter.

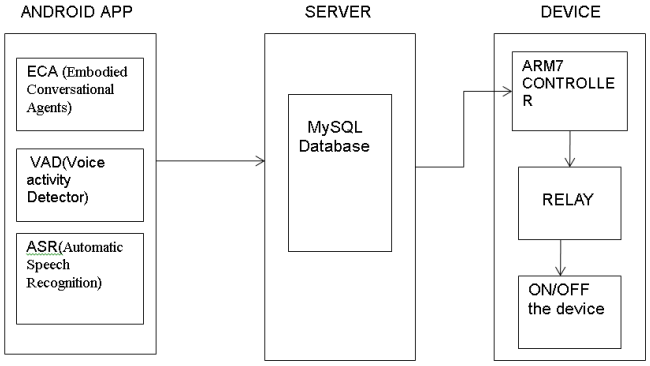
Proposed System enables the consumer for flexibility in controlling the devices: The users can switch the device on/off in three different ways.

- **Mechanical control:** Based on the electricity tariff conditions, the appliance can be controlled with the help of smart software. This enables the user to

easily auto switch off the appliances during the electricity peak hours.

- **Physical control:** An on/off switch is provided to directly intercede with the device. This feature helps the user to have more flexibility by having manual control on the appliance without following automatic control. Also, with the help of the application developed for monitoring and controlling user interface, user can control the device for anytime use. This feature has the higher priority to bypass the automatic control.
- **Isolated control:** The smart power monitoring and controlling application system has the feature of interacting with the appliances remotely through internet. This enables user to have flexible control mechanism remotely through a secured internet web connection. This sometimes is a immense help to the user who has the habit of forgetting the status of appliances while away from house. The user can monitor the condition of all appliances and do accordingly.

The architecture diagram as follows:



List of modules used in application development are:

- **Voice Activity Detector (VAD):** The Voice Activity Detector role is to discriminate the user's voice frames from those containing noise. This reads the digitized audio samples acquired from a microphone and sends the filtered raw audio to the ASR. The exact implementation of the VAD module is based on the Sphinx Base library, which was modified so it can work with the OpenSL ES native audio libraries present on Android.
- **Automatic Speech Recognition (ASR):** The Automatic Speech Recognition module performs speech to text conversion. It takes the input with the user's speech that come from VAD module and sends the resultant text to the CE. In the proposed system, the ASR module is based on the Pocket Sphinx speech recognition library.
- **Server Communication:** The raw audio is filtered and gets matched with the audio base library. The implementation of android voice to text conversion which is connected to the server by entering the IP address. Received input text is compared with database and corresponding interrupt is generated. It is sent to the controller. Server communication is done by using web services based SOAP protocol.
- **Control interface:** This Interface translates the commands said by then user to a format that can be understood by the target applications or services running on the same device or accessible remotely. This module is domain specific and has to be re-designed or adapted for every new target application.

The interrupt given to the device :

INTERRUPT	ACTION PERFORMED
0	OFF
1	ON

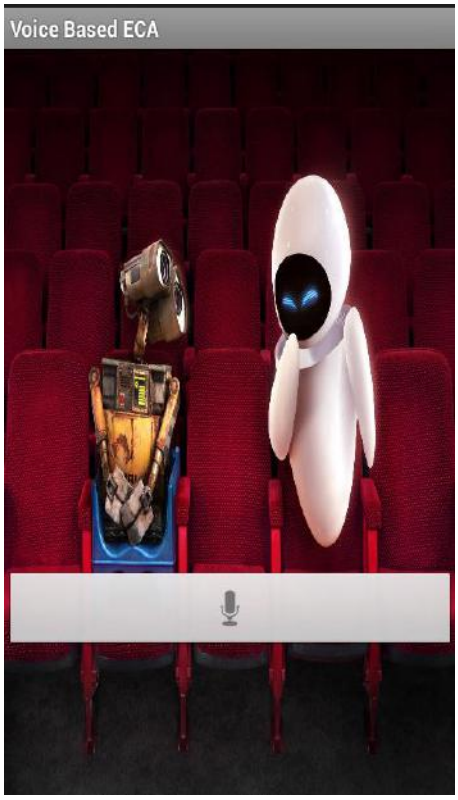


Figure a : ECA based android interface

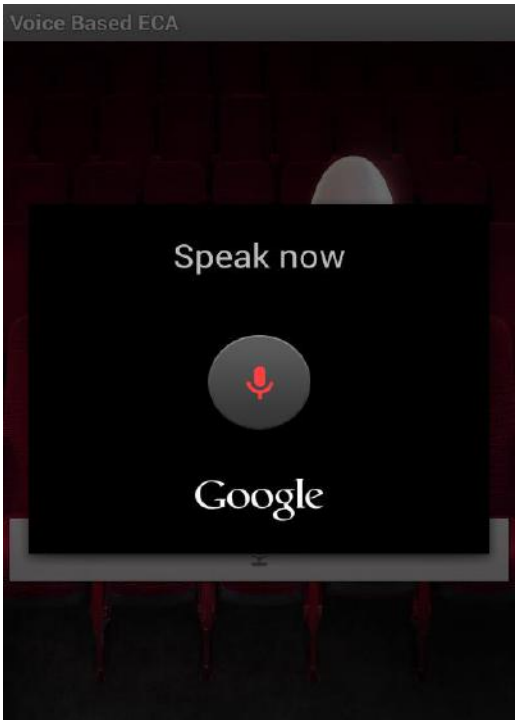


Figure b : Speech is given as raw input.

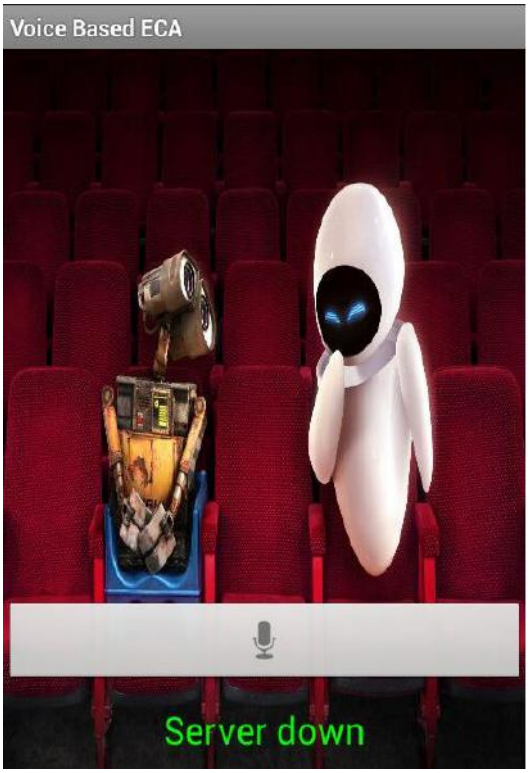


Figure c : After giving speech input.(It shows "Server down" message because the application is not connected to server.)

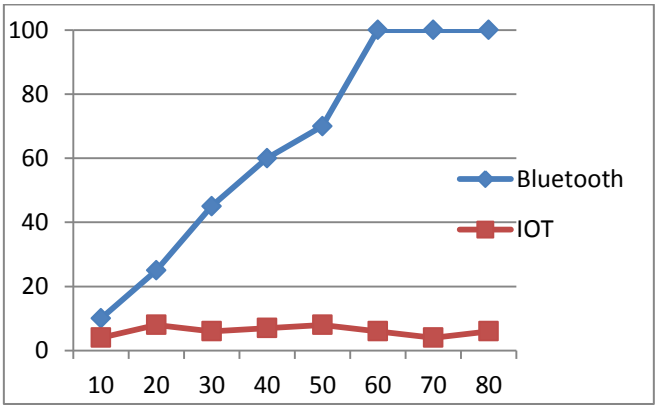


Figure d : Performance graph for distance(x-axis) and connectivity failures(y-axis) occurring in Bluetooth and Internet of things

III. RESULT AND DISCUSSION

This section describes the results obtained in the existing system. We propose this project for the development of wireless enabled smart systems that can control of

localized devices or device networks and to achieve seamless monitoring with a Smart Phone through exchanging of information between the Smart Phone and the managed devices. The hand-held devices has limited computational power compared then desktop computers. So the most common architectures for ECA-based mobile applications rely on an external server that performs the processor intensive tasks, such as speech processing, language understanding and text-to-speech. It designs mobile-based device monitoring and control, which can be applied in both fixed and moving LAN scenarios, such as vehicle electronics, power and energy systems, etc.

Speech is given as an input given through android application which is processed and converted into text and transmitted to a remote server through internet. Server on receiving the text compares it with the database and generates a corresponding interrupt signal. Using RS232 cable the interrupt signal is given to the micro controller. This in turns controls the device.

IV. CONCLUSION

We have portrayed a speech processing system which can control the remote device. The project which is presented is about speech to text conversion using the android application and with the help of an arm7 micro controller which generates interrupt to control the device. The advantage of this system is that it provides user interface. Using this, we can automate any devices like light, fan, irrigation motors etc. Expect voice and sound recognition technology to allow homeowners of the future to control the electronic devices inside of their homes by merely uttering a sound or word.

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An Efficient Group Key Agreement Protocol for Online Social Network

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ABSTRACT

The objective of this project is to study a group key agreement problem where a user is only aware of his neighbors while the connectivity graph is arbitrary. In our problem, there is no centralized initialization for users. A group key agreement with these features is very suitable for social networks. Under our setting, we construct two efficient protocols with passive security. We obtain lower bounds on the round complexity for this type of protocols, which demonstrate that our constructions are rounding efficient. Finally, we construct an actively secure protocol from a passively secure one.

Keywords: Data Sharing, Data Privacy, Diffie Hellman, Lower Bound.

I. INTRODUCTION

Key agreement is a mechanism that allows two or more user two share a secret key in a secure manner. Almost, all the protocols assume a whole connectivity graph which means any two users can communicate directly. In, any social network a post or commend can be communal publicly. Even if it is shared privately it can be accessed by the mutual friends. There is no secret sharing of information between two users. So to make a secure transmission of information between two users, we use RSA algorithm. Using this algorithm we encrypt and decrypt the data files. The user can transmit the data files with the help of private key and group key. Both the keys are used to transmit the information in a more secured form.

Related Works

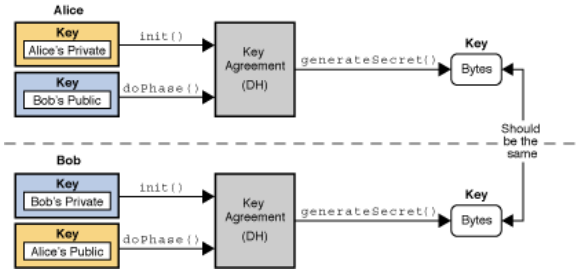
A rekey scheme can be defined as a centralized dynamic broad cast encryption, where the authority maintains the group and updates the group key. The drawback of this system is that the user key will be updated whenever the group changes. So we cannot adopt a rekeying scheme as a group key agreement. In the previous work, in any social network the information can be shared publicly. Even if it is shared a private key it can be read by the mutual friends and users. Key pre distribution system is a non-interactive group key agreement. In this case the shared key of a given group is fixed. The drawback of KPS is that if the number of user increases then the key size also increase. Another drawback is that group key of a given group cannot be changed even if it is leaked. Traitor tracing is a special type of broad cast encryption which can trace the pirate user. If the user builds an illegal decryption device, it will be identified. It has the drawbacks of broadcast encryption.

II. METHODS AND MATERIAL

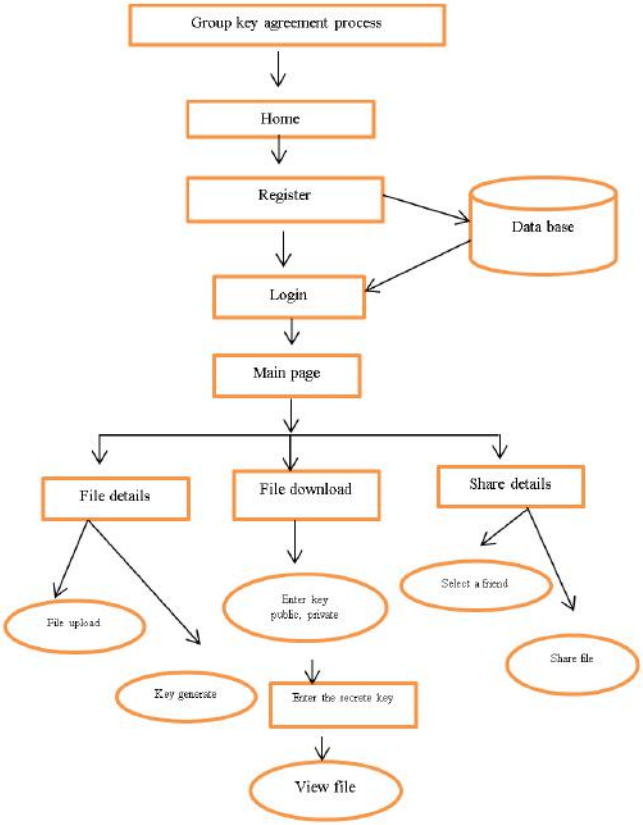
The project is proposed to make a protected transmission of information in social networks between the users. The group key and private key provide security. While, the user needs to transmit secret information to a particular user, the user can transmit it with the help of private key and group key. Since, the group key is publicly available; the user with correct matching key with the transmitted private key can only decrypt the information. The public key can be created using RSA algorithm for encryption and the private key can be created using attribute based system for decryption. Thus everyone else is denied to

access the information. So this system is more secured when compared to existing methodologies.

Architecture Diagram



Data Flow Diagram



Attribute Based Encryption:

Attribute-based encryption is a kind of public-key encryption in which the secret key of a user and the ciphertext are reliant on upon attributes (e.g. the country he lives, or the kind of subscription he has). In such a system, the decryption of a ciphertext is likely only if the set of attributes of the user key matches the attributes of the ciphertext. A crucial security feature of Attribute-Based Encryption is collusion-resistance: An adversary that holds several keys should only be able to access data if at least one individual key grants access.

- Setup. A randomized algorithm Setup(k) takes in as input a security parameter and provides a set of public parameters (PK) and the master key ideals (MK).
- Encryption. The algorithm Enc(M, T , PK) is a randomized algorithm that proceeds as input the message to be encrypted (M), the entrée structure T which needs to be satisfied and the public parameters (PK) to output the ciphertext CT. We can say, that the encryption system embeds the access structure in the ciphertext such that only those users with attributes satisfying T will be able to decrypt and retrieve the message M.
- Key-Generation. The KeyGen(MK, PK, A) algorithm proceeds as input the master key values (MK), the public parameters (PK) and the attribute set of the user (A), and yields for the user a set of decryption keys SK which confirms the users possession of all the attributes in A and no other external attribute.
- Decryption. The decryption algorithm Dec(CT, SK, PK) takes as input the ciphertext CT, the user secret keys SK and the public bounds PK, and it outputs the encrypted message (M) if and only if the attributes A embedded in SK satisfy the access structure T which was used while encrypting the ciphertext CT. i.e If T (A) = 1 then message M is output else, it outputs.

RSA Algorithm:

The RSA algorithm involves a public key and a private key. The public key is used for encrypting message. The intention is that messages encrypted with the public key can only be decrypted in a reasonable amount of time using the private key. The basic principle of RSA is to find three large positive integers *e*, *d* and *n* such that the modular exponentiation for all *m.*

$(m^e)^d \bmod n = m$

Additionally this relation also implies for some operation is convenient,

$(m^d)^e \bmod n = m$

1. Group Key Agreement:

The group key agreement with an arbitrary connectivity graph, where each user is only aware of his neighbors

and has no information about the existence of other users. Further, he has no information about the network topology. Under this setting, a user does not need to trust a user who is not his neighbor. Thus, if one is initialized using PKI, then he need not trust or remember public-keys of users beyond his neighbors.

2. Key pre-distribution system (KPS):

In this case, the shared key of a given group is fixed after the setup. If a group is updated, then the group key changes to the shared key of the new group. Further, computationally secure KPS is only known for the two-party case and the three-party case. KPS with a group size greater than 3 is still open.

3. Lower Bound:

Broadcast encryption is a mechanism that allows a sender to send a group key to a selected set of users. In a symmetric key based broadcast encryption, the sender is a fixed authority. In this case, the user key size is combinatorial lower bounded. In addition, it is secure only against a limited number of users. In a public key broadcast encryption, the key size problem can be waived. The cipher text size depends on the number of users and hence could be large (e.g., it is O (p n) in for n users). Under our setting, we construct two efficient passively secure protocols. We also prove lower bounds on the round complexity which demonstrates that our protocols are round efficient. Finally, we construct an actively secure protocol from a passively secure one.

4. Diffie-Hellman protocol:

The computationally secure group key agreement in a passive model. This started from the Diffie-Hellman protocol. In the following, we use the tuple (a; b; c) to represent a protocol that has a rounds, b elements of messages per user (the unit is a field element in Z_ p for a large prime p) and computation cost c. designed a group key agreement for n users in a ring with an efficiency tuple Their protocol assumes a complete connectivity graph. The proposed protocols in the random oracle model, where the interesting construction has an efficiency tuple.

III. RESULT AND DISCUSSION

Registration

We are creating a website and sign up the page for registration. And the register page is viewed then filled our details and submits the registration. Then the server generates the group key and private key.

Main Page

We are creating the user name and password by using the registration. The user can login through their username and password. After the login main page will appeared.

The main page contains the view member page, file upload, share file and file download. It is based on the user opinion to access the file (ie. Upload and sharing).

Download

To download a file we must need a private key and public key. Key was checked by the server. If the key is not matched we cannot download the file.

IV. CONCLUSION

We studied a group key problem where there is a secured transmission of information between the users. It is very suitable for applications such as social networks like facebook. In facebook the post or messages can be accessed by mutual friends. So, secrete sharing of information between user is not possible. In this project we create a private key for each user in this group. we construct two efficient protocols with passive security. So it maintains secure relationships between the users.

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Child Sexual Abuse in India : Socio-Legal Issues

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ABSTRACT

"Child Sexual Abuse or child molestation is a form of child abuse in which any person uses a child for sexual stimulation. Child Sexual Abuse can be of many kinds like touching in private parts, taking obscene photos, showing child pornography picture to child etc. In India, sexual abuse against girl child has added fuel to the fire and it had made its place in one of the hot topic for debate and research in India. In Delhi, a girl aged 5 years was brutally raped by 2 men and she was left in the bushes with bleeding in her genital area. A girl who don't know the meaning of rape is raped and due to the failure of our executive as well as judiciary system still now the culprit are moving free in search of new victim and are not arrested yet due to absconding. A survey by United Nations International Children Education Fund (UNICEF) on demographic and health was conducted in India from 2005 to 2013 and it reported that 10% of Indian girls experience sexual abuse between 10-14 years of age. It is believed to be true that mostly the cases of Child Sexual Abuse include the people who are well known with the victims. As a result of this, the family members don't go to police station for complaining about Child Sexual Abuse. Child Sexual Abuse in India is governed by 'Protection of children from Sexual Offences Act 2012'. Instead of having a strong law for Child Sexual Abuse, due to the lack of awareness among people and old mentality of harm to reputation of families in society, they avoid to register complaints. Through this research paper I will discuss about the socio-legal issues of Child Sexual Abuse and its remedy."

Keywords: Child Sexual Abuse, Protection of children from Sexual Offences Act 2012, socio-legal issues.

I. INTRODUCTION

According to Medem, child sexual abuse is "any sexual act with a child performed by an adult or an older child". "It is a fact that millions of girls and boys worldwide are being sexually abused within homes and outside." As stated above in the abstract that Child Sexual Abuse in India is a hot topic for debate and research in India, it had really provided the researchers a wide area of research and had made its place in the society as a very big social problem."Child Sexual Abuse has been a reality that children in India have been facing continuously irrespective of their gender or societal strata they belonged to". In India people consider their reputation above all. Even in cases of sexual assault of small girl, no complaint is registered due to the reputation of families. This is injustice to the victim and this motivates the other criminals to do such kind of acts more and more with other child. The laws relating to the Child Sexual Abuse are given in the **Protection of Children from sexual offences Act, 2012**. Before this Act, the cases of Child Sexual Abuse were dealt under the **Indian Penal Code (sec-376,354,509).** "In 2007, **the ministry of Women and Child development** released a study report on child abuse. The report discusses incidence of child abuse nationwide. It is estimated that **150 million girls and 73 million boys under 18** have been subjected to forced sexual intercourse or other forms of sexual violence". In 2013, **India's Hell Holes: Child Sexual Assault in Juvenile Justice Homes,** the Asian Centre for Human Rights said that sexual offences against children in India have reached epidemic proportion." "The report stated that **more than 48,000 child rape cases** were recorded from 2001 to 2011 and that India saw an **increase of 336%** of child rape cases from **2001 (2,113 cases) to 2011 (7,112 cases)."**

As said by Aamir Khan in popular Television show in India, **Satyamev Jayate:**
"Aamir quoted from a survey conducted **in 2007 by the Women and Child Development Ministry and the NGO Prayas in association with UNICEF and Save the Children across 13 states and with a sample size of 12,447.** The shocking details were laid bare to the entire nation.

The survey found that **53.22 per cent** of children reported having faced one or more forms of sexual abuse. Andhra Pradesh, Bihar, Assam and Delhi had reported the highest percentage of such incidents at that time. In 50% of the cases, the abusers were known to the child or were in a position of trust and responsibility and most children did not report the matter to anyone.

The National Study on Child Abuse is one of the largest empirical in-country studies of its kind in the world. This study also complements the UN Secretary General's Global Study on Violence against Children 2006."

II. METHODS AND MATERIAL

A. Protection Of Children From Sexual Offences Act, 2012 (Highlights) :

- The act has defined a child as any person who is below the age of 18 years and it provides protection to all those children who are below the age of 18 years "from the offences of sexual assault, sexual harassment and pornography."
- This is the first time that the Act has listed aspects of **touch as well as non touch behavior** (eg: photographing a child in an obscene manner) under the ambit of sexual offences."
- "The Act incorporates **child friendly procedures** for reporting, recording of evidence, investigation and trial of offences."
- If a person **attempts to commit an offence under the Act** will be liable for punishment for up to half the punishment that has been prescribed for the commission of the offence.
- This Act has also provided for the **Abetment of the offence** that is same as the punishment given for the committing of offence. This will also cover trafficking of children for sexual purposes.
- "For the heinous offences of Penetrative Sexual Assault, Aggravated Penetrative Sexual Assault, Sexual Assault and Aggravated Sexual Assault, the **burden of proof** is shifted on the accused."
- The Act also says that media cannot or is barred from **disclosing the identity of child** without the permission of court required.

B. Incidents Relating To Child Sexual Abuse In India:

- In kanyakumari, a girl named Shanta was a daughter of daily labourer and she was sexually abused by her neighbour, she told her parents about this and when the family went to the police station for lodging a report, the police did not register their complaint as the person who sexually abused Shanta was an influential person and was in a position to dominate others. As the parents of Shanta knew about Childline they asked for the assistance and with the help of Childline they succeeded in registering the complaint. After this, the family was harassed further and the police also did not help the family. So the Childline took the case and passed it to the state women commission and the commission arrested the person and imprisoned him. The girl was sent for the counseling and she is continuing her studies now.
- A recent incident of Bhilai of February in which a nursery going school girl was sexually abused by the sweeper of the school for about 3 days. The girl told the incident to her parents and the parents took her for medical examination and it was clarified by doctor that it is a case of molestation and school on the next morning. A complaint was registered and the sweeper was taken under custody.
- "This incident has shocked the entire security as well as state, but the reality is that at least four children below the age of 14 years were found to have been raped at different parts of Chhattisgarh every week in 2015 and 2014 with the cases registered under the Protection of Children from Sexual Offences Act and National Crime Records Bureau. The record of the National Crime Records Bureau states that after Uttar Pradesh, West Bengal, Madhya Pradesh, Maharashtra, Delhi and Tamil

Nadu, Chhattisgarh recorded the maximum number of child abuse or sexual offence cases in a year."

- Sunitha Krishnan is an inspiration to all women. She was gang raped at the age of 16 but she didn't stop and started her own anti-trafficking NGOs for the rehabilitation of the women who are sex trafficked instead of facing serious death issues.

C. "Good Touch, Bad Touch Workshop For Children:

Aamir conducted a 'Good Touch, Bad Touch' workshop for children across the nation to teach them about the importance of understanding sexual abuse, recognising predators and confiding in their parents if abuse happens. Through interactivity and a series of diagrams he taught the children the importance of having a 'bodyguard' or someone they implicitly trusted to take care of them. Aamir appealed to people to press the government to pass the Protection of Children from Sexual Offences Bill in Parliament and pledge their support against child sex abuse by SMSing Y to 5782711."

III. SUGGESTIONS

- The Protection of Children from Sexual Offences Act should be implemented strictly so that any person before committing such kind of sexual abuse think of the circumstances which will be faced by commission of such offence.
- Also there must be setting up of some rehabilitation centers for the victims of such offence so that they recover soon.
- Parents also play a vital role in the recovery of the child from the mental trauma which her daughter is going through at the initial stage after such incident of sexual abuse also they should support their child and should also register the complaint without thinking of any societal aspects of their reputation also they must start telling about all the abuses and make them understand that if anything happens with them they should first come to the parents and tell them about it. There must be a good bonding between the child and the parents so that the child doesn't hesitate to share these incidents with parents.
- As in the incident of rescuing Shanta from the sexual abuse which she was going through, the police did not registered the complaint initially which is injustice to the victim Shanta and the government should take strict action against these kind of police officers.
- Every city should have a call centre which receives call for such cases and immediate steps should be taken for registering complaints of such cases in the police station and the police who deny registering the complaint, action should be taken against them.
- Active Non-Governmental Organizations like Childline (1098) should be popped out in every state so that they can provide relief to all the victims of sexual abuse.
- Schools also play an important role in providing knowledge about sexual abuse and should also discuss the problem of sexual harassment with the students.
- Awareness should be spread in the society among people regarding the social evil of child sexual abuse so that the parents can safeguard their child from such evil.

IV. CONCLUSION

Through this research paper, I got to know about the Protection of Children from Sexual Offences Act, 2012 popularly known as POCSO Act. The Protection of Children from Sexual Offences Act, 2012 was passed on May 22, 2012. I got to know about the data collected by different surveys regarding Child abuse in India. The very popular show among Indians i.e., Satyamev Jayate also included an episode regarding Child Abuse in India which gave the data of Child Sexual Abuse. Also, the society plays an important role in implication of the law. If people become alert and give respect to the laws no one can dare to do anything against the laws.

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Effectiveness of a Mobile Educational Learning Using a QRBased U-Learning for Personalized Tutoring

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ABSTRACT

The main aim of the project is to propose a QR-based U-Learning Material Production System (QR-ULMPS) to develop context-aware u-learning environment during outdoor learning activities. As portability and mobility are necessary factors for an authentic outdoor learning experience, our QR-ULMPS needed to incorporate versatile mobile devices. With the help of word net tool and natural language processing technique, synonyms and antonyms are being generated for the difficult words in context aware u-learning materials. We can tag images, videos and audios for the content to reduce the technical barrier for the u-learning student's. The application of QR code technology not only support students in accessing online information materials via mobile devices, but also fulfilled all of the context-aware ulearning environment needs of teachers using the system. Issues are resolved by QRULMPS during conventional outdoor teaching approaches, which are often very time-consuming and labor intensive.

Keywords: Context-Aware Ubiquitous Learning, Natural Language Processing, Outdoor Learning.

I. INTRODUCTION

The learning aspects such as m learning are learning across multiple Interactions with portable technologies. New delivery mechanism is provided by the mobile learning model to overcome space and time limitations of traditional classroom learning [1], [2]. The context-aware ubiquitous learning concept is used to identify a novel learning environment, by which the students can be taught with the content appropriately at the right time and in the right place[3], [4].

The advancement of u-learning environment is done using the development of the radio-frequency identification. Using RFID technique, the learning behavior of students in the real world is recorded. However, many teachers lack coding skills and do not have sufficient Programming knowledge to use the RFID technique [5]. When dealing with the complexities of RFID tag production, during such situation it will be difficult for the RFID tags to be printed using traditional printers, it either requires industrial grade or specially designed printers. Especially when the RFID technique is used in a mobile context [6], [7]. During the use of Quick Response (QR) codes in conjunction with a context aware u-learning system, teachers used to create customizable context-aware ulearning materials without expert assistance. The QR code is capable of handling enormous information at a time. The integration of QR codes can connect users to information quickly and easily[8], while the low technical barrier of creating u-learning educational materials brings an easy accessibility to code readers Which allows teachers to build modern learning environments without any hassle. QR codes have become widely popular and increasingly used in mobile learning applications [9].

The students who are assigned to the advanced u-learning system attained desirable results than participants learning via conventional methods based on the results of Instructional Materials Motivation Survey. We believe that the proposed ulearning system is advantageous because it motivates students and allows

for higher levels of engagement, particularly during outdoor learning activities. Thus, we conclude that the u-learning system can create a learning experience that both interests and engages students.

The reminders are structured as follows: Section 2 briefly reviews the related work. The methods and materials are respectively introduced in the section 3. Finally, Section 4 outlines the result and discussion. Section 5 includes the conclusion of our project.

Related Work

1. U-Learning

The advancement of sensing technologies, such as RFID (Radio Frequency Identification), QR (Quick Response), barcode tags [10], [11] has brought us a new form of technology enhanced education. The characteristic of ubiquitous learning refers that the information can be appeared or found everywhere.

2. Radio-Frequency Identification

The RFID technique has spurred the advancement of context-aware u-learning Environments. With the help of the RFID technique, u-learning system can detect and record students' learning behaviors in the real world, and enables students to learn content found in the real world "actual space" rather than in cyberspace. It is not uncommon for educator to face a number of issues when working with RFID systems, particularly when dealing with the complexities of RFID tag production. This is because RFID tags cannot be printed using traditional printers.

3. QR-Code

QR codes can scan and encode large amount of data, but not limited to URLs, and text. A QR code allows educators to include teaching content in the u-learning content and QR code readers are used in mobile devices.

II. METHODS AND MATERIAL

The two main factors are mobility and port-ability that incorporate touch screen mobile device. The teachers are supported with QR based multimedia materials editing system which make it simple for the author's teaching content and to create QR codes. Admin has to process and manages the entire architectural system. Once the teacher is provided with new files they can automatically prepare customized u-learning material.

Once a multimedia material package is been created by the teacher, they are able to edit individual teaching contents to the code. QR codes embed data that links the

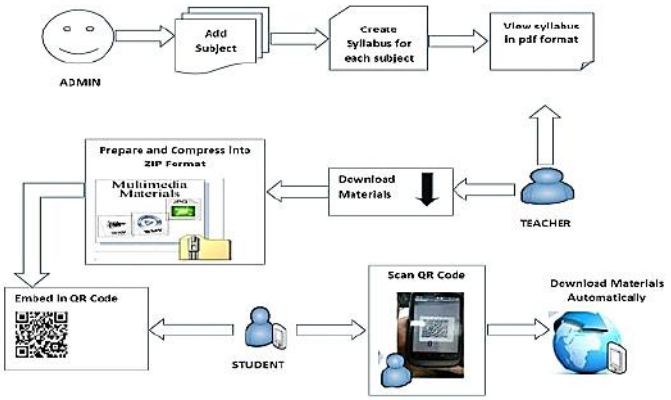

Figure 1: Architecture Diagram

Corresponding multimedia material package to the appropriate Content and makes it possible for the user using mobile device to scan QR codes placed in the existing real world and links them back to relevant class materials. Finally, the multimedia material server provides a dynamic web page for teachers to manage their collection of Ulearning materials.

The u-learning system will decode the internal information contained in the QR code, and using that multimedia material package will be coded. Then, the relevant materials designed by the teacher can be used by the students, without hassle directly from their mobile devices.

Teacher prepares the material based on context aware u-learning system, for Difficult words with synonyms using natural learning technique. To easily understand the concepts images, videos, audios are been tagged and hyperlink is used. The QR code application, automatically recognize the URL contents in the QR and redirect it to the browser in android and trigger the URL to download the U-learning material. The Ulearning material can be viewed in offline mode. Study Materials will be automatically downloaded after scanning the QR-code.

1. Syllabus Creation

In this module, admin login into QR U learning website. Then admin have to upload whole syllabus. The PDF contents of whole syllabus are parsed to text contents by copy paste operation. A new syllabus is created for that particular subject. Each and every subject syllabus is created in similar ways. Admin can view the entire syllabus.

2. Subject Allocation and Teacher login

In this module teacher should register the details like name, address, and subject specialization. Admin can view all the teacher details and allocate the syllabus to particular teacher. While login in QR u learning website the syllabus allocated by the admin will be shown and can be downloaded.

3. U-learning multimedia material production system

Teacher allocated syllabus are displayed by units. If the teacher select the unit x (unit 1) that particular unit syllabus will be displayed. Then teacher will choose the particular content in a unit syllabus. The teacher will upload the core content and relative content for the selected content in a unit syllabus. Inside the core content the important words are mapped and tags meanings.

4. QR-code generation and ULMPS

In this module the already created core content view by the teacher. When mapping is finished the teacher click to create multimedia material button. The material are compressed in to zip file format and mapped content are created a new java server page (jsp) page the page verified by the teacher and click to generate QR code. After the QR codes are generated, teacher provides the QR code to the student. The student scans the QR code in electronic devices (android mobile phone) and the related content is downloaded to student mobile.

III. RESULT AND DISCUSSION

Nowadays the researchers focus on the way of using new technologies in the current world to enable anyone to learn at anyplace at any time. With the help of smart mobile phones, contactless smart cards, handheld terminals, wireless communication and sensing technologies such as RFID or QR code enhances the learning system to detect the learning status of students in the authentic world and provide learning support to them, includes delivering supplementary learning materials and hints to the learning tasks. In the proposed system outdoor learning activity is done using offline reading. Such a form of technology enhanced learning has been named “context aware ubiquitous learning”.

IV. CONCLUSION

The advancement of QR-based U-Learning Material Production System (QRULMPS) that truly helps teachers to build a context-aware u-learning environment, which supports students in obtaining adequate knowledge during outdoor teaching activities. It provides engaging self-learning opportunities for students to review teaching content and brush up on related materials.

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The Eating and Cooking Qualities of Rice : A Review

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ABSTRACT

As a major cereal crop, rice (Oryza sativaL.) is crucial to food security for at least half the world population. After yield, quality is one of the most important aspects of rice breeding. Preference for rice quality varies among cultures and regions; therefore, rice breeders have to tailor the quality according to the preferences of local consumers. Rice quality assessment requires routine chemical analysis procedures. Eating and cooking qualities (ECQs) are important determinants of cooked rice grain quality. ECQs comprise three physical and chemical characteristics of starch in the endosperm: amylose content (AC), gel consistency (GC) and gelatinization temperature (GT). Grain quality is a general concept which covers many characteristics ranging from physical to biochemical and physiological properties. The advancement of molecular marker technology has revolutionized the strategy in breeding programs. The availability of rice genome sequences and the use of forward and reverse genetics approaches facilitate gene discovery and the deciphering of gene functions. A well-characterized gene is the basis for the development of functional markers, which play an important role in plant genotyping and, in particular, marker-assisted breeding. In addition, functional markers offer advantages that counteract the limitations of random DNA markers.

Keywords: Rice (Oryza sativaL.), Eating and Cooking Quality, Quantitative Trait Loci (QTL), Marker-Assisted Breeding

I. INTRODUCTION

Oryza Sativa L (Rice) is a vital worldwide agriculture product. It is one of the leading food crops of the world as more than half of the world's population relies on rice as the major daily source of calories and protein (Rohit, 2011). Botanically, cultivated rice belongs to the Poaceae family and includes two species: Oryza sativa L. (commonly known as Asian rice) and Oryza glaberrima Steud. (Commonly known as African rice) (Linares, 2002). Rice is mainly consumed as cooked rice, but during the last decade the consumption of rice flour has increased due to its application in breadmaking. Rice has unique sensorial and nutritional advantages for developing gluten-free foods. Specifically, rice flour has a neutral flavor, low levels of sodium, easy digestibility, hypoallergenic proteins, and does not contain gluten. These characteristics make rice flour a suitable ingredient for gluten-free bakery products (Marco & Rosell, 2008). The eating and cooking qualities (ECQs) of rice are important in determining its economic value in the export market and for consumer acceptance (Pingali, 1997).The preferences for rice eating and cooking qualities within a certain region and culture may not be accepted by other cultures. In general, the Japanese prefer short grain, sticky rice that is usually used in making sushi. Conversely, in India, Pakistan and the Middle East, Basmati rice is well-liked due to its fragrance and its elongated, dry grains when cooked (Suwannaporn & Linnemann, 2007). As the largest proportion of milled rice, the starch component in the endosperm is a key factor in determining the eating qualities of table rice and the processing qualities of rice flours. The cooking and eating qualities (ECQs) of rice are largely determined by some physicochemical characteristics of the starch in the endosperm: apparent amylose content (AAC), gel consistency and gelatinization temperature (GT) and pasting properties (Bao, 2012). Grain quality can be considered as physical,chemical, cooking and nutritional quality

groups. Grain quality traits are controlled by major and minor quantitative trait loci (QTLs), implying that the genetic mechanisms underlying quality traits are complex. QTL analyses have identified several markers linked to grain quality (Shao et al., 2010; Fan et al., 2005; Lestari et al., 2009 & Tabkhar et al., 2012). But validation of those markers is essential to add value to those markers in a diverse set of germplasm before using them in marker aided breeding programme. Such information is very limited in rice particularly for quality traits. Therefore, the present investigation was carried out to find association of markers for quality traits.

II. METHODS AND MATERIAL

A. The Genus Oryza

Rice belongs to the genus Oryza and family Poacae tribe Oryzeae. It originated in Asia (O. sativa L.) and West Africa (Oryza glaberrima Steud) (Vaughan et al., 2003). According to Vaughan (2004) the genus Oryza is made up of 23 species, with two species being cultivated (O. sativa and O. glaberrima), while the other 21 are not domesticated. The O. sativa has further three subspecies; indica Kato, japonica Kato and javanica (Roschevicz, 1931). The subspecies japonica has two strains, namely tropical and temperate which is commonly sticky rice due to high amylopectin content. Indica are found in tropica land sub -tropical regions, while javanica are mainly grown in Indonesia and japonica are found in temperate regions. In terms of grain characteristics; the indica varieties have long grains. While, japonica have short grains and javanica have broad grains (Jones , 1997; Khush, 2005).

B. Grain Quality In Rice

Rice grain quality is determined by its physical and physicochemical properties. Physical properties include kernel size, shape, milling recovery, degree of milling and grain appearance (Cruz and Khush, 2000). Physicochemical properties of rice are determined based on amylose content, gel consistency and gelatinization temperature (Rohilla, 2000). In rice, eating and cooking qualities are mainly controlled by the physicochemical properties which greatly influence the consumer's affinity (Rohilla, 2000). Therefore, eating and cooking quality can be considered as a vital intrinsic quality component of rice grains that have to be focused in future rice breeding programmes to meet market demands at both local and international level. Volume expansion over cooking is another quality parameter which influences the edible volume which is the final output after cooking (Rebeira, 2014).

C. Amylose Content

Waxy rice has near zero amylose, and is used for special foods such as desserts and snacks. High amylose cultivars (>25%) are common inindica rice, and are dry and fluffy on cooking, often becoming hard after cooling. Low amylose cultivars (15–20%) are soft and sticky, and include nearly all-temperate japonica cultivars. Intermediate amylose (20–25%) rice is soft but not sticky, and is widely preferred by most consumers. AAC is largely genetically controlled by the Wx locus on chromosome 6, or specifically by the amount of Wx protein present (Wang, 1995).Therefore, high AC will lead to the deterioration of viscosity, softness, luster, and palatability, but AC does not absolutely determine the texture of cooked rice because the palatability of cooked rice with similar AC may vary greatly. However, the rapid viscosity analyzer (RVA) profile characteristics of rice endosperm starch can make up for the deficiency in using AC to appraise the palatability of cooked rice. Namely, RVA, breakdown viscosity (BDV) and setback viscosity (SBV) can be used to evaluate the palatability differences of cooked rice with similar ACs (Shu, 1998; Wu , 2001).

D. Gelatinization Temperature (GT) In Rice

The gelatinization temperature determines the time and energy input required for cooking. Gelatinization temperature (GT) is another important quality predictor in determining the cooking quality of rice. Low GT rice needs less energy input during cooking than high GT rice. GT in rice is mainly controlled by the starch synthase IIa (SSIIa) gene which is located on chromosome 6 (Umemoto, 2002, 2004; Waters, 2006). In terms of the impact of climate change on rice starch, a high temperature during the grain-filling stage decreases the levels of amylose and long-chain-enriched amylopectin (Yamakawa et al., 2007) . The subsequent reduced expression of granule-bound starch synthase I, as well as the activity of the starch-branching enzyme

IIb at a high ripening temperature, was considered to be primarily responsible for the changes in amylose content (Yamakawa et al., 2007) and amylopectin structure,(Jiang et al., 2003) respectively. However, little is known about the effects of ripening temperature on the fine structure and molecular characteristics of amylopectin and on starch crystallinity. Chun et al. (2015) suggested that an increase in cooking temperature and time would be required for rice grown at higher temperatures. A high ripening temperature increased the peak, trough, and final viscosities and decreased the setback due to the reduction in amylose and the increase in long amylopectin chains. With regard to starch crystallinity and amylopectin molecular structure, the highest branches and compactness were observed at 28/20°C. Rice that was grown at temperatures above 28/20°C showed a deterioration of cooking quality and a tendency toward decreased palatability in sensory tests.

E. Gel Consistency

Gel consistency is a measure of firmness of cooked rice. It is used to classify rice varieties by measuring the length of a cooled gel made from flour previously cooked in 0.2M KOH (Cagampange et al.,1973). Gel consistency used in rice improvement programs focusing on rice varieties with intermediate and lower AC classes. Rate of hardnening and hardness differences in cooked rice correlate with GC (Rohilla et al., 2000). If the GC is hard, then the cooked rice tends to be less sticky and if the GC is soft, then the cooked rice is more tender (Juliano, 1985).

F. Aroma In Rice

More than 100 volatiles contribute to rice aroma. Among these, 2-acetyl-1-pyrroline (2AP) possesses low odor threshold value; hence, it is regarded as principle aroma compound contributing to the aroma character of rice (Buttery et al. 1982, 1983). Nadaf et al. (2006) have developed a histochemical test to detect 2AP in scented rice. A marker system for validation of basmati types is developed at the Center for DNA Fingerprinting and Diagnostics (CDFD), Hydrabad, by Nagaraju et al. (2002).The quality of rice grains has great economic interest, characteristics such as yield, shape and defects being important in marketing,while the aroma of the cooked product, in particular when prepared in the Asiatic mode, has a big impact on consumers. The aroma of both aromatic and non-aromatic rice cultivars consists of a complex mixture of odor-active compounds. Several authors have studied the composition of the cooked rice volatile fraction,identifying a large number of components and defining several key-aroma compounds (Champagne, 2008; Jezussek et al., 2002; Widjaja et al., 1996a; Yang et al., 2008; Yang et al., 2008; Zeng et al., 2009). These include saturated and unsaturated aldehydes, alcohols, and cyclic compounds; in particular, hexanal, 1-octen-3-ol and 2-pentylfuran are markers of both quality and ageing, while 2-acetyl pyrroline (2-AP) is one of the aroma quality markers for aromatic rice (Buttery et al., 1988; Champagne, 2008; Grimm et al., 2001; Laguerre et al., 2007; Mahatheeranont et al., 2001; Widjaja et al., 1996a).

G. Roles Of GBSSI And Ssiia In Determining Amylose

Multiple isoforms exist for each type of enzyme. For instance, four classes of SS have been identified: SSI, SSII (including SSIIa, SSIIb and SSIIc), SSIII and SSIV, while two GBSS isoforms, GBSSI and GBSSII, have been reported (Ball & Morell, 2003). GBSSI and SSIIa genes are believed to have major single nucleotide polymorphisms (SNPs) that influence the properties of rice starch (Kharabian-Masouleh et al., 2009). Although several past studies have reported the functions of GBSSI and SSIIa in influencing key starch physiochemical properties (such as pasting, gelatinization, retrogradation and texture properties) (Lu et al., 2010; Yang et al., 2014), amylose content (Chen et al., 2008b) and the CLD of short amylopectin chains (Umemoto et al., 2002), current knowledge on the roles of GBSSI and SSIIa in controlling the CLDs of amylose and long amylopectin chains (which could not be precisely characterized in the past) is still limited.

III. RESULT AND DISCUSSION

Molecular Markers for the Analysis of Genetic Diversity of Amylase Content and Gel Consistency

ADP glucose pyrophosphylase catalyzes the first reaction in starch synthesis, producing the activated

glucosyl donor ADP-glucose (ADPG). AGPiso (AGPlarge subunit isoform) codes for the protien glucose-1-phosphate adenylyl transferase which is composed of 518 amino acids. Previous research revealed that AGPiso gene is responsible for GC of japonica rice (Sun et al., 2011) and acts as a minor gene affecting GC in all rice cultivars (Tian et al., 2009). AGPiso is a PCR based SSR marker linked to the AGPiso gene and the expected product size is approximately 98 bp (Hsu et al., 2014). A major quantitative trait loci (QTL) contributing largely to the ECQ has been mapped to chromosome 6 corresponding to the Waxy locus. It encodes GBSS1, a key gene determining the percentage of amylose and ratio between amylose to amylopectin, the two critical factors affecting the ECQ. Six alleles of Wx have been found in natural germplasm (Hsu et al., 2014). GBSS1 marker is a SSR type PCR based marker derived from OSR19 to RM587of QTL region (Kwon et al., 2008). The expected PCR product is 170 bp in size. The WX marker is a STS type PCR based marker with an expected band size of 100 bp (Han et al., 2004). There are two classes of brancing enzymes (BE); BEI and BEII; that differ in terms of the length of the chains they transfer (Guan & Preiss, 1993). The amylopecten structures (Umemoto et al., 2002) and the percentage amylose content (Takeda et al., 1986) vary between japonica and indica rice.

Functional Marker

FMs, also known as perfect markers are an alternative to random DNA markers. FMs are developed from polymorphic sites within genes that cause phenotypic trait variation (Andersen and Lübberstedt, 2003). In contrast with random DNA markers, FMs are directly linked to the allele of the trait of interest (Vars hney et al., 2005). Therefore, FMs are outcompeting random DNA markers, especially in marker-assisted breeding (MAB). Thus far, numerous FMs have been developed for the breeding of quality rice.

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QTLs for Spikelet, Panicle and Grain Numbers in Rice (Oryza sativaL) : A Review

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ABSTRACT

Rice spikelets are borne on the branches of an inflorescence known as a panicle. The weight of an individual rice grain for a cultivar is almost constant. Consequently, yield improvements in a rice cultivar are always associated with an increase in grain number per unit ground area. Understanding the relationship between the number of spikelets when they differentiate and the number of grains at harvest is important in understanding the basis of high yield in rice. Effective panicle number, grain number, and grain weight are the three components of rice yield, of which grain number shows the highest variation and makes the largest contribution to yield output. Rice panicle number per plant is a grain yield component that directly influences rice yield. The identification of the genes controlling panicle number will play a vital role in high -yield rice breeding. Studies on QTL of panicle number in rice are limited to morphological description and primary mapping. Rice grain number is quantitatively inherited and great deals of quantitative trait locus (QTL) mapping for grain number have been conducted using various mapping populations. Panicle morphology and grain number are influenced by the development of the panicle main axis, primary and secondary branches, spikelet development, and developmental phase transitions. Grain number is linearly correlated with total plant N content.

Keywords: QTL, Panicle, Grain number, spikelet, Oryza sativa

I. INTRODUCTION

With the advent of DNA molecular markers, QTL mapping has become a routine strategy for the discovery of genes involved in complex quantitative traits. Thousands of QTL have been mapped for important agronomical traits in rice. Although primary mapping populations including F2, recombinant inbred lines (RILs) and doubled haploid lines (DHs) have been widely used for QTL mapping in rice (Li et al., 1995; Yu et al., 1997; Xu et al., 2004; Fan et al., 2005; Marri et al., 2005), QTL can only be localized to a genomic region (confidential region) rather than a locus in those populations. Following the primary mapping, advanced populations such as near isogenic lines (NIL) and chromosome segment substitution lines (CSSL) can be used to map QTL to a locus as a Mendalian factor by blocking the genetic background noise (Lin et al., 2002; Zhang et al., 2006; Wang et al., 2006). Based on this strategy, several QTLs have been isolated in tomato (Frary et al., 2000) and rice (Yano et al., 2000; Takahashi et al., 2001; Li et al., 2003) in recent years. The common aspect in all the QTL cloning work is to exploit high quality NILs as advanced mapping populations. Rice is a staple food for many countries. As the world population increases, rice production has to be raised by at least 70% over the next three decades to meet growing demands. In the long run, development of high yield varieties is one of the most important goals in rice cultivation. Complex traits such as rice yield components are quantitative inheritance, which are contributed by multiple genes each with small efect, namely quantitative trait loci (QTL). Number of spikelets per panicle (SPP) is highly associated with number of grains per panicle (GPP), which is a very important component of yield. These traits have been

frequently studied because of their importance in rice genetic improvement with the advent of the molecular markers (Xiao et al., 1996; Zhuang et al., 1997; Xiong et al., 1999; Xing et al., 2002, 2008).rice spikelets are borne on the branches of an inflorescence known as panicle.The number of spikelets per panicle (SPP) strongly influenced by primary and secondary branches is also important for determining yield potential in rice (Zhang et al., 2006). Many studies have detected quantitative trait loci (QTLs) for SPP using various segregating populations (Thomson et al., 2003; Suh et al., 2005; Liu et al., 2010). These QTLs are located across the chromosomes and provide valuable information on the genes that control SPP in different populations.

A. Nitrogen fertilizer increases spikelet number per panicle

Growing populations will demand higher rice yield, which is partly limited by flower number per panicle. Therefore, increasing the flower number per panicle via breeding and/or crop management is indispensable for increasing rice yield. Nitrogen fertilizer might affect cytoKinin (CKs) levels to increase rice flower numbers. A correlation between nitrogen nutrition and CKs was demonstrated many years ago (Hirose et al., 2008; Salama & Wareing, 1979). CKs regulate rice branch and flower numbers (Barazesh & McSteen, 2008). CKs oxidase/dehydrogenase (OsCKX) is an enzyme that degrades CKs and, in many plant species, is responsible for the majority of metabolic CKs inactivation (Werner et al., 2003). Reduced expression of OsCKX2 causes CKs accumulation in inflorescence meristems and increases the number of reproductive organs and yield (Ashikari et al., 2005).

B. A model explaining genotypic and environmental variation of rice spikelet number

Many hypotheses have been proposed to explain ecophysiological process that determines spikelet number per unit area. Those hypotheses may be classified into the following three types. The first is that the spikelet number is proportional to nitrogen (N) content of plant (product of percentage N and crop biomass per unit area) at around spikelet formation stage (Murayama, 1969; Hasegawa et al., 1994; Kobayashi & Horie, 1994; Horie et al., 1997). The second is that the spikelet number is proportional to biomass production during the period from panicle initiation to heading (Kropff et al., 1994). The third is that the final spikelet number is represented as the difference between the numbers of spikelets differentiated and degenerated; the former is proportional to the crop-N content at the late spikelet differentiation stage and the latter to crop growth rate (CGR) during the period from the late stage of spikelet differentiation to heading (Wada, 1969).

C. Characterization of near-isogenic lines carrying QTL for high spikelet

Grain yield of rice (*Oryza sativa* L.) has four components: panicle number, total spikelet number per panicle (TSN), grain weight and spikelet fertility. There is wide variation in TSN among cultivated rice varieties and it is one of the targets of breeding programs to improve rice yield. However, genetic analysis of TSN is difficult because it is a complex trait controlled by multiple genes and influenced by environmental conditions. Quantitative trait locus (QTL) analysis using DNA markers has recently made it possible to understand the genetic basis of TSN and other complex traits. QTLs for TSN have been identified using various segregating populations, including F_2 populations, recombinant inbred lines (RILs), and doubled haploid (DH) lines (Hittalmani et al., 2003; Kobayashi et al., 2004; Mei et al., 2005; Xing et al., 2002; Yagi et al., 2001; Zhuang et al., 1997; Zou et al., 2005). Since the 1960s, IRRI-bred rice varieties have been distributed worldwide and used by both plant breeders and farmers. IR64, which was released in 1985, had been widely accepted as a high-quality rice variety in many countries (Khush, 1987). Because of the wide adaptability of IR64, breeding materials with an IR64 genetic background, such as DH lines, RILs and thousands of mutant lines, have been developed for research and improvement of rice varieties (Guiderdoni et al., 1992; Wu et al., 2005). In the late 1980s, a breeding program to develop a new plant type (NPT) of rice was launched at IRRI with the goal of increasing yield potential under tropical environments. Unlike IR64, the NPT varieties have several agronomic traits inherited from tropical *japonica*-type varieties: low tiller number, low number of unproductive tillers, large panicle, thick culm, lodging resistance and large, dark green flag leaves (Khush, 1995). Thus, the NPT varieties were

chosen for experiments designed to improve the yield potential of IR64.

D. A novel gene controlling the number of grains per panicle in rice

Rice yield is a complex trait multiplicatively determined by three component traits: number of panicles, grain weight and number of grains per panicle (NGP) (Hua et al., 2002). Of these, NGP is shown to be highly correlated with yield and acts as a crucial component in determining rice yield (Luo et al., 2013). Therefore, dissection of its genetic basis would be of great value in breeding high-yielding rice varieties. During the last decade, although many QTLs/genes controlling the NGP trait have been mapped in rice (Tian et al., 2006; Ahmadi et al., 2008; Xing et al., 2008; Liu et al., 2009; Deshmukh et al., 2010; Zhang et al., 2013), only a few related genes have been cloned (Ashikari et al., 2005; Huang et al., 2009; Tabuchi et al., 2011), and the molecular mechanism of NGP trait formation is still far from clear. Genetic analysis indicates that the ngp4c phenotype is controlled by a single recessive gene, tentatively named as NGP4c(t) and the NGP4c(t) gene was finally mapped to 81.7 kb region, where no gene involved in the NGP trait formation had been reported previously.

E. Genetic mapping of a QTL controlling leaf width and grain number in rice

Panicle morphology and grain number are influenced by the development of the panicle main axis, primary and secondary branches, spikelet development, and developmental phase transitions. The transition from the adult phase to the reproductive phase involves the participation of sucrose, miR156, and miR172 (Tsai & Gazzarrini, 2014; Zhu & Chris, 2011). During this transition, the gain-of-function mutation of OsSPL14 causes release from suppression by miR156, and the grain number is increased owing to the accelerative development of secondary branches (Jiao et al., 2010; Miura et al., 2010). Two major quantitative trait loci (QTLs),qGNPP1-1 and qFLW1-1, which control grain number per panicle and flag leaf width, respectively, were detected by QTL analysis on the same interval of chromosome 1 between markers RM3521 and RM8111 using an F2 population derived from the cross HP× Nipponbare. Thus, a single QTL, designatedqLG1(Leaf widthand grain number 1), was presumed to control both traits (tian et al., 2014).

F. Designing and Validation of Primers for High grain number

The cultivated rice (Oryza sativa L.) is rich in genetic diversity apart from highly diverse 21 wild progenitors and the African cultivated rice, Oryza glaberrima Steud. In addition to staple food, rice has extensive protective and curative properties against human ailments like epilepsy, chronic headache, rheumatism, paralysis skin diseases, diabetes, arthritis, indigestion, blood pressure, colon cancer, internal rejuvenation of tissues and overcoming postnatal weaknesses. Three hundred sixty nine QTLs distributed across all over the 12 chromosomes of rice controlling grain number per-panicle have been identified (http://www.gramene.org) using various mapping populations derived from inter-specific indica-japonica, indica-indica and japonica-japonica crosses. Some of them were fine mapped to less than 1 cM intervals and few have been cloned using QTL-based near isogenic lines (NIL). Genes controlling grain number per-panicle directly or indirectly, i.e. Gn1a, Ghd7, Dep1, fz, Sp1, rcn2, lax1 and Apo1 also have been isolated from rice (Jin, 2008; Li ,2009; Piao, 2009; Zha, 2009).

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Parameters and QTLs for Milling Quality in Rice : A Review

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ABSTRACT

Rice (Oryza sativaL.) is the most important staple food in the world, providing more than 21% of the calorific needs of the world population. Rice varieties can be grouped into several quality classes based on consumer preferences. These quality classes are based on physical properties (head rice recovery, chalkiness, grain size and shape, and grain color) and starch quality influencing cooking and organoleptic properties. Milling quality determines the final yield and the broken kernel rate of the milled rice, which is of concern for consumers and farmers. Three main parameters, brown rice recovery (the percentage of brown rice to rough rice), milled rice recovery (the percentage of milled rice to rough rice), and head rice recovery (the percentage of head rice to rough rice) are used to evaluate the quality and efficiency of the milling process. Milling quality, which is one kind of complex quantitative trait whose genetic control is poorly understood. However, many studies have been carried out to search quantitative trait locus (QTL) for the milling quality. Breeding for improved grain quality is a major objective of rice breeding worldwide. Identification of genes/QTL controlling quality traits is the prerequisite for increasing breeding efficiency through marker-assisted selection.

Keywords: Rice, Milling quality, Physical Properties, quantitative trait locus (QTL)

I. INTRODUCTION

Rice, the staple food crop of about three billion people, is nutritionally superior to many carbohydrate rich foods and contributes 40–80 % of calories and 40 % of the protein in the Asian Diet. The whole polished rice kernel is primarily consumed after the removal of the hull and bran layers through milling and polishing (Patnaik et al., 2015). Rice (Oryza sativaL.) belongs to the family Poaceaeand tribe Oryzeae.It has two cultivated species and 22 wild species and possesses huge diversity for grain quality traits. Market survey data suggest that efforts to develop varieties with improved cooking and eating quality have high economic returns (Son et al., 2014). Rice varieties can be grouped into several quality classes based on consumer preferences (Calingacion et al., 2014). These quality classes are based on physical properties (head rice recovery, chalkiness, grain size and shape, and grain color) and starch quality influencing cooking and organoleptic properties (Champagne et al., 2010, 2004b; Fitzgerald et al., 2009b; Foegeding & Davis, 2011; Juliano, 1979, 2001; Juliano & Villareal, 1993; Pandey et al., 2012; Siebenmorgen et al., 2013; Sreenivasulu et al., 2015). In addition, after the relative success of the Green Revolution, food security has consistently been challenged by (i) population growth, (ii) urbanisation, and (iii) climate change. It is therefore now essential, not only to grow more high quality rice per hectare, but also to equip these varieties with tolerance to environmental stresses (Brar & Khush, 2013). To this end, significant investment has been made in many countries to improve yield and stress tolerance, while retaining quality (Singh et al., 2000; Inthapanya et al., 2006; Mackill et al., 2006; Tomita, 2009; Boualaphanh et al., 2011). The current tools of quality evaluation are not sophisticated enough to define the quality each market requires, let alone enable selection for it. Rice (Oryza sativaL.), a staple cereal crop, feeds more than half of the world's population. Improvement of rice yield and grain quality is the major objective of rice breeding worldwide. Grain quality primarily includes grain appearance, milling, eating and cooking and nutrition (Unnevehr et al., 1992). Milling quality is measured by brown rice rate (BRR), milled rice rate (MRR) and HMRR. Brown rice is the de-hulled rice with the palea and lemma removed that can be used for cooking and eating. Milled rice is the result of brown rice after removing all of the bran, which consists of

aleurone and pericarp, and germ or embryo. Head milled rice is kernel longer than or equal to 3/4 full length of a kernel. Among the above-mentioned three milling quality parameters, HMRR is the most important and greatly affects market value. HMRR depends on varietal characteristics, production factors, and harvesting, drying and milling processes. Most of the rice quality determining traits are quantitatively inherited, controlled by multiple genes/QTL(Tan et al., 2000), and affected by growing environment(Zhao et al., 2015). The evaluation criteria for milling quality mainly include brown rice percentage, milled rice percentage, and head rice percentage, which reflect the proportion of whole kernels (head rice or head milled rice) and broken kernels produced during milling of rough rice (Lisle et al., 200).

A. Brown Rice

Rice is the most commonly consumed in the form of milled rice because of its softness and easy digestion. Brown rice is nutritionally superior to milled rice in terms of protein, dietary fiber, vitamin B, minerals, and even functional antioxidants which are mostly existed in external parts like hull and bran (Juliano, 2010); however, those nutrients are easily removed during the milling process. With increasing health concerns, the health promoting functions of brown rice have received the attention of consumers, and the demand for brown rice consumption has increased greatly. The bran in brown rice, however, restricts water diffusion during cooking, resulting in a harder texture and lower palatability than milled rice (Piggot et al., 1991).

B. Quality controlling of brown rice by ultrasound treatment

Soaking is the simplest method for softening the texture of brown rice. Longer soaking times shorten the cooking time of brown rice; however, microbial contamination can occur during long soaking time. To shorten soaking time, warm water soaking is needed, and the higher the soaking temperature, the faster the rate of moisture absorption (Han & Lim, 2009). Ultrasound treatment has merits such as short processing time, high reproducibility, and lower energy consumption, so the treatment has been applied to several foods processing such as extraction, emulsification, homogenization, crystallization, filtration, separation, viscosity alteration, defoaming, and extrusion (Jambrak et al., 2010; Knorr et al., 2004; McClements, 1995). The ultrasonic process has also been used with starches and other polysaccharides as an efficient processing method for solubilization, modification, and purification (Czechowska-Biskup et al., 2005; Iida et al., 2008). Ultrasound treatment can affect the physico-chemical properties of starch in different ways depending on operation time, temperature, power, frequency, and the differences in the botanical origin (Czechowska-Biskup et al., 2005; Iida et al., 2008).

C. Rice Milling

Rice milling typically involves harvesting, rying, milling and packaging. During milling, dried paddy undergoes de-husking, bran removal and whitening stages. In the de-husking stage, paddy is first fed into a sheller to remove its outer layer, i.e. the rice husk. The husks are separated from the brown rice (rough rice without husk) by aspiration. The brown rice is then conveyed to the whitening process to remove the rice bran. In general, the whitening process can be divided into two categories: the abrasive, and the friction type. The abrasive type functions by channelling rice through a moving rough surface and a stationary screen. In contrast, the friction type operates by contacting one kernel against another under slight pressure (Afzalinia et al., 2002). In the final stage, the milled rice is separated into the whole kernel and the broken kernel by its length by means of grading sieves. The length of the whole kernel is 75% or more of the full kernel. The remaining kernels are termed as broken rice (Webb, 1991). Two important indices of the milling process are the degree of milling and the head rice yield. The degree of milling refers to the extent in which the bran layers have been removed from rice during milling. The degree of milling affects the rice cooking time and texture (stickiness) as well as the properties of cooked rice (e.g. the starch content, the lipid as well as protein levels) (Lyon et al., 1999).

D. Head Rice

The head parboiled rice yield (HY%) was calculated as percentage of whole milled grains with respect to the rough rice. As the cooking quality of broken rice is very poor, the market price with broken grains is much less than that for whole grains (Li et al., 1999). The ultimate

goal of the rice industry is to achieve maximum head rice yield (HRY) from the milling process. HRY is the current standard to assess commercial rice milling quality. The average head rice yield (HRY) was low with 43.5 % from IRRI's breeding programs, and therefore this trait should be improved further as the prime target of future breeding by minimizing the broken grains during milling. Interestingly, in breeding material, the mean chalkiness value was 13.9 %. Those lines with less than 10 % chalkiness have 45.5 % HRY. These observations made from a large collection of data contradict the existing notion that area of chalkiness substantially increases breakage during milling and thus decreases HRY (Lisle et al., 2000).

E. Effects of drying conditions on head rice yield

The method of drying is the kingpin of the parboiling process so far as the milling quality of rice is concerned (Bhattacharya et al., 1967). Several methods have been used for drying parboiled rice, among are sun or shade drying, hot air drying, vacuum drying, rotary dryers, etc. (Bhattacharya, 1985). Drying of parboiled rough rice is essentially a batch process; this is so because the removal of large amount of moisture, from 55% to 12%, dry basis, requires multiple-stage drying with intermediate tempering periods. Bhattacharya et al. (1971) found that twostage drying considerably reduces breakage during milling. Tempering treatment was designed to provide moisture equilibration for rice samples. Bhattacharya and Indudhara Swamy (1967) have studied the effect of tempering time at room temperature on grain breakage when the rice was dried in two-stage drying at 60°C. Several authors have recommended drying the rough rice as fast as one wishes to 16±18% moisture and then to temper it for 4±8 h (Bhattacharya, 1985).

F. QTLs for Brown rice recovery

A total of 20 QTLs have been identified in eight studies, covering all chromosomes except chromosome 2. A major QTL at the interval between markers RM42 and C734b on chromosome 5 is also responsible for grain width (Tan et al. 2001). A QTL on chromosome 3 likely shares the same genomic region for grain length (Lou et al., 2009). These results indicate that brown rice rate relates to the grain shape and size of rice kernel. Five QTLs were detected in the study of Li et al. (2004a), of which three were expressed in two years, indicating that there are QTL-by-environment interactions effects.

G. QTLs for Milled rice recovery

A total of 19 QTLs have been identified in seven studies, covering all chromosomes except chromosome 8. There are no strong or reproducible QTLs for the milled rice recovery. Three independent studies detected QTL for the milled rice recovery on chromosome 5 (Tan et al., 2001; Aluko et al., 2004; Zheng et al., 2007), but there are actually not at the same region. Li et al. (2004a) reported that two of four QTLs were detected in two years, indicating that the QTL-by-environment interactions effects exist.

H. QTLs for Head rice recovery

Up to date, a total of 34 QTLs locating at all the chromosomes have been reported in ten studies with the number of QTLs varied from 1 to 7 in different studies. A major QTL located on chromosome 3 is also a major QTL for grain length (Tan et al., 2001), suggesting that genetic relationship exists between grain size or shape and the percentage of head rice. Other studies frequently identified the QTL at chromosome 3 (Li et al., 2004a; Dong et al., 2004; Aluko et al., 2004; Jiang et al., 2005; Lou et al., 2009), proving that there might be a major gene for head rice. In addition, QTLs on chromosome 1, 5 and 6 are also detected by at least three independent studies. Li et al. (2004) detected three QTLs for head rice, but all of the m were detected only in a specific year, suggesting that the head rice is largely affected by the environment. However, Nelson et al. (2011) showed that more variance of head rice yield was explained by main-effect QTL than QTL × environment effect in the Cypress/RT0034 RIL population, whereas the main effect QTLs contribute a little less to genetic variation than those of QTL × environment effect in the Cypress/ LaGrue RIL population. There is a clear coincidence of QTLs for head rice recovery with early-heading QTLs in the hotter growing location, hinting an environmental effect (Nelson et al. 2011). Note that some genetic populations were derived from cultivated rice and wild rice (Septiningsih et al., 2003; Aluko et al., 2004), but all milling-yield-increasing effects came from the cultivated parent.

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Voice Intelligence System (VIS) for disabled

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ABSTRACT

As we know that the disabled people faces difficulties in working with the computers in their day to day life. In order to overcome this difficulty a voice intelligence system is proposed as advancement in the technology. The name for the voice intelligence system is '**SAM'.** It was named such as it responds as a human. The purpose of this voice intelligence system is to make the computer to do multiple works using voice over commands. The voice over commands are predefined in a library and given reference in the source code. Thus executing this project results in controlling PC using the voice commands. The additionally added feature in this system among other existing systems is that, it responds back to the user with executing the commands with a speech back from the computer. Shortly it behaves as a human.

Keywords: HMM (Hidden Markov model), Algorithm-Viterbi

I. INTRODUCTION

Today in the technology world computer has become an integral part of every body's day to day life. We use computers to access and use multimedia files and accessing information from the internet. Every field in our society is computerized. But the information access and computer handling has to be done with the mouse and keyboard. The operations depend upon the eye sight and by reading everything that appears on the screen. So the computer is not user friendly for the blind and other disabled people. The blind people cannot read the information and cannot view the mouse cursor and other disabled people cannot use computer as well. Thus the computer becomes a toughest thing for the disabled people. We are going to develop an application for the blind and the disabled in which it can be accessed and used with the voice commands.

II. METHODS AND MATERIAL

A. Related Work

There are some previous studies about voice based systems but not very efficient. In the existing system there is no feedback voice from the system and makes it not much user friendly. So it is s big drawback for the blind people to interact with the system. Voicemail is an existing system that makes use of keyboard and mouse. The existing system is not fully voice based in nature.

The existing system involves steps like attaching a microphone and opening the recorder using mouse or keyboard. Using the computer may be easy for the normal people but it is difficult for the visually challenged people. This is because it is time consuming process for the blind people and quite difficult.

B. Proposed Work

The proposed work is a desktop application that allows accessing the computers with the help of the voice commands. We use artificial intelligence to benefit the disabled to make use of the advanced technology for their growth. The proposed work is a desktop application which makes use of artificial intelligence that makes it cost effecient and easy to use. The proposed work makes use of the Viterbi algorithm for voice detection and conversion.

It overcomes the disadvantages of the existing work in that it is fully voice based technology and gives no work to the basic input devices of a computer. Since it is a voice based technology, it provides an interactive and

easy to use GUI that can be used by a disabled person even if they are not computer literate. The idea is to create a class in .Net with .Net speech engine. The dictation mode gets activated and events are generated when the user tells the commands which are predefined.

V1,k=P(y1|k).πk
Vt,k=max(xϵS)(P(yt,k).ax,k.Vt-1,x

1. Here Vt,k is the probability of the most probable state sequence responsible for the first t observations that has k as its final state.
2. The Viterbi path can be retrieved by saving back pointers that remember which state was used in the second Equation. Let Ptr(k,t) be the function that returns the value of x used to compute Vt,k if /
3. t>1, or k if t=1. then:
$$x_T = \arg\max_{x \in S}(V_{T,x})$$
$$x_{t-1} = \mathrm{Ptr}(x_t, t)$$
4. Here we're using the standard definition of arg max. The complexity of this algorithm is .

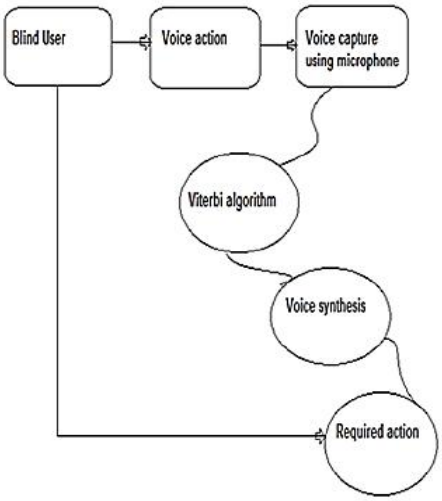


Figure 1: Overview of proposed system

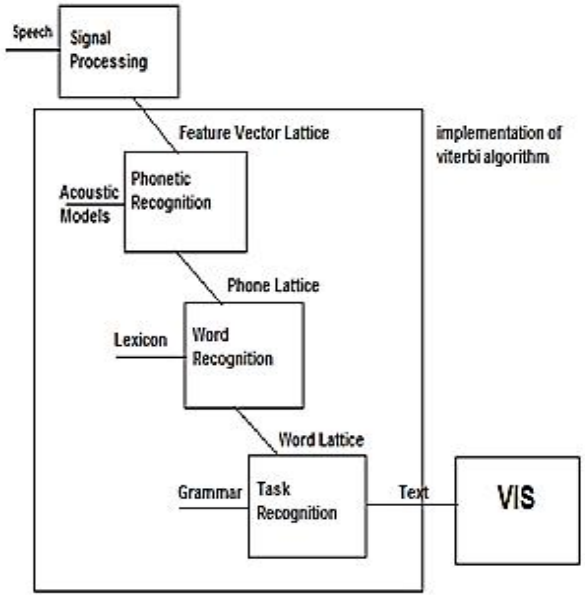
C. Viterbi Algorithm

This algorithm is used to find the most common sequence of hidden states which is called the Viterbi path that always results in a continuous sequence of observed events, especially in the context hidden Markov models. The algorithm has found universal application in decrypting the convolutional codes. It is now also commonly used in speech recognition and speech synthesis in finding the most appropriate word. For example, in speech-to-text (speech recognition), the acoustic wave signal is treated as the observed continuous sequence of events, and a string of text is considered to be the hidden cause of the acoustic wave signal. This dynamic algorithm finds the most suitable string of text as predicted by the user.

Algorithm implementation

Suppose we are given a Hidden Markov Model(HMM) with state space S, initial probabilities πi of being in a state i and then the transition probabilities of transitioning from state i to state j. Say we observe outputs yi,…..,yT. The most likely state sequence xi,…..,xT that produces the observations is given by the recurrence relations:

The algorithm executes in the way that the system detects the most appropriate word when user spells it and then matches the spelled word that is guessed with the actual word that is pronounced by the user. If both of them is found to be same then the word is selected from the loaded grammar and typed by the system without giving any burden to the user. That is how the algorithm is used to convert speech to text.



III. RESULT AND DISCUSSION

A. Voice Intelligence System Implementation

This system is developed using artificial intelligence. The proposed system is implemented by using the following hardware and software. They are as follows
Hardware:

Dual core processor
2 GB RAM
Microphone

Software:

Front End: C# GUI
Back End: C# .Net

The proposed system has 4 stages of implementation namely

1. Login Authentication
2. Voice Recognition
3. Voice based command detection
   3.1. Implementation of the Viterbi algorithm
4. Voice based functioning

Each level is implemented using .net in the front end and the backend .

B. Login Authentication

A login authentication form is included in the system in order to ensure that only the authorized user is permitted to use the system. This module can also be neglected if the user is uncomfortable with it.

C. Voice Recognition

Initially the voice commands being spoken by the user is detected by the speech recognition engine. The speech API used by the speech engine recognizes commands according to the speech culture selected.

D. Voice Based Command Detection

A voice based system that uses grammar based commands from residents to start and end actions. It makes use of the Viterbi algorithm.

This dynamic algorithm works in the way that the system detects and guesses the word when user spells it and then compares the word that is guessed with the actual word that is pronounced b. If both of them are found to be same then the word is selected from the loaded grammar and typed by the system without giving any burden to the user.

E. Voice Based Functioning

Here the main purpose of proposed system is used according to the voice commands spoken by the user.

F. The contributions of this paper are summarized as follows

We point out that Voice intelligence system is an initiative of introducing the mailing system that entirely concentrates on the benefits and comfort of the disabled people. However, by taking advantage of the To the best of our knowledge, this paper is an early feasible work on Voice intelligence system for disabled people. We propose desktop application that can be accessible from anywhere, this application is platform independent and it is supported by windows of any versions ranging from windows 7 to windows 8.1.

We establish the dynamic feature of notification that is entirely based on voice commands to enhance the performance of the proposed system. The research based analysis and experiments conclude that it is possible to add more features to the system.

IV. FUTURE ENHANCEMENTS

Future enhancements includes additional features to the developed intelligence system like introducing webcam based cursor control for the disabled persons. The proposed system includes only features like using the pc through voice based detection. So further features can also be added according to the need of the user in the forthcoming years.

V. CONCLUSION

Voice based architecture helps disabled people to access and use computers with no difficulty. The proposed system helps the disabled people in making use of advanced technology for their growth and improvement. This design will also reduce cognitive load taken by

disabled people in using the computers. It also helps handicapped and people who are less fluent in english. This project will be very much useful for today's generation either blind or physically challenged to improve their knowledge in using the computers in their day to day life.

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Efficient Surveillance in Wireless Sensor Networks Using Sink Mobility

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ABSTRACT

The WSN helps in easy monitoring and controlling in the areas of surveillance. With the environment becoming more and smarter, it is essential to maintain the overall lifetime of the network. The sink that serves as the center spot is equipped with enormous energy. When these sinks are more in number and not stationary, it increases the overall performance thereby preventing much of the mote and data failure. In this paper, energy aware mechanism is proposed to reposition the sinks in optimum number of steps. Thus the congestion can be routed away effectively. This approach is found to be better than it's contemporary.

Keywords: Wireless Sensor Networks, Sinks, Surveillance, Network lifetime

I. INTRODUCTION

A Wireless Sensor Network (WSN) is a wireless network consists of spatially distributed autonomous devices using sensors to monitor physical or environmental conditions. It incorporates a gateway that provides wireless connectivity back to the wired world and distributed nodes. These networks are collections of small devices, known as motes, with limited computational power i.e, 1-100th of the computing power of a PDA.

Sensor networks inter-network with an IP core network via a number of gateways. A gateway routes user queries to appropriate nodes in a sensor network and at times aggregate and summarize to users who have requested it or are expected to utilize the information. A sensor network performs a set of high-level information processing tasks such as detection, tracking, or classification. Measures of performance for these tasks are well defined, including detection of false alarms or misses, classification errors, and track quality.

Sensor networks provide a bridge between the real physical and virtual worlds. Each device monitors some aspects of its environment, and communicates its observations through other devices to a destination where data from the network is gathered and processed. Some special components in routing based networks are routers, designed to compute, calculate and distribute the routing tables.

The radio frequencies are used for the communication purposes. The WSNs are well known for their resilience, mobility, heterogeneity, scalability, low cost, concurrent processing and security. Some of the challenges to this wireless network are accuracy, time synchronization, data collection, etc.

The organization of this document is as follows. In Section 2 (**Methods and Material**), I'll give detail of any modifications to equipment or equipment constructed specifically for the study and, if pertinent, provide illustrations of the modifications. In Section 3 (**Result and Discussion**), present your research findings and your analysis of those findings. Discussed in Section 4(**Conclusion**) a conclusion is the last part of something, its end or result.

II. METHODS AND MATERIAL

The main components of the proposed system are clearly depicted below. Zigbee is used for memory relted

operations. EARA is the Energy Aware transmission Range Adjusting.

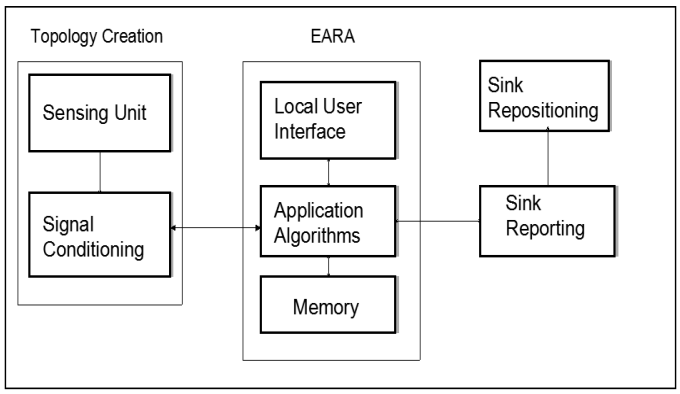

Figure 1: System architecture.

The algorithms used are two in number. The MCP - maximum computation path is the protocol that finds the best suitable path based on

1. The node with high energy
2. The path with overall maximum energy

Greedy finds the correct number of relocating steps for the base station. A node should remember the location of its neighbors within one hop. Routing is done dynamically. This succeeds if the network is so dense. Thus perimeter is used to find the route in case of void nodes using right hand thumb rule. But the latter alone cannot be used due to its longest path. Thus if one fails, the other compensates.

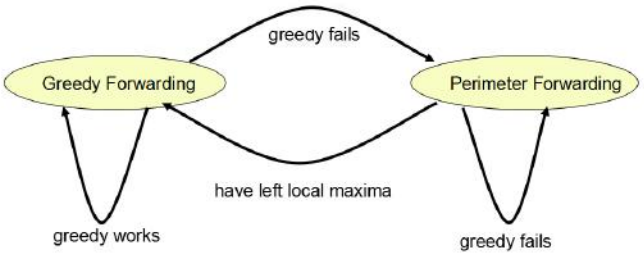

Figure 2 : Protocols Used

Start

1. *Determine the total coverage area of n sensors*
2. *Select the no. of multi sinks , m*
3. *split the area into 'm' sections*
4. *Position the mobile sinks and let their energy be s_i*
5. *Compute the neighbour nodes for each sensor n_i by sending 'hello' message*
   - *Calculate the distance , d_i*
   - *Compute their energy, e_i*
6. *Adopt greedy and perimeter stateless routing protocol to compute the optimum shortest path to the nearest sink*
   - *Update the best shortest path*
   - *Sense data and report to sink*
7. *Determine the residual energy after every transmission*
8. *If($e_i < s_i$) or if($\Sigma e_i < s_i$)*
   - *Move the sink*
   - *Move sink towards the last-hop relays (involved in packet transmitting) to improve lifetime.*
9. *Run to check the performance and depict it graphically*

Stop

Figure 3. Algorithm

III. RESULTS AND DISCUSSION

The complete picture of the wireless network with a static sink, a mobile sink and multiple mobile sinks are depicted here. The results are obtained based on the simulation in NS2.

A set of 100 sensors are plotted to form a grid network in a 1500 x 1500 area.The sink is equipped with 300 units of energy while the other nodes have 100 units. The transmission loss is taken to be 0.01.

A. Static Sink

The sink remains stationary throughout. It remains constantly tied to a single mote. This eventually results in around 17 failure nodes.

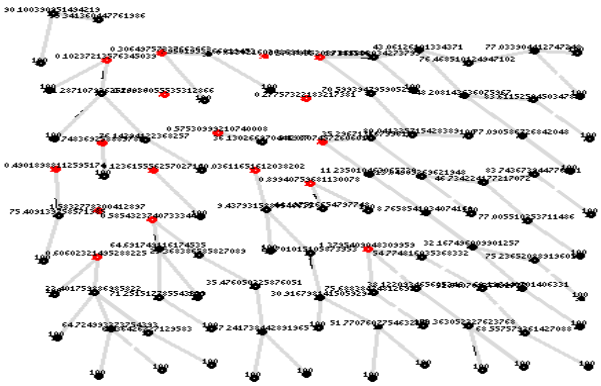

Figure 4. Simulation window of immobile sink and its network

B. A Mobile Sink

The sink can move at a radius of 300m and the nodes communicate data at a radii of 100m. In this case, the failure nodes correspond to 6.

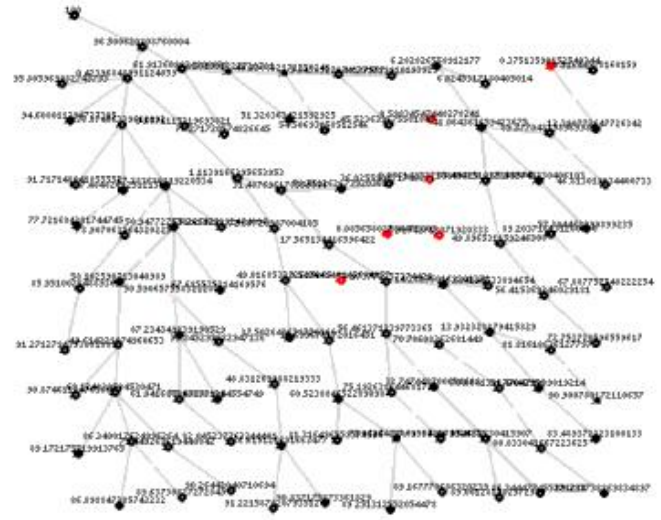

Figure 5. Simulation window of one mobile sink and its network.

C. Two Mobile Sinks

To this network, one more sink is added to monitor the entire coverage. This reduces the failure nodes to just 1 in number.

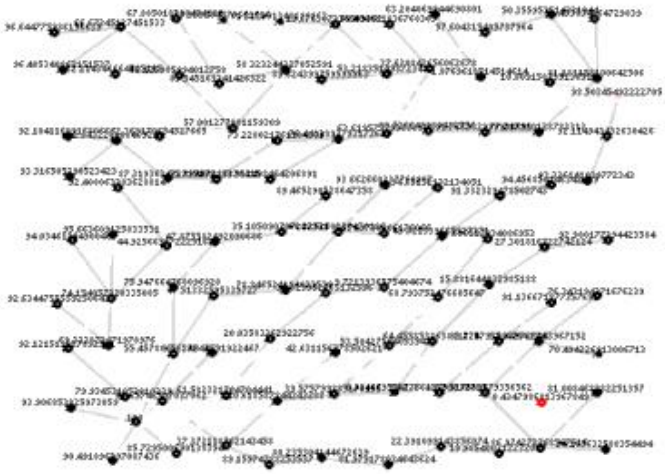

Figure 6. Simulation window of two mobile sinks and its network

D. Performance Analysis

All the three scenarios are taken here and their performance is studied using Xgraph.

1) Case: The nodes that drain much of their energy ultimately becomes inactive after a while. Thereby the entire route is cutoff from the main stream leading to dormant performance of the entire network.

2) Case: Here as the sink is mobile, the entire network gets re-configured when there is a need. Though better when compared to the former, this also covers only area upto 300m.

3) Case: In this situation, with two sinks the entire area is easily patrolled. The network re-arranges accordingly. This considerably boosts the overall performance.

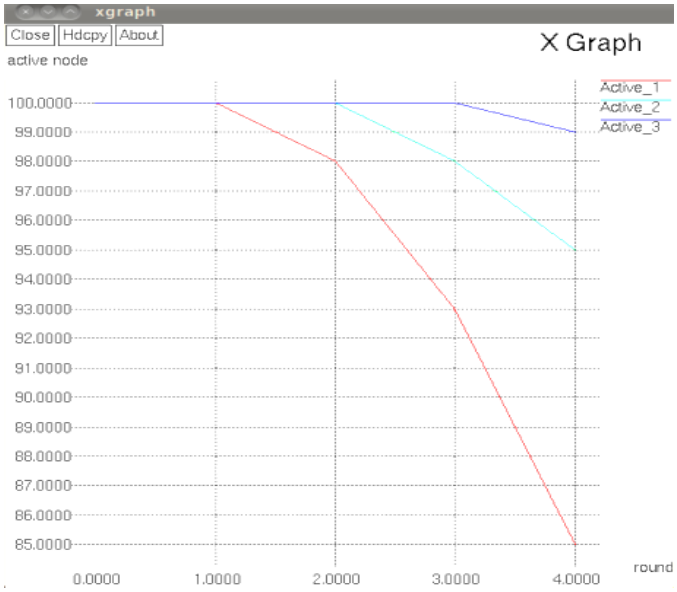

Figure 7. Performance Graph

E. Time Analysis

The total time a node is seen to be active is calculated. Cases 2 and 3 are taken into consideration. On an average when the number of sinks increases, the time to live also rises up.

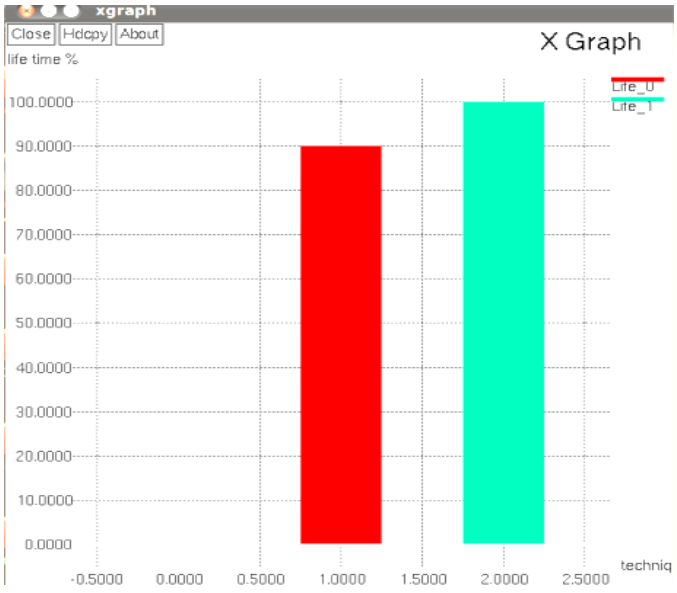

Figure 8. Time Graph

F. Energy Analysis

Based on the amount of residual energy left behind, the case 3 is found to outlive the former.

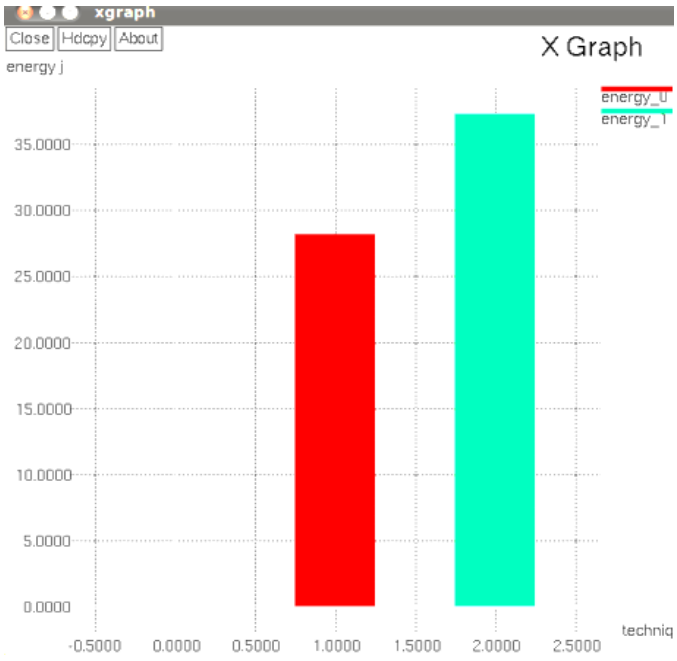

Figure 9. Energy Graph

IV.CONCLUSION

Thus the art of surveillance can become more befitting using this strategy. The proposed model basically computes the shortest path using MCP, then applies greedy and perimeter algorithm to compute the optimum relocating sinks keeping in mind the transmission energy of the nodes. The future work relates to establishing trust among the neighbors using DES algorithm or in a simpler way deploying a trust matrix to rate the surrounding motes inorder to avoid intrusion and hackers.

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Effective Automatic Attendance Marking System Using Face Recognition with RFID

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ABSTRACT

In this RFID system, the student shows RFID tag which initiates the camera and a face is captured and recognized so that attendance is marked. During the class hours Ultrasonic sensor is activated. If a student leaves in between the class hours or comes late to the class, Ultrasonic sensor is triggers the camera is initiated, which captures the Image and it will be sent to the server. Hence student information is updated in the Records by the Department In-charge & SMS Alert is sent to parent mobile.

Keywords: Face Recognition, RFID, Sensor, Neural Networks.

I. INTRODUCTION

Face recognition is a well-developed technology used for person authentication. Illumination, pose, facial expression, aging, hair and glasses are the challenges in face recognition. Radio-frequency identification (RFID) tags are used for access control system which contains electronically stored information. Traditional RFID-based access control system presents a registered RFID card will pass the authentication even he/she is not the card holder. To avoid this problem, face recognition was involved in the RFID-based access control system. The proposed access control system is implemented and performed in a multinational enterprise. The purpose of this system is used to inspect who has the permission to enter the factory for work. All the operations will be recorded with time. HR manager could check the records from the database. Experimental results show that the proposed access control system has strong ability to reject the person presents others RFID card. First, employees are required to present his/her RFID card. Only the person presents a registered RFID card will undergo the face recognition. In face recognition, a face detection technology is applied to extract faces. The normalization process is used to adjust the size and intensity of the extracted faces. The SURF algorithm is then performed to align the extracted and registered faces. Finally, the CW-SSIM is adopted to calculate the similarity of the extracted and registered faces.

II. METHODS AND MATERIAL

First, employee is required to present his/her RFID card. Only the person presents a registered RFID card will undergo the face recognition. In face recognition, a face detection technology is applied to extract faces. The normalization process is used to adjust the size and intensity of the extracted faces. The SURF algorithm is then performed to align the extracted and registered faces. Finally, the CW-SSIM is adopted to calculate the similarity of the extracted and registered faces.

A. Face Detection

Robust Real-Time Face Detection is a powerful face detection technology with high accuracy [5]. The algorithm consists of three major methods includes integral image, Ada Boost, and cascade detection. In this paper, the Robust Real-Time Face Detection is used to detect faces.

B. Face Extraction

Since the background and hair significantly affect recognition, background and hairstyle of detected faces are removed. Only the "inner face" is used to identify the card holder in the proposed method.

C. Normalization

To fix the size of the detected faces, all inner faces are adjusted to 100*100 pixels. To reduce the influence of illumination variation, the histogram equalization is performed.

SURF Algorithm

The SURF algorithm is based on the same principles and steps as SIFT but details in each step are different. The algorithm has three main parts: interest point detection, local neighbourhood description and matching.

Interest Point Detection

The SIFT approach uses cascaded filters to detect scale-invariant characteristic points, where the difference of Gaussians is calculated on rescaled images progressively. In SURF, square-shaped filters are used as an approximation of Gaussian smoothing .Filtering the image with a square is much faster if the integral image is used, which is defined as:

$$S(x,y) = \sum_{i=0}^{x}\sum_{j=0}^{y} I(i,j)$$

The sum of the original image within a rectangle can be evaluated quickly using the integral image, requiring four evaluations at the corners of the rectangle.
SURF uses a blob detector based on the Hessian matrix to find points of interest. The determinant of the Hessian matrix is used as a measure of local change around the point and points are chosen where this determinant is maximal. In contrast to the Hessian-Laplacian detector by Mikolajczyk and Schmid, SURF also uses the determinant of the Hessian for selecting the scale, as it is done by Lindeberg. Given a point p=(x, y) in an image I, the Hessian matrix H(p, σ) at point p and scale σ, is defined as follows:

$$H(p,\sigma) = \begin{pmatrix} L_{xx}(p,\sigma) & L_{xy}(p,\sigma) \\ L_{xy}(p,\sigma) & L_{yy}(p,\sigma) \end{pmatrix}$$

where $L_{xx}(p,\sigma)$ etc. are the second-order derivatives of the grayscale image.

The box filter of size 9×9 is an approximation of a Gaussian with σ=1.2 and represents the lowest level (highest spatial resolution) for blob-response maps.

Scale-space representation and location of points of interest

The interest points can be found in different scales, partly because the search for correspondences often requires comparison images where they are seen at different scales. In other feature detection algorithms, the scale space is usually realized as an image pyramid. Images are repeatedly smoothed with a Gaussian filter, then they are subsampled to get the next higher level of the pyramid. Therefore, several floors or stairs with various measures of the masks are calculated:

$$\sigma_{\text{approx}} = \text{Current filter size} * \left(\frac{\text{Base Filter Scale}}{\text{Base Filter Size}}\right)$$

The scale space is divided into a number of octaves, where an octave refers to a series of response maps of covering a doubling of scale. In SURF, the lowest level of the scale space is obtained from the output of the 9×9 filters.

Hence, unlike previous methods, scale spaces in SURF are implemented by applying box filters of different sizes. Therefore, the scale space is analysed by up-scaling the filter size rather than iteratively reducing the image size. The output of the above 9×9 filter is considered as the initial scale layer, to which we will refer as scale s=1.2 (corresponding to Gaussian derivatives with σ=1.2). The following layers are obtained by filtering the image with gradually bigger masks, taking into account the discrete nature of integral images and the specific structure of filters. Specifically, this results in filters of size 9×9, 15×15, 21×21, 27×27, etc. In order to localize interest points in the image and over scales, non-maximum suppression in a 3×3×3 neighbourhood is applied. The maxima of the determinant of the Hessian matrix are then interpolated in scale and image space with the method proposed by Brown et al. Scale space interpolation is especially important in this case, as the difference in scale between the first layers of every octave is relatively large.

Local Neighbourhood Descriptor

The goal of a descriptor is to provide a unique and robust description of an image feature, e.g. by describing the intensity distribution of the pixels within the neighbourhood of the point of interest. Most descriptors are computed thus in a local manner; hence, a description is obtained for every point of interest identified previously.

The dimensionality of the descriptor has direct impact on both its computational complexity and point-matching robustness/accuracy. A short descriptor may be more robust against appearance variations, but may not offer sufficient discrimination and thus give too many false positives.

The first step consists of fixing a reproducible orientation based on information from a circular region around the interest point. Then we construct a square region aligned to the selected orientation and extract the SURF descriptor from it.

Furthermore, there is also an upright version of SURF (called U-SURF) that is not invariant to image rotation and therefore faster to compute and better suited for application where the camera remains more or less horizontal.

Orientation Assignment

In order to achieve rotational invariance, the orientation of the point of interest needs to be found. The Haar wavelet responses in both x- and y-directions within a circular neighbourhood of radius 6s around the point of interest are computed, where s is the scale at which the point of interest was detected. The obtained responses are weighed by a Gaussian function centered at the point of interest, then plotted as points in a two-dimensional space, with the horizontal response in the abscissa and the vertical response in the ordinate. The dominant orientation is estimated by calculating the sum of all responses within a sliding orientation window of size $\pi/3$. The horizontal and vertical responses within the window are summed. The two summed responses then yield a local orientation vector. The longest such vector overall defines the orientation of the point of interest. The size of the sliding window is a parameter which has to be chosen carefully to achieve a desired balance between robustness and angular resolution.

Descriptor based on the sum of Haar wavelet responses

To describe the region around the point, a square region is extracted centred on the interest point and oriented along the orientation as selected in the previous section. The size of this window is 20s.

The interest region is split up into smaller 4x4 square sub-regions, and for each one, the Haar wavelet responses are extracted at 5x5 regularly spaced sample points. The responses are weighted with a Gaussian (to offer more robustness for deformations, noise and translation).

Matching

By comparing the descriptors obtained from different images, matching pairs can be found.

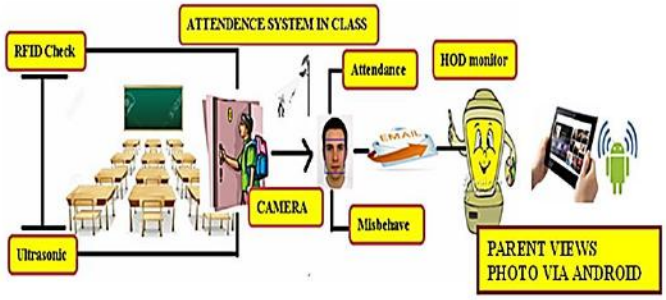

Figure 1. Architecture Diagram

III. RESULT AND DISCUSSION

We are going to create an User application by which the User is allowed to access the data from the Server of the Cloud Service Provider. Here first the User want to create an account and then only they are allowed to access the Network. Once the User create an account, they are to login into their account and request the Job from the Cloud Service Provider. Based on the User's request, the Cloud Service Provider will process the User requested Job and respond to them. All the User details will be stored in the Database of the Cloud Service Provider. In this Project, we will design the User Interface Frame to Communicate with the Cloud Server through Network Coding using the programming Languages like Java/ .Net. By sending the request to Cloud Server Provider, the User can access the requested data if they authenticated by the Cloud Service Provider. Register to the RFID Card and face

reorganization. We are going to implement such a thing like student attendance system at the same time we are integrating student behavior monitoring system during the class session.

A new student tracking technology using ultrasonic sensor and RFID technology. The system is being developed for economic with respect to School and College point of view. RFID tag based Attendance System of every user is implemented with cheap cost. Two types of implementation are integrated here. First one is student will be showing RFID tag in front of the Door, which initiates the camera and Photo is Captured During the class hours, Ultrasonic sensor which is placed in the above of the entrance detects any student movement. If someone leaves in between the class hours or someone comes late to the class, Ultrasonic is triggered and automatically camera is initiated which captures the image and sends it to the server. The Department Head or other department professors can view the list of students who bunked or came late using their android application. The application hits the server and the server replies with the list of students who bunked.

We cannot store lot of data in a mobile due to limited memory. So, there is no space to store new files. Also we cannot delete the old files. However, loss is there. Mobile Client is an Android application which created and installed in the User's Android Mobile Phone. So that we can perform the activities. The Application First Page Consist of the User registration Process. We'll create the User Login Page by Button and Text Field Class in the Android. While creating the Android Application, we have to design the page by dragging the tools like Button, Text field, and Radio Button. Once we designed the page we have to write the codes for each. Once we create the full mobile application, it will generated as Android Platform Kit (APK) file. This APK file will be installed in the User's Mobile Phone an Application.

IV. CONCLUSION

We proposed a novel access control system that integrates the RFID and face recognition technology. A real time face detection method was adopted to detect human faces. The similarity between the detected and registered faces was measured by CW-SSIM. To speed up the authentication process, user pass the authentication when the similarity larger than a predefined threshold. The SURF was performed to align the detected and registered image when the user misses the authentication in the first pass.

V. FUTURE ENHANCEMENTS

We proposed the system where the student can show their RFID tag which initiates the camera and a face is captured and recognized so that attendance is marked. Then, during the class hours Ultrasonic sensor is activated. If a student leaves in between the class hours or comes late to the class, Ultrasonic sensor is triggers the camera is initiated, which captures the Image and it will be sent to the server.

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Multi Server Authentication System Based On Palm Vein Authentication and Secured OTP Using ECC

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ABSTRACT

There is no proper security is implemented in online bank transaction even though lot of mobile user's presence. These textual passwords are easily hacked by the attackers using Guessing attacks and Shoulder Surfing attacks. To provide data communication security while sending the (OTP) One Time Password form bank transaction to customer using Elliptic Curve Cryptography (ECC) technique. The bank transaction server generates OTP and encrypts the OTP with ECC. To generate private key, we take the palm vein of the user and generates its hash value. The hash value is private key of user. During the authentication process, server sends the encrypted OTP to user. Then the user decrypt the OTP based on giving its private key. The user will be registering their palm vein and can select 3 different web portals like face book, gmail and twitter. After successful verification of palm vein user can select any one of the above set sample web sites so that the corresponding web sites gets login without its password.
Keywords: OTP-One time password, ECC-Elliptic curve cryptography, Palm vein, Biometric Authentication

I. INTRODUCTION

Electronic-commerce (E-commerce) is buying and selling of product using information and communication technology. It includes order accepting, order evaluating, supplying of order, billing, and the transfer of money. We are living in digital arena, where most of the business transaction is performed with the help of computers and computer networks. Computer networks provide platform to do e-commerce tasks, online banking, and sharing of information and many more within a fraction of seconds with the parties who may be located in any places of the digital world. The security is required for dual purposes. They are, i) to protect customers' privacy ii) to protect against fraud. While more than two parties communicate to each other then they worry about confidentiality, data authentication, non repudiation etc. In order to mitigate these issues, we can apply cryptography with biometric features. Biometrics is technique for measuring unique personal features, such as a subject's face, voice, palm-vein, fingerprint, gait, retina, or iris for personal recognition. It provides unique features to recognize an individual. Human being has been recognized by its appearance, gait, voice for thousands of years. While comparing with prevalent identification/ recognition/authentication, biometrics excels in providing strong security model. Cryptography is a mathematical technique of transforming text to intangible form, which can't be easily broken by eavesdropper/cracker.

It provides excellent data communication security in this digital world, provided keys size should be as per industry standard. There are many researches, who have suggested that biometrics provides competent technique for identifying and authenticating an individual, since it has been proved as reliable and universally acceptable identification and authentication methods in many application areas. The popularity of biometrics and cryptography provides foundation to the information security for becoming a common choice among all applications areas for enhancing their security . The identification and authentication of an individual using cryptography and biometrics, provides high assurance in its security model. We proposed an algorithm for enhancing the security of OTP using ECC with palm-vein biometric. The major influence of ECC compared to prevalent public key cryptography such as RSA, is

that it offers higher security per bit with smaller key size. Since ECC has smaller key size, hence it also reduced the computation power, memory and bandwidth. This research article has been organized as follows.

Out of many types of attacks, there is a type of attack on computing environment connected to the network, is replay attack/eavesdropping, which obtains legitimate user's credential such as login-id and password. Once the credentials are captured by attackers, then same are used to get accessed into the legitimate user's account to do some mischievous works. To get rid of this type of attack, an OTP is used. OTP has operations in both sides of the networks. On the client/user side, the appropriate OTP must be generated and displayed. On the server/host side, the server must be able to verify the OTP received from client side and permits the secure exchanging of the user's confidential information.

II. METHODS AND MATERIAL

ECC-Elliptic curve cryptography Algorithm

1. Server generates OTP.
2. Encryption module gets OTP as its input in a plain-text.
3. Encryption module generates cipher-text against plain-text of OTP.
4. Cipher-text gets transmitted over the channel to the user's cellphone.
5. User cellphone gets cipher-text.
6. Decryption module at recipient-end gets executed in a decryption enabled devices and plain-text gets generated.
7. The plain-text generated in the step 6, entered as input for OTP for the transaction in the input box of OTP.

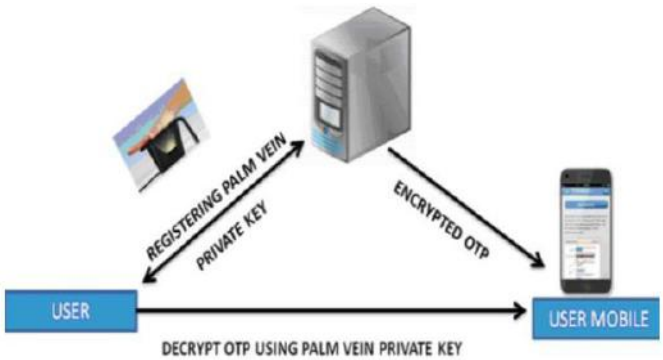

Figure 1. Architecture Diagram

III. RESULT AND DISCUSSION

Features	RSA	ECC
Efficiency	Low	High
Security	Low	High
Confidentiality	Less	More
Chances of hacking	More	Less
Throughput	Not accurate	Accurate

Figure 2. Palm Vein Authentication

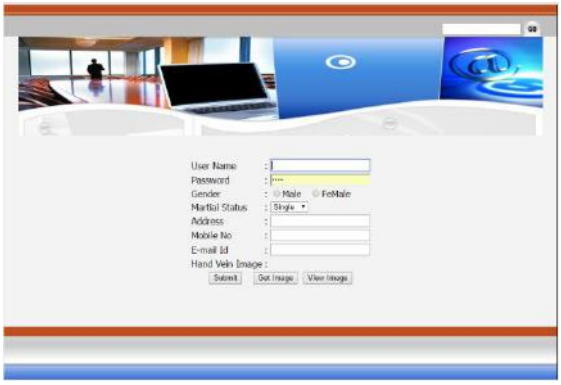

Figure 3. Registration

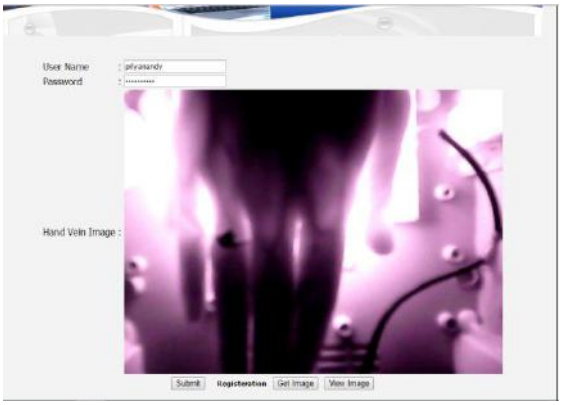

Figure 4. Login

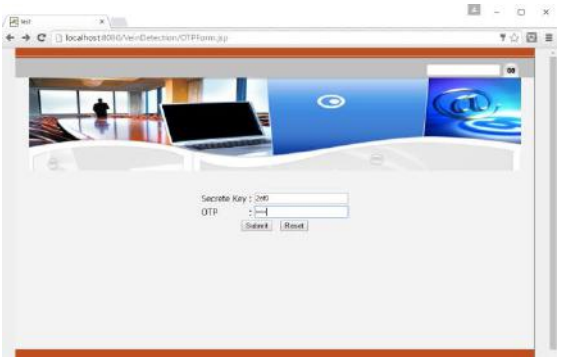

Figure 5. OTP

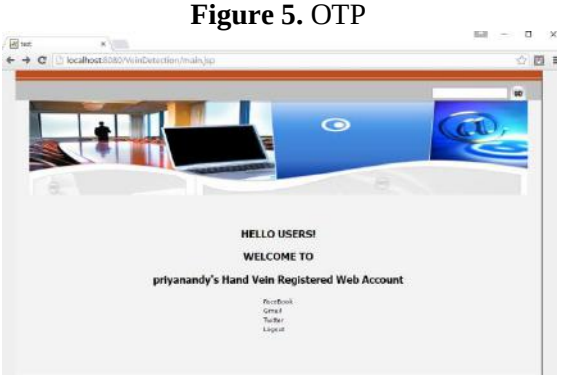

Figure 6. Opening Three Web Portals

IV. CONCLUSION

A very secure communication of the OTP in the network is illustrated with the help of ECC and palm vein biometric. The main advantage of ECC is that it requires very less key size and gives high level of security with cheaper biometric recognition system. Palm vein biometrics provides contact-less, hygienic and noninvasive and easy to use. At present e-commerce business is growing very rapidly. Most of the banking systems use OTP in the form of plain-text for the money transaction of e-commerce business, which is very insecure and totally dependent on the Short Message Services (SMS) providing communication client/server. This model enhances the drawback of the present ecommerce transaction system. This model also can be employed for any other type ofsecure data communication systems, which is communicated through SMS.

V. FUTURE ENHANCEMENT

The implemented method has generated private key from fused image and also elliptic curve parameters to find the elliptic curve and public key associated with the user.

This method can fatherly develop to generate the digital signature by using ECDSA and can also be merged with steganography.

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Implemented Mitigation of Security Attack in Android Application Using Pin Tool

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ABSTRACT

The popularity and adoption of smartphones has greatly stimulated the spread of mobile malware, especially on the popular platforms such as Android. In light of their rapid growth, there is a pressing need to develop effective solutions. In the past few years, mobile devices (smartphones, PDAs) have seen both their computational power and their data connectivity rise to a level nearly equivalent to that available on small desktop computers, while becoming ubiquitous. On the downside, these mobile devices are now an extremely attractive target for large-scale security attacks. Mobile device middleware is thus experiencing an increased focus on attempts to mitigate potential security compromises. In particular, Android incorporates by design many well-known security features such as privilege separation. In this thesis the Android security model and some potential weaknesses of the model is described. Thesis provides taxonomy of attacks to the platform demonstrated by real attacks that in the end guarantee privileged access to the device and mitigation technique for the same attack would be proposed. The result analysis and testing would be done on mitigation technique.

Keywords: Dynamic Analysis, Runtime, Binary Instrumentation, Pin, Pin tool, Intel, Just-in-time compiler, security attack, android Attack.

I. INTRODUCTION

Instrumentation is a simple technique for inserting any extra line of code in to an application to observe its behavior. It can be performed at various stages – inside the source code, at compile time, post link time, or even at run time. Source Code Instrumentation is a way to instrument source programs and Binary Instrumentation is to instrument binary executable directly Static binary instrumentation (SBI) occurs before the program is run phase, a phase in which we can rewrite executable code or object code. Dynamic binary instrumentation (DBI) is done at run time.

Program Analysis

	Static Category	Dynamic Category
Source Type	Static source analysis	Dynamic source analysis
Binary Type	Static binary analysis	Dynamic binary analysis

Table (1). Types of Program Analysis

Static Analysis and Dynamic Analysis:

Static analysis is the process of analyzing the source code or machine code of the program without need of running it **Dynamic analysis** is the process of analyzing program as it executes or at the runtime**.**

Source Analysis and Binary Analysis:

Source analysis is the process of analyzing programs at the level of source code. Source analysis are generally done for the points of programming language constructs such as expressions, statements, functions, and variables.

Binary analysis is the process of analyzing programs at the level of machine code, that stored either as object code (pre-linking) or executable code (post-linking). In this category, we have analysis that are performed at the level of executable intermediate representations, such as byte-codes, that runs on a particular virtual machine.

Binary analysis are generally done for the points machine entities, such as registers, memory locations, procedures, and instructions.

Pin :

Pin has been the framework of choice for researchers working on program analysis and related tools. It can be used for several purposes, but mostly for program analysis (memory allocation analysis, error detection, performance profiling, etc...) and for architectural study (processor and cache simulation, trace collection, etc…). PIN is a dynamic binary instrumentation engine or framework. Pin is used for the instrumentation of software programs. It supports many platforms like Windows, Linux, Mac OS and Android executable for IA-32, and Intel(R) 64[4]. The Pin allows a programmer to insert any arbitrary code (written in C or C++) at arbitrary places in the executable (run time of any program). The code is added dynamically while the executable (program) is in the running phase. The input to this compiler is not byte code, but a regular executable. Pin dynamically re-compiles the application during execution. The Pin kit includes many tools (they can be found at: pin-w-x-y-android/source/tools). The tools are provided as source files .Pin provides the framework and API.

Pin Architecture:

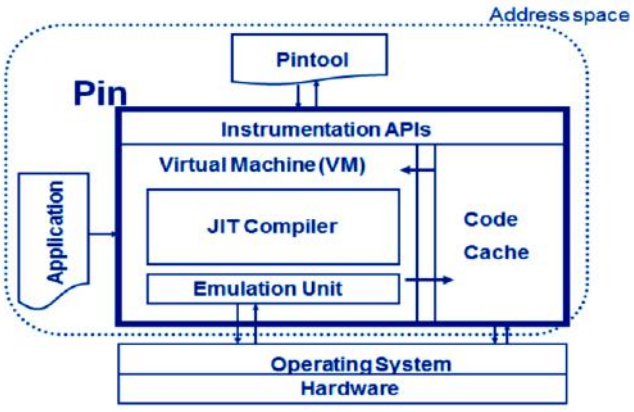


Figure 1. Pin architecture [1]

Pin consists of a virtual machine (VM), a code cache, and an instrumentation API invoked by Pin tools. The VM consists of a just-in-time compiler (JIT), an emulator, and a dispatcher. After Pin control of the application, the VM coordinates its components to execute the application. The JIT compiles and instruments application code, which is then launched by the dispatcher. The compiled code is stored in the code cache. The emulator interprets instructions that cannot be executed directly. It is used for system calls which require special handling from the VM. (E.g. system calls)

II. METHODS AND MATERIAL

A. Pin Tool

Pin tool is the instrumentation program. Pin tools run on Pin to perform meaningful tasks. The inscount pin tool is used to find out the number of instructions in the running program.

Instrumentation consists of two components:

1. A mechanism that decides where and what code is inserted
2. The code to execute at insertion points

These two components are instrumentation and analysis code.

B. Android

Android is a powerful Operating System supporting a large number of applications in Smart Phones. These applications make life more comfortable and advanced for the users. Hardware's that support Android are mainly based on ARM architecture platform. Android comes with an Android market which is an online software store. It was developed by Google. It allows Android users to select, and download applications developed by third party developers and use them. There are around 2.0 lack+ games, application and widgets available on the market for users. Android applications are written in java programming language. Android is available as open source for developers to develop applications which can be further used for selling in android market. There are around 200000 applications developed for android with over 3 billion+ downloads.
Android relies on Linux version 2.6 for core system services such as security, memory management, process management, network stack, and driver model. For software development, Android provides **Android SDK**

(Software development kit). Read more about open source software.

Android uses following Tools:

Eclipse, ADT Plugins, SDK toolkit, AVD toolkit.

Android Architecture

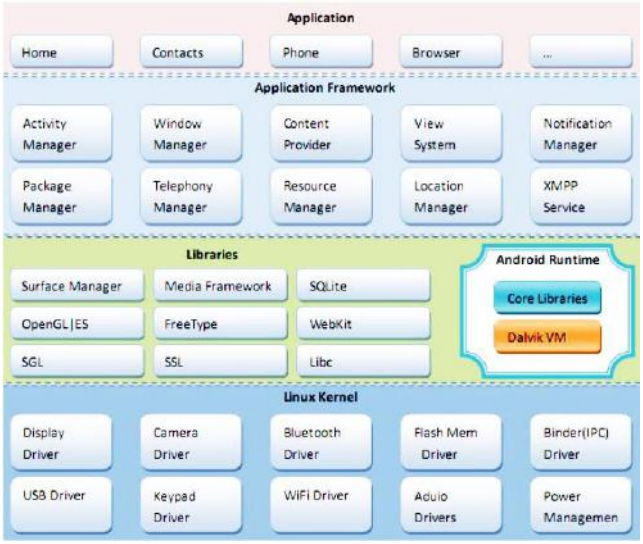


Figure 2. Android Architecture [3]

Android Activity Lifecycle

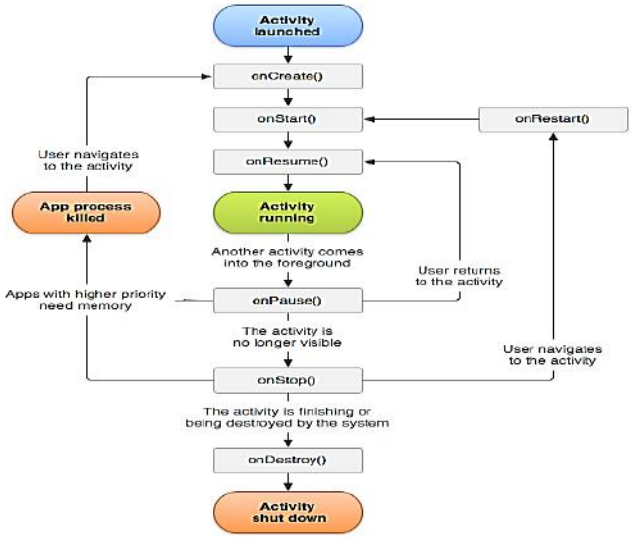


Figure 3. Android Activity Lifecycle [2]

C. Mitigation

Mitigation is the effort to reduce loss life and property by Lessing the impact of disasters.

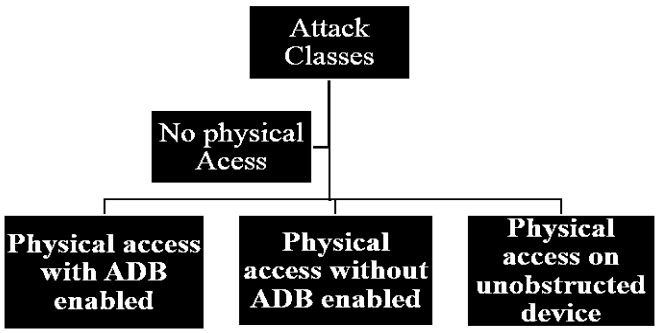


Figure 4. Attack Classes

No physical access

Attack circumstances where it is impossible to gain physical access to a user's device. Then the attacker must get the user to perform actions on the attacker's behalf. Such remote attacks commonly rely heavily on social engineering [5]. To achieve the appropriate initial access to the user's device an attacker must get some malicious software running on the device. To run code remotely on a user's device, the attacker typically must convince the user to either download a malicious application or access malicious content via one of the applications already installed on the device. If the attacker can exploit a vulnerability on the user's device, then this access may be used further to gain privileged access.

Physical access with ADB enabled

If the attacker finds a device left unattended, yet obstructed via a password or screen lock, the attacker may be able to exploit the device through the Android Developer Bridge.

Physical access without ADB enabled

If the attacker finds an obstructed Android device left unattended, but is unable to use the ADB service, the attacker may still gain privileged access via recovery boot.

Physical access on unobstructed device

In some cases the attacker may actually have access to a device without a password protected screen lock. Such a situation allows the attacker to actually leverage any

other attack method since the attacker can choose to install applications, visit malicious websites, enable ADB on the device, etc.

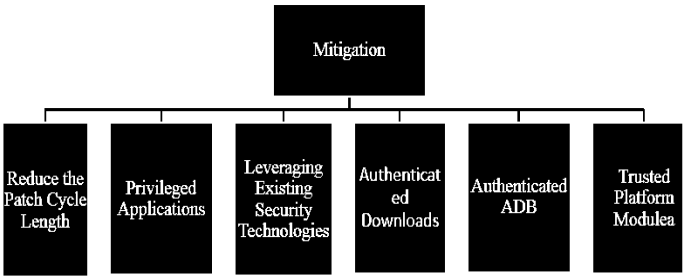


Figure 5. Type of Mitigation

Reduce the Patch Cycle Length

Attackers exploit some flaw in the operating system to gain root privileges. Reducing the patch cycle length would mitigate these threats with greater effectiveness. Zero-day exploits would still be possible, however the common lingering threat will be reduced. While Google has already demonstrated willingness to act quickly with out of band patch releases in reaction to certain attacks (e.g., [6]), reducing complete patch cycles is a more difficult problem. Indeed, manufacturers make changes to the Android source to create a competitive advantage. A fundamental separation between the core of Android and manufacturer modifications should be established.

Privileged Applications

To mitigate application attacks that take advantage of Android's permission model many solutions have been proposed. Propose lightweight application certification comparing the requested permissions of an application to a set of security rules. If the application does not pass any of the security rules, then possible malicious activity is brought to the attention of the user.

For example, Google could validate that certain software vendors create security software and grant applications created by these vendors additional API functionality. Applications signed by such a vendor could, for example, have read access to the file system in order to facilitate anti-virus scanning beyond limited scope typically granted to applications. Such a configuration would allow users to install security related applications without having to first root their device. Because privileged applications will have unrestricted access to the device, these applications should be certified by some governing entity before they can be downloaded. This certification process could also help mitigate some weaknesses of an unmodulated market. With access to trusted security tools, users would be able to monitor untrusted applications and provide appropriate feedback.

Leveraging Existing Security Technologies:

There are several existing operating system security enhancements that could be ported to Android. Instrumenting Android to monitor applications and understand how they interact with the user's sensitive information. A realized implementation of Taint Droid could give users real-time information about how an application uses the permissions it is granted. Generally, operating system level software modifications such as adding a firewall to Android involve porting existing technology to the Android kernel and creating an application to facilitation administration.

Authenticated Downloads:

Once an attacker has physical access to a device, adding malicious applications becomes simple and quick by posing as the legitimate user and downloading them from the Android Market. To ensure downloads are made only by the user, the market should require authentication before every transaction, similar to the model currently used by the iPhone.

Authenticated ADB:

Because of the power given through the ADB, it should not be accessible to unauthorized users. Android should require the device to be unlocked before ADB can be used. Any legitimate user should be able to unlock the device and once the connection is made, the session could be maintained by preventing the screen from locking while it is connected via USB. With ADB authentication, the attacker no longer has a backdoor to bypass the lock mechanism's authentication process, mitigating the ADB attack against obstructed devices.

Trusted Platform Module:

To secure a device in a managed model scenario a root of trust must be established. Using a Trusted Platform

Module (TPM) provides a ground truth on which device security could be built, providing authentication of device state. Using a TPM would mitigate the recovery image attack, which relies on the ability to change the boot image. Assuming signed byte code and authentication of the boot image, updates running unauthorized code would become extremely difficult.

III. LITERATURE REVIEW

1. Pin: Building Customized Program Analysis Tools with Dynamic Instrumentation

In this Paper they have described that pin is robust and powerful software instrumentation tool for program analysis tasks such as

1) Profiling
2) Performance Evaluation
3) Bug Detection

2. Behavioral Analysis of Android Applications Using Automated Instrumentation

In this paper, they present efforts on effective security inspection mechanisms for identification of malicious applications for Android mobile applications.

1) Count the number of Instruction in the original Application.
2) Count the number of Instruction in the Malicious Application.
3) If Number of Instruction are different then know there are some extra line of code in the application code

3. All Your Droid Are Belong to Us: A Survey of Current Android Attacks

In this paper we look to Android as a specific instance of mobile computing. We first discuss the Android security model and some potential weaknesses of the model. We then provide taxonomy of attacks to the platform demonstrated by real attacks that in the end guarantee privileged access to the device. Where possible, we also propose mitigations for the identified vulnerabilities.

4. Analysis and Research of System Security Based on Android

In this paper, it has analysis Android system's security mechanisms with widely used in mobile platforms. It has separately introduced its system architecture, security mechanism and safety problems. Through it has analysis Android security mechanisms and its components; it has set to the Android security, safety mechanism side, system security and data security. It has promoted system security to system permission. At the same time it analysis the Android security risks, it has deeply researched the attack based on Linux kernel. It has proposed security mechanisms based on SELinux policy theory to ensure system security on application program framework layer.

5. Patch droid: scalable third party security patches for android devices.

In this paper they have presented patch droid, a System to patch security vulnerabilities on legacy android Android devices, Patch droid uses dynamic instrumentation techniques to patch vulnerabilities in memory, and uses a path distribution service so that patches only have to be created once and can be deployed on every devices. Because patches are injected directly into the processes, Patch droid does not need to flash or modify system partitions or binaries, making it universally deployable even on tightly controlled devices.

Proposed System

6. Mitigation of security attack in android application using pin tool

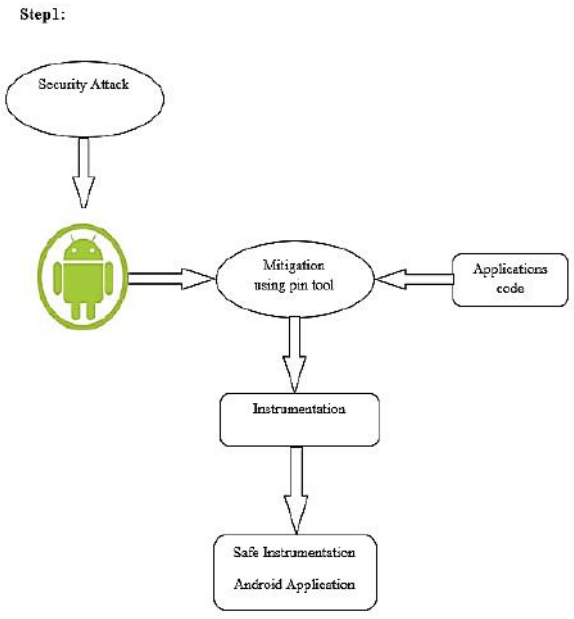


Figure 6. Instruction count in this android application

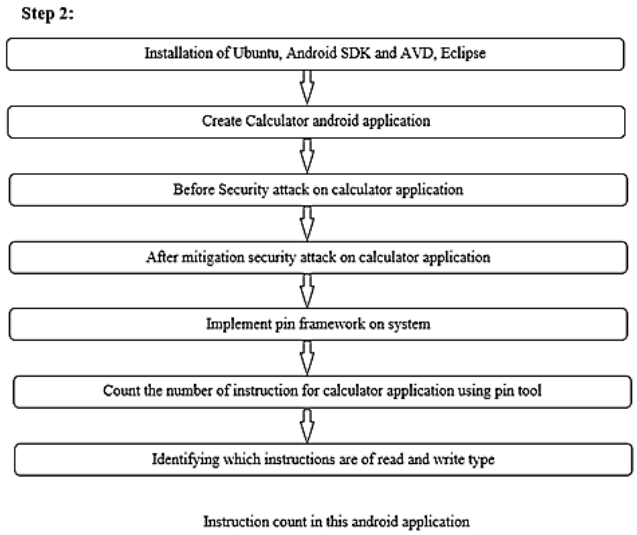
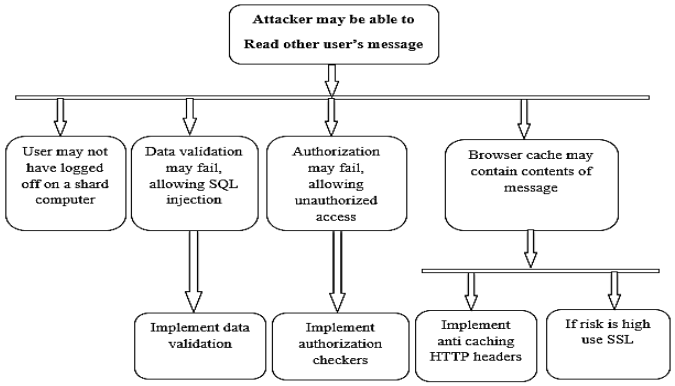


Figure 7. For Example: Attack



IV. RESULT AND DISCUSSION

Getting the system ready

Table 2. System Specification

Operating System	Ubuntu 14.04 32 Bit
Android	ADT Bundle with eclipse and sdk
API used for sdk	API 18,19
Android Device	INTEL AVD (x86)with hardware emulation
	Busy box and Pin installed
NDK Version	Ndk 9(gcc 4.6) 32 Bit
PIN Version	Pin 2.14-67254 gcc4.6

Installation on Ubuntu

Figure 8. Install ubuntu in my system

Install Android SDK and AVD, Eclipse

Start eclipse and AVD.
Create calculator android application in eclipse.
There are two values add, mul, sub, div.

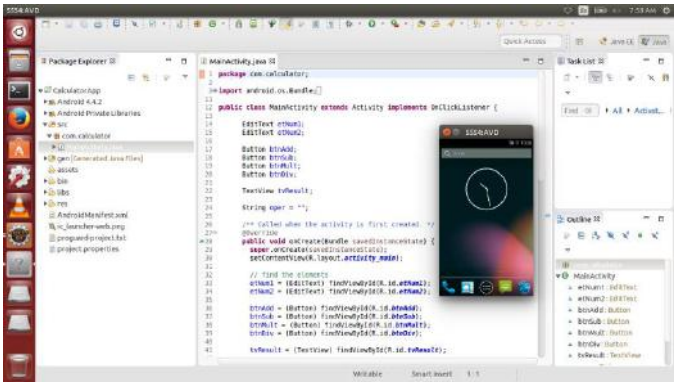


Figure 9. Install Android SDK and AVD, Eclipse in Ubuntu

Before Security attack on calculator application

Create calculator android application and the privilege escalation type attack will be performed.

- **Addition:**
- Before there are two values addition but attacker attack will be perform modification your output multiplication.

- **Subtraction:**
- Before there are two values subtraction but attacker attack will be perform modification your output division.

Figure 10. Before attack addition, subtraction

- **Multiplication:**
- Before there are two values multiplication but attacker attack will be perform modification your output addition.

- **Division:**
- Before there are two values division but attacker attack will be perform modification your output subtraction.

Figure 11. Before attack addition, subtraction

After mitigation Security attack on calculator application

- **After mitigation security attack on calculator application**
- **Addition:**
- After mitigation there are two values addition and your attack will be mitigate and your original output is addition.

- **Subtraction:**
- After mitigation there are two values subtraction and your attack will be mitigate and your original output is subtraction

Figure 12. After mitigate attack in addition, subtraction

- **Multiplication:**
- After mitigation there are two values multiplication and your attack will be mitigate and your original output is multiplication.

- **Division:**
- After mitigation there are two values division and your attack will be mitigate and your original output is division.

Figure 13. After mitigate attack in multiplication division

Implement pin framework on system

Start the terminal and use to command
Run on pin this command. /pin –version and. /pin -- /system/bin/ls.

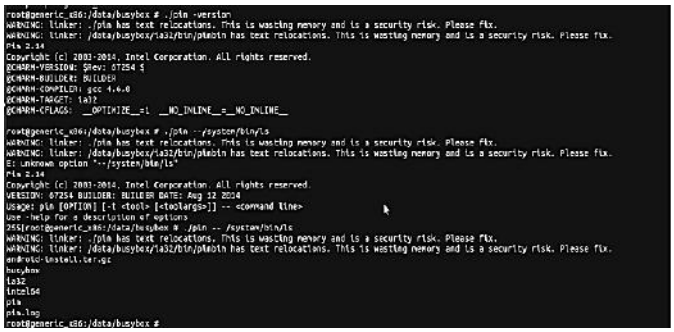


Figure 14. The pin framework version on android avd on system

Count the number of instruction for calculator application using pin tool

Inscount pin tool code used for count the number of instruction in calculator application

```
#include <stdio.h>
#include "pin.H"
using namespace std;
UINT64 icount = 0;
// Variable to keep running count of instructions
VOID docount()
{
        icount++;
}
// whenever any new instruction is executed.
VOID Instruction (INS ins, VOID *v)
{
      INS_InsertCall (ins, IPOINT_BEFORE, (AFUNPTR) docount, IARG_END);
     // this function insert a call to docount before every instruction.
}
// this function is called every time whenever any new instruction is encountered.
VOID Fini (INT32 code, VOID *v)
{
     fprintf (stderr, "%llu\n", icount);
}
// When the application exits, this function is called
// in following. argc, argv are the entire command line
int main (int argc, char * argv [])
{
         PIN_Init (argc, argv);
         // this will Initialize pin
         INS_AddInstrumentFunction (Instruction, 0);
         // this is called to instrument instructions (Register Instruction)
        PIN_AddFiniFunction (Fini, 0);
        // when the application exits, Fini is called
        PIN_StartProgram ();
        // to start the program
       return 0;
}
```

Run this code on pin framework.

Figure 15 .Output of inscount pin tool

We have compiled the inscount pin tool in the android avd and then attached it to the running android application. The application we used is CalculatorApp.apk. As we can see the image that the directory of the bin in the android avd contains a file name “inscount.out”. This file is made when we have compiled and attached the pin tool to the application

process. When we open that file we see a value ”484677” which means that there are total 484677 instructions during the running of the Calculator Application.

V. CONCLUSION

We have presented a method of mitigation of security attack in Android Applications using Pin tool which allows the user to instrument an Android Application. Instrumented code alters the behavior of the original application and the attacker can’t find the right way to inject his own code into the running Application. Moreover instrumentation can also be used as a protecting weapon. So here we have used pin tool to mitigation of security attack in android application.

VI. FUTURE WORK

In future on any android application, the attack will be performed. Using pin tool, its mitigation will also be provided. Any types of attack will be done and mitigation technique will be developed to protect application from any attack. Any android application count the number of instructions and API read and write type and run on pin framework.

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An Empirical Research : Impact of the Changes of Oil Prices over Stock Market Prices

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ABSTRACT

The stock market volatility is a well-known phenomenon. These volatility and fluctuations are empirical proven but which macroeconomic factor affect stock prices in what proportion and with what frequency is not well known phenomenon. Although, there are many macroeconomic factors that affect the stock market, however, we considered only one macroeconomic factor for the purpose of this research paper; that is, oil prices and its impact on the stock market prices. Therefore, the aim of this research paper is to investigate the empirical relationship between oil prices shocks and stock market. An empirical approach has been utilized to accomplish this research paper. The findings of this research paper concludes that stock market and oil prices are related but under what circumstances how it will react is uncertain.

JEL: E44, E03

Keywords: Stock Market prices, changes of Oil Prices

I. INTRODUCTION

The movement towards liberalization, privatization and globalization have strengthens the foundation and relatedness of stock market in the whole world since 1990s specifically in developed, emerging and developing countries. Around-the-world the need, emergence and popularity of stock-market considered as well-known fact and as such need arises among investors, researchers, academicians and policy makers to identify more specifically about the actual or real factors affecting the stock market prices. It is known that market-prices of stocks are driven by 'information' and information is highly sensitive and can be affected by known and unknown factors from all around the world. Also, it could be said that stock market 'react before' and 'interpret after' about the right and wrong information and finally perform corrective action if required according to interpretation. Now it is essential to add today's most important key element which makes this market to run at a speed of rocket which is, 'information technology', through which whole world is connected so tight that if little vibration is their at one point than it will impact whole channel but frequency will be higher at proximate region and vice versa.

Generally accepted, another stock market proven fact illustrates that stock market is the mirror and backbone of an economy, it can be concluded that stock prices are affected by the macro-economic indicators. This is evident from the fact that whenever there are any macroeconomic news flashes about expected as well as unexpected macroeconomic indicators than stock market prices will show its impact accordingly. It is difficult to know which information played an important role in the movement of stock prices. Daily fluctuations and volatility as reported in the whole world's stock exchanges, stocks prices, supports the argument that individual stock prices are influenced by a variety of unanticipated economic events, as if information is well known than stock market will not allow fluctuation but this is not the case. Therefore, it can be understood as; there is an element of unanticipated news that results into fluctuations of the stock prices. However, the impact of the above-mentioned economic news, will behave differently with different stocks due to their nature (industry with which it is related). Thus,

economic news whether broadcasted or as anticipated or unanticipated among investors are directly related or associated with the stock market index movement.

The theories are silent on the question of which specific factor or variable affect the stock prices. However, there are many theories developed to assess the stock prices with assumptions and risk and return approach, efficient market hypothesis and capital asset pricing theory. But these theories are also silent on question of which specific variable affect stock prices in what proportion. Other than company's operational performance, there are other factors which made possible to move in the same direction as other stocks moving in the stock exchange. This provides evidence that macroeconomic do affect stock prices but which macroeconomic factor affect is not specific.

This research paper, attempted to understand the relationship between the oil prices shocks and stock market with the evidences provided in empirical research. The empirical fact that changes in oil prices can be judged for the economic growth of an economy. It would not be wrong, if we say that the whole world is dependent on the oil producing countries and oil is a major as well as scare resource which has been extensively used throughout the world. Therefore, the dependence of the world economy on oil can be explicitly understood and regarded as a macroeconomic indicator, and therefore, it does have relevance with the stock market. Oil-prices are determined on the basis of fundamental market forces, that is, demand and supply of oil-based products. When there is an increase in the oil prices it is valid to say that the cost-of-production of oil-based companies have been increased, and if so that means level-of-profits are decreased and thus stock returns also decreased and vice versa. On the other hand, non-oil based companies, cost of production will affect due to the involvement of transportation cost. Thus, oil prices will affect directly and indirectly to all types of businesses. Oil prices are believed to be one strong macroeconomic factor that performs movement of stocks, although the level of influence is not determined in comparison to other macroeconomic factors. Recent ups and downs in the oil prices and its impact on stock market have shown that the traditional beliefs are changing with regards to the correlation between the two. This can be better understood with the empirical perspective.

This paper is organized as follows: section two includes the research methodology, research question, and research hypothesis; section three includes literature review and discussion; section four includes limitations and scope of the research; section five includes findings conclusion and section six includes recommendations.

II. METHODS AND MATERIAL

A. Objectives of the Research

The primary objective of this paper is to find out the type of relationship between the oil prices and stock market returns in the past and present. In addition, the secondary objective of this research paper is to find out the expected future relationship between the oil prices and the stock market returns. The basic idea of the research paper is to know what is happening to the oil prices since financial crises of 2008, and to know the reasons for the sudden unexpected changes and future expected relationship.

B. Research Methodology

The research methodology is the combination of two methods they are, data collection and data analysis. The data collection method used for this research paper is based on the secondary data base, collected from the authentic sources such as, website: World Bank, Stock Exchanges; Yahoo Finance; Newspapers & Magazines (The New York Times, Reuters, Fortune, The Telegraph, and Forbes); Journals (Journal of Future Markets, The Energy Journal, Journal of Finance, American Economic Review, Journal of Business, Scottish Journal of Political Economy). Whereas data analysis technique used for this research paper is between-study literature review which involves comparing and contrasting information from multiple literature sources. Specifically saying, empirical works findings compared with multiple components. The advantage of using this technique is appropriate for the purpose of this research because this technique is based upon two factors, representation and legitimation, where representation refers to the ability to extract meaning from the

information and legitimization refers to the credibility of the synthesis made in the research. These two factors are the important factors to achieve the objective of this paper.

Research question: What is the impact of oil price changes on the stock market prices over a period of time?

Hypothesis

H1: Oil prices changes are not highly correlated with the stock market prices.

H2: Oil prices impact over stock market prices has been changed over a period of time.

H3: The impact of oil prices as one of the macroeconomic indicators on the stock market prices is losing its relevance in recent years due to relationship between countries.

III. RESULT AND DISCUSSION

A. Literature Review and Discussion

Over the past six decades, oil prices have been treated as one of the macroeconomic indicator from the point of view of many economist, academicians and investors of financial markets. In favor of the above statement, Hamilton (2011) pointed out that ten out of eleven postwar economic downturn, was experienced at the time when there is an increase in oil prices. Thus, it gave rise to the importance to examine the relationship between oil prices and stock prices so that linkage of oil prices with that of overall economy, and oil prices can be investigated, and results or observations can be applied for the betterment. When the oil prices were increasing, economy was facing downturn which means that there is a connection between economy and oil prices. This connection indicated that oil prices can be understood as one of the macroeconomic indicator. His research observation cannot be ignored because it was proved that there is a statistically strong negative relationship.

Thus, this research paper argued that oil price changes are treated as macroeconomic indicator and similar point is proved in Hamilton's research.

Jones, Leiby and Paik (2004), argued that oil price shocks is a meaningful and useful measure of economic impact which is directly linked with the stock market prices. Asset prices are the present discounted value of the future net earnings of a firm, thus stock prices and returns absorb impact of current and expected future impact of oil price shocks. Where, it is not essential to wait for the incidence to occur actually, that is, change in oil prices, on the basis of expectation changes occur in the stock prices.

Chen, Roll & Rose (1986) in their research paper that aimed to study the economic forces and stock market', they concluded that stock market returns are exposed to systematic economic news. However, impact of systematic news will differ from one stock to other stock in terms of their relevance. Also, they argued that oil prices do not affect the trend of stock prices. This means unsystematic economic news does not hold in the real market scenario. Accordingly, the question arises is; why market is not moving according to the systematic economic news?

In contrast, evidence of negative relationship was verified by the research of Jones and Kaul (1996). However, it was not supported by the research of Huang et al. (1996) and Wei (2003). Ready (2003) examined separately the demand and shocks of oil prices, and they found that both demand and supply shocks are strongly correlated with aggregate stock returns. Changes in oil shocks considered as supply shocks, whereas increase in oil prices considered as demand shocks. The strong significant negative relationship found between supply shocks and stock returns in the sample period of 1986-2011. The strong positive relationship found between demand shocks and stock returns in the same period.

Bjørnland (2008) argued that the stock prices determinants are the prevailing economic conditions as well as expected economic conditions. The information processing efficiency of the stock market has been a subject of research since the formation and development of stock market in the whole world history. Therefore, the improvement in stock prices are made as per forecast than it is a case where forecast is made on the basis of public and private information, however, it is not the case. And, it is reasonable to argue that stock market do absorb consequences of information as quickly as it

absorbs any information and react instantly in relation to oil price shocks. As asset prices are the present discounted value of the future net earnings of firms, thus, both prevailing and expected impacts of oil price shocks should have absorbed into stock prices and its return, instead waiting for the actual time occurrence of the consequences. Consequently, it can be concluded that oil price is one of the macroeconomic factors which do have an impact on the stock market.

Jones & Kaul (1996) investigated the effects of changes in oil prices on stock prices during the postwar period. Their major contribution was to find out whether the stock market rationally evaluates the impact of oil shocks on the economy. They evaluated the stock market ability to evaluate the casual real effects of events that exogenously disturb the economy. Investigation was triggered to the reaction of the U.S. stock market with that of oil shocks, which shows that the stock prices rationally reflect the impact of news on current and future cash flows. On the other hand, they were not able to find out the evidences of fads or market overreaction. Canadian stock market also appears to react rationally to oil shocks as per their research. Whereas, reaction of Japan and United Kingdom stock markets were different. They were unable to find out completely the stock markets reactions to oil price changes in the context of rational asset pricing. They found that the effects of oil price changes on the stock market of Japan and the United Kingdom was substantially greater which cannot be justified in relevance to real cash flows. They also failed to explain the effects of oil prices on stock exchanges in relation with the changing expected returns. They concluded that, in the case of Japan and the United Kingdom the stock markets do overreact to oil price shocks and oil price shock impact on expected stock returns which is not proportional.

Thus, from the above discussion it can be concluded that, the oil prices do have had a correlation with the stock prices, however, the frequency or level of reaction is not determined, it could be same as expected or under-reaction as expected or over-reaction as expected.

An evidence of positive relationship between oil prices and stock prices has been reported recently in October 2014, when the Dow Jones Industrial Average fell down by 500 points which was driven by falling oil prices. Logically, a drop in oil prices is good for the market and economy, because it lowers down the production cost and stock returns will increase. In 2008, there was an increase in oil prices by around $150 a barrel, which was treated as bad for the stock market. Now the question arises is; why it is happening opposite. The answer is the weak correlation between oil prices and stock prices overtime.

To measure the relationship between oil prices and stock prices' a research conducted by Andrea Pescatori an economist (Gandel, 2014), found sometimes oil prices follow the stock market and sometimes stock market moves in opposite direction. He also found that stock prices tend to follow oil prices when people are not having confidence on the economy.

Hamilton (2003) provided evidences that there is a strong negative relation between increase in oil prices and future GDP growth. This means that, if there is fall in oil prices than GDP will increase and vice versa, this fact was stated by Ethan Harris also.

Lower oil prices simple means that the supply is higher according to law of supply. Ethan Harris, an economist, argues that lower oil prices are the function of increased supply and not a fundamental problem of an economy (Gandel, 2014). Thus, it can be concluded that, as oil prices decreases, due to higher supply, it means there is an increase in total production and consumption of oil based products and as such it should be indicated as an increase in the level of GDP in an economy.

Recent years showed entirely different trend between oil and stock prices. For instance, it presented no fundamental relationship exist between oil prices and stock prices. In the year 2014, oil prices and stock prices were experienced as moving in same direction.

Oil prices have been dropped down so fast in recent past (1980 till Dec 2015) and behind the scene it has its own story. Domestic production of oil in United States has been nearly doubled over the last six years. Thus, decrease in imports; oil exporting countries need to find another home. Therefore, oil exporting countries like, Saudi Arabia, Nigeria and Algeria, used to depend on exporting to the United states, however, nowadays they

have to depend on Asian Markets and thus they are forced to drop down the prices. Not only Canada and Iraq have had increased their exports of oil in the past, rather Russia also managed to keep pumping its exports besides all its economic problems.

Other sign for oil price downfall in recent past can be stated from the fact of weakening of economies of Europe and developing counties like world's biggest importer of oil. China has also undergone devaluation of its currency.

International relations and deals between the nations along with crises such as Greek debt crises and sanctions made by the United States on the Iran on account of 'Nuclear Deal' pave the path for the great changes in the Oil Industry. This fact is proven evidence as we can see the downfall of oil prices in the recent past. Thus, the question arises accordingly is that; do oil prices made any impact on the stock market index movement as it does in the history. The answer is oil prices movement is no more regarded as the fundamental indicator of macroeconomic which has any impact on the stock prices.

B. Limitations and Scope of the Research

One of the important limitations is the availability of data and time for doing the research. Second limitation is the lack of quantitative research methodology approach. Therefore, there is a huge scope of this study for the researchers to take this research to new heights and discover relationships between oil prices and stock market. Stock market is related to the current changes and future expectations; hence, we cannot fix any relationship because market conditions and circumstances will change. Thus, it is the duty of the researchers, economist and professionals to know which factor is related to present market conditions and how it will affect in what sense.

IV. FINDINGS AND CONCLUSION

This paper concludes as follows: there is an impact of macro-economic performance indicators of an economy with respective stock market. For the purpose of this paper only one macroeconomic factor is considered to be empirically studied that is oil prices changes and stock market prices correlation.

World economic news can be considered as one of the common factor that affect all the stock market index at the same point of time but the degree of affect will vary from one stock market to another and one stock price to another, it will be more appropriate to say impact will be based on the terms of relevance to the concerned stock market and its stocks. Also, at this stage we can also conclude that the stock market movements are highly associated with its proximate environmental and economic changes. Stock market movement is highly correlated with closely related environmental & economic factors and vice versa.

As a result, all Null hypothesis is rejected and alternative hypothesis is accepted. Thus, the results of their study is concluded as follows; history of correlation between oil prices and stock market prices are highly correlated but today the correlation is week between the two. This is because of the fact that there are huge changes taking place from recent past between the countries political relationship and economic resources development and new technology which weaken the demand of oil or it can be said that substitute of oil is in the market.

The reduction in the imports of oil in United States is one of the reasons for the downfall in the oil prices. This could be documented from the increase of Shale oil production since 2008 by approximately 4 million barrels per day. Reduction in imports from Organization of the Petroleum Exporting Countries (OPEC) cut in half and in the last thirty years the US has stopped importing crude oil from Nigeria.

Oil prices have been dropped from $110 per barrel to $25 per barrel from 2008 till October 2015. In the last three months (August, September and October) 2015, oil prices have been reduced from $54 to $46.22 per barrel, that is 14.40 percent decline. Whereas, in the last ten years statistics shows that, in 2006 the oil price was $59 per barrel and today it is $46.22 per barrel (21.66 percent decline). During 2008 oil prices reached $140 per barrel, thereafter, it started declining and reached lowest of this period $42 per barrel at the beginning of 2009. Within one year, it decline to 70 percent which is not normal, we can relate to the global financial crises

also. Again it started recovery and it reached $113 per barrel in the first quarter of 2011, till first quarter of 2014; it fluctuates between $113 per barrel to $105 per barrel. Thereafter, a sharp decline has been seen in the second and third quarter of 2015. If we assume that economic cycle for oil industry is ten years than again oil prices will regain its high prices in the upcoming years.

On the other hand, if we evaluate the economic and political relationship between countries and their development, than the whole scenario will change and it will not follow any previous trend associated with the price changes in this industry. Therefore, it can be concluded that as there are numerous factors that are related to the huge changes in the oil prices and thus relationship between the oil prices and the stock prices will not remain same as before. If this trend continues than oil production companies have to stop production, therefore reduction in the total supply will cause oil prices to recover and adjust.

V. RECOMMENDATIONS

Stock market investors should not evaluate their investment in stocks only on the basis of the oil prices changes rather investment evaluation should be based on two broad areas that is internal factors and external factors. An internal factor means the actual and expected performances of the respective stock's companies. Whereas, an external factor refers to the broad economic indicators of the concerned economy and world economy.

Simple economics rule says oil price changes is the result of demand and supply rule, that is when supply is more than price will decrease and vice versa. Thus, production cost will decrease and ultimately earnings of the companies will increase. This simple logic is proving wrong in the current scenario because decreasing oil prices is not matching with the earnings that is, still companies' earnings are not increasing and this makes investors confused.

This paper focuses only on the one macroeconomic indicator that is oil price changes, thus for investors of stock market, it is concluded that oil prices changes impact on stock market prices is weak and not a good indicator of the stock market movements. Rational investors need to have continues watch or awareness about the world economy and its consequences to the different stock exchanges. More specifically oil price changes will affect only oil stocks and little impact will be there on the other. Still specific relationship cannot be determined. In simple words we can say it will change according to the new changes in the whole world.

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An Experimental Study on Sea Sand by Partial Replacement of Sea Sand in Concrete

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ABSTRACT

The rapid growth in development of construction industry is leading to an increase in utilization of natural resources like river sand due to which there has been a much scarcity in availability for construction. This overuse should be balanced by introducing certain abundantly available other natural materials which can be replaced to the river sand. The sea sand seems to have certain similar properties and can be used as a constituent of concrete. This can reduce the river sand replenishment and decrease various ecological imbalances. The fast growth in industrialization has resulted in tonnes and tonnes of by product or waste materials, which can be fly ash, crushed stone dust, silica fume, and granulated blast furnace slag, steel slag etc. The use of these byproducts not only helps to utilize these waste materials but also enhances the properties of concrete in fresh and hydrated states. In the present work a series of tests were carried out to make comparative studies of various mechanical properties of concrete mixes prepared by using Sea Sand. If some of the materials are found suitable in concrete making, cost of construction can be cut down. So in the present study, an attempt has been made to assess the suitability of Sea sand in concrete making. Cubes and beams were cast and tested for compressive strength and flexural strength after 7 days and 28 days. The Sea sand is replaced in percentages of 0%, 20%, 40%, 60%, 80%, and 100%.

Keywords : Aggregate, Sea Sand, Compressive Strength, Split Tensile Strength

I. INTRODUCTION

The river sand still remains the main source of sand for construction industry. The demand for sand has been ever increasing with the development of building industry. As a result, it has been noticed the overexploitation of river sand causing serious environmental problems. One of the main objectives of the study is the identification of potential sources of river sand alternatives. The sea sand is now being recognized as the major alternatives of river sand in this study. Sea sand is some of the alternative that can be used to replace with river sand in the preparation of concrete. As major natural resource Sea sand can be obtained from the sea shores abundantly at free of cost.

II. METHODS AND MATERIAL

A. Problem Statement

Now–a-days, the use of river sand for concrete production has increased rapidly due to increase in number of construction industries. The increase in rate of production of concrete leads to increase in demand for raw materials which in turn leads to price hike of raw materials. Also this demand may be due to scarcity in availability of raw materials mostly the river sand. This problem of importing river sand from other places at a higher price has brought the idea of using the locally available natural material in the place of this river sand. So, by using the sea sand which is abundantly available at the sea shores for the low volume road construction, much of the economy of construction could be saved.

So, by using sea sand from the sea shores as a fine aggregate replacement in preparation of concrete will save our earth for a sustainable environment. It also helps to save much of our river sand from being deployed for construction.

B. Aim And Objective

The objectives of this study are:

1. To determine the performance of using sea sand as a fine aggregate in concrete.
2. To determine the most economic material that can be suitably replaced for construction.
3. To fulfil safe environment by using waste materials.
4. To investigate the basic properties such as Flexural Strength, Compressive strength of sea sand replaced concrete in comparison with Normal River sand used concrete.

C. Scope of The Study

The scope of the study will be focused on the performance of concrete using sea sand as a partial replacement with 20mm nominal maximum aggregate size. In this study the sea sand sample is collected from Mypadu, Indukurupeta Mandal, Nellore District, Andhra Pradesh, India. The sample was taken on the sea shore.

D. Mix Design

Mix design can be defined as the process of selecting suitable ingredients of concrete and determining their relative propositions with the object of producing concrete of certain minimum strength and durability as economically as possible. The mix design is based on as IS: 10262-2009.

Table - 1: Shows Mix Design for M30 grade

Water	Cement	Fine aggregate	Coarse aggregate
140	333	740	1258
0.42	1	2.2	3.78

E. Test On Materials

✓ Cement

OPC 53 Grade of Cement Maha cement was used in this study. The following physical test should be conduct in the laboratory as per IS codes

Table – 2: Physical Test results of cement

Sl. no.	Physical Tests	Obtained results	Requirements as per IS CODES
1	Fineness	3%	Not >10% as per IS 4031 part 1
2	Standard Consistency	32%	IS 4031 part 4
3	Initial Setting time	42min	Not less than 30 minutes as per IS 4031 part 5
4	Final setting time	265 min	Not more than 600 minutes as per IS 4031 part 5
5	Soundness	2 mm	Not>10mm as per IS 4031 part 3
6	Specific gravity	3.10	IS 2720 part 3

✓ Aggregates

The aggregate used in this study was clean river sand and crushed stone aggregate collected from near Kurnool.

Table – 3: Physical Test of aggregates

Sl. No	Physical Tests	Obtained results	Requirements as per IS 383
1	Impact Test	19.74%	Not more than 45%
2	Los Angeles Abrasion Test	9.89%	Not more than 50%
3	Specific gravity		
	a) Coarse Aggregate	2.72	2.6-2.9
	b) Fine Aggregate	2.61	2.6-2.8
4	Water absorption		Not>2%as per IS:2386-Part 3
	a) Coarse Aggregate	0.6%	
	b) Fine Aggregate	0.3%	

F. Tests on Concrete

✓ **Slump Test**

Table – 4: Shows the slump values of sea sand used concrete

SL NO	Percentage addition of Sea Sand to concrete	Slump Values in mm.
1	0%	103
2	20%	98
3	40%	95
4	60%	93
5	80%	90
6	100%	86

✓ **Compaction Factor Test**

Table – 5: Shows the Compaction factor values of sea sand used concrete

SL NO	Percentage addition of Sea Sand to concrete	Slump Values in mm.
1	0%	0.98
2	20%	0.96
3	40%	0.93
4	60%	0.90
5	80%	0.88
6	100%	0.86

III. RESULT AND DISCUSSION

All specimens will be moist cured for one day and after moist curing the specimens will be water cured for required days. Traditional curing the cubes moulded with the cement concrete is subjected to curing in the water Tank and then checks the strengths at the age of 7 days and 28 days.

Table – 6: Shows the Compression and Flexural strengths of sea sand used concrete cubes and beams

Percentage of sea sand added in concrete mix	Compressive strength in Mpa		Flexural Strength in Mpa	
	Age in days		Age in days	
	7	28	7	28
0%	33.04	41.93	3.38	4.64
20%	34.81	44.38	3.48	4.80
40%	37.33	47.55	3.52	4.94
60%	35.70	46.07	3.32	4.54
80%	33.18	42.07	3.22	4.43
100%	32.44	40.60	3.15	4.25

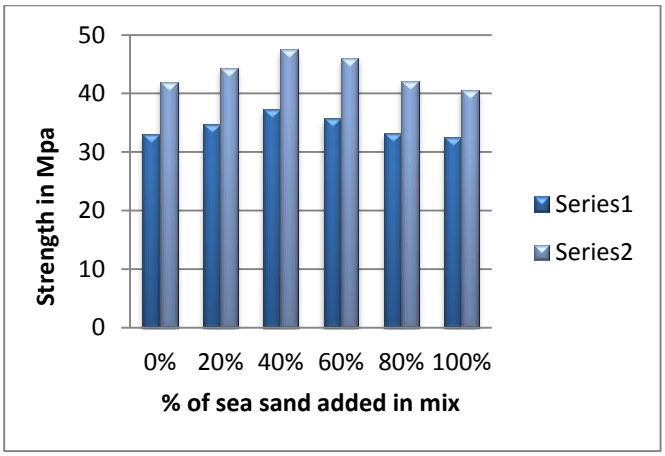

Chart -1: Difference of 7 days and 28 days compressive strength test results

In the present study, the sea sand has been replaced with river sand in concrete mix. The compressive strength and flexural strength for

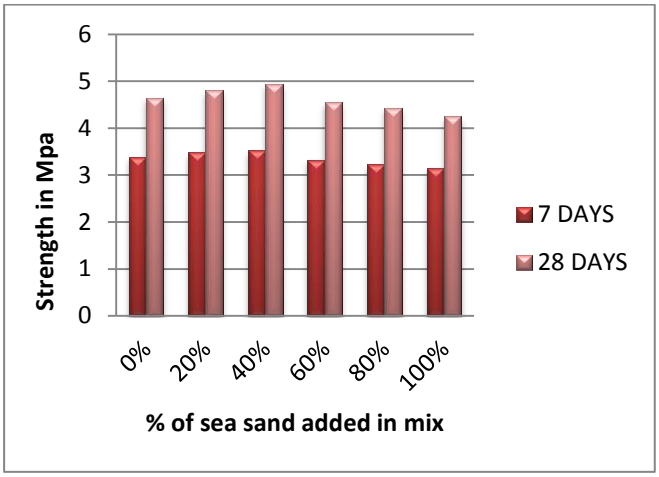

Chart -2: Difference of 7 days and 28 days Flexural strength test results

Different percentages of sea sand are shown in table. The normal M30 grade with no replacement is used as a reference for compressive and flexural strengths and the increase or decrease in Percentage of strength is calculated. For 20% replacement the compressive strength has increased for 5.84% and gradually increased with increased in percentage of sea sand. The optimum strength achieved is 13.4% more than the normal strength at 40% of sea sand replaced and then decreased 3.17% for 100% of replacement. The flexural strength behavior is also similar in this case since the strength has increased for about 3.44% by 20% replacement and increased to 6.46% more than the normal concrete mix strength for 40% replacement. For 100% replacement the strength has been decreased for about 8.4% for 100% replacement than the normal concrete mix strength.

IV. CONCLUSION

1. The replacement of sea sand to concrete slightly increases the compressive and flexural strength.
2. By replacing 40% sea sand the compressive strength has increased by 13.4%
3. By replacing 40% sea sand the Flexural strength has increased by 6.46%.
4. Adoption of waste materials, cost of construction can be reduced to some extent.

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Implementing Smart Traffic Control System for Congestion Management

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ABSTRACT

This paper presentsSmart Traffic light Control System for congestion management which is implemented using Infra-Red sensors. An infrared sensor is an electronic instrument which is used to sense certain characteristics of its surroundings by either emitting or detecting infra-red radiations. Infrared sensors are also capable of measuring the heat being emitted by an object and detecting motion. It helps us to know more about the congestion of traffic and reduce it. Sensors are kept at both the sides of the road and it is kept at a distance of 500 metre away from the signal and that place is built in such a way that only one car can pass through the lane.Sensors sense the number of cars passed and alter the timer of the green light.If the number of cars passed is low, the timer will be set for 10 seconds and if the number of cars passed is high, the timer will be set for 30 seconds. This is how congestion management is done.

Keywords: PIC16F877A, Congestion Control, Traffic Junction

I. INTRODUCTION

The effects of increased congestion are typically characterised by slower speeds, longer journey times, increased queuing at junctions or bottleneck, increased stopping and starting, more time spent stationary, less predictable journey times. As a result of these effects, congestion also has both economic and environmental impacts. Although increased demand for the road network can often be driven by economic growth, the presence of congestion can also hold back further growth as more time is spent travelling at the expense of other productive activities. In addition, the inability to accurately predict journey times due to congestion can result in wasted time as individuals either arrive late for appointments or arrive early by allowing too much time for their journey. Environmentally, increased congestion can lead to increased pollution and carbon emissions as vehicles spend more time stationary or at very low speeds where engine efficiency is lower. In addition, greater levels of congestion can result in increased wear and tear to vehicles due to the high frequency of braking and acceleration that often occur in slow moving congestion. Generally work done in various phases has been organized into Sections. Section 2 gives details about the existing system and its drawbacks. Section 3 gives details about proposed system, design and architecture. Section 4 gives details about different modules and their operations. Section 5 discuss about conclusion and the possible future enhancements for our project.

II. METHODS AND MATERIAL

1. Literature Survey

Traffic congestion has been one of the fundamental problems by modern cities since the wide usage of automobiles. Time is equal to money in today's society. Just a normal few minutes trip to the convenience store may take up to hours due to traffic jam or slowdown .According to police ,congestions are actual cause of some issues like road rage, road bullies and major accidents. Using fixed time at traffic signal extends the waiting time at each traffic signal and hence, makes people wait for hours together, there are several factors that contribute to the occurrence of traffic congestion.The rapid increase in the numbers of private

automobiles ownership due to the development of the country and economy is certainly an undeniable one. Not only it put a dent on the environment with the amount of greenhouse gases it produced, but also precious natural resources like gasoline and diesel are greatly exploited and wasted. The government should further reduce the subsidies on the gasoline and diesel to raise awareness on how important these resources are. Car pooling and taking public transportation should be practiced by the public.

Figure 1. Traffic Congestion

The small road capacity is another contributing factor. As the number of private cars increase traffic congestion occurs when the needed road capacity is not fulfilled. Simple improvements of the road infrastructure can easily solve this problem. for example; wider roads ,overpasses and even underground tunnels could be built to trim down the traffic .since congestion occurs frequently in cities ,local government municipal can consider passing laws on restricting the number of cars owned in a family. Traffic police are not available at all signals during a day which becomes an advantage for people to break traffic rules and wait for hours at same position. from a road user perspective, managing such situation requires either reduction of vehicular traffic volume or freeing up available spaces on the road.

On taking survey of traffic jam recorded at Ramapuram, Bharathisalai signal, the main junction near SRM ,which creates heavy traffic every single due to improper traffic police and traffic signal maintenance ,three colleges and hospital being located in the same road, At peak hour around 7:30am people wait for more than 30 minutes due to inefficient traffic control .without any proper signal system and traffic polices ,only YRC members take up duty and try to control traffic to an extent. Given below is image of the signal junction. This live difficulty we faced every day made us to solve this issue by using infrared sensors to overcome traffic issue in this locality.

Figure 2. Ramapuram Junction, Chennai

The existing system contains automatic signal control system. Here, each vehicle is equipped with an RFID tag. When it comes in range of RFID reader, it will send the signal to the RFID reader. The RFID reader will track how many vehicles have passed through for a specific period and determines the congestion volume. Accordingly, it sets the green light duration for the path. But this system cannot sense long distance and it cannot be properly detect all the RFID tag of vehicles in the signal.

2. Proposed Model

The proposed model explains that after the red light signal, number of cars that pass through the IR sensors are detected. The IR sensors are wired with the Traffic controller where the counter takes the count of the number of car that pass through the IR sensors. The number of cars detected by the counter is sent to the PIC controller where the code is written. The PIC controller compares the number of cars detected with the threshold value.If the number of cars detected is lesser than the threshold value then the green light times is not altered. If the number of cars detected id higher than the threshold value then the green light timer is altered accordingly.

A. LCD

Liquid crystal display is very important device in embedded system. It offers high flexibility to user as it can display the required data.LCD cannot communicate with the microcontroller and therefore a LCD driver is used. LCD driver is a link between the microcontroller and LCD. Datasheet of LCD is required to know about LCD driver for e.g. JHD 162A is name of LCD having driver HD44780U and interfacing of LCD has to be done according to the driver specification. To understand the algorithm of LCD datasheet of both LCD and LCD driver is required. Major task in LCD interfacing is the initialization sequence. In LCD initialization command bytes has to be sent to LCD and set the interface mode, display mode, address counter increment direction, set contrast of LCD, horizontal or vertical addressing mode, color format. This sequence is given in respective LCD driver datasheet. Studying the function set of LCD lets you know the definition of command bytes. It varies from one LCD to another. If you are able to initialize the LCD properly 90% of your job is done.

B. Microcontroller (PIC16F877A)

Peripheral Interface Control (PIC) 16F series has a lot of advantages as compared to other series. It executes each instruction in less than 200 nanoseconds. It has 40 pins and has 8K program memory and 368 byte data memory. It is easy to store and send UINs. At the junction, it is easy to store large number of emergency vehicles. Before switching to green, it should satisfy all the conditions. Simple interrupt option gives the advantage like jump from one loop to another loop. It is easy to switch any time. It consumes less power and operates by vehicle battery itself without any extra hardware. Figure 3 shows the PIN Diagram of PIC16F877A.

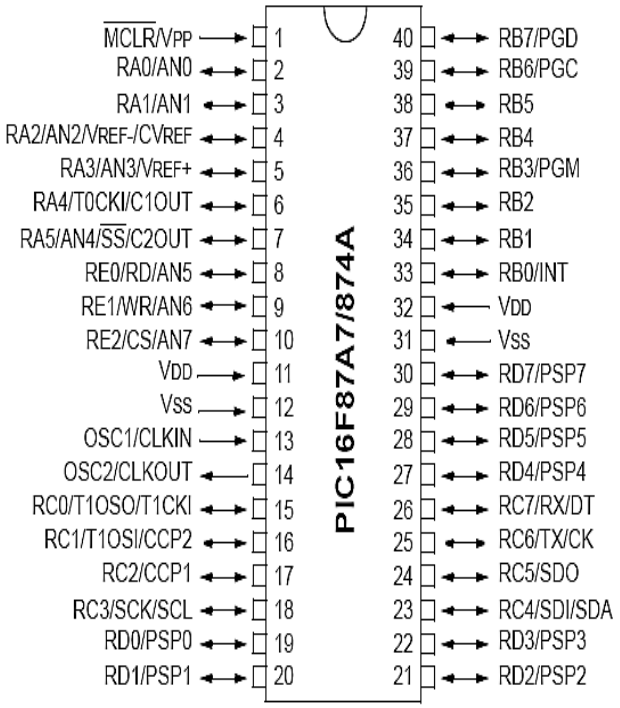

Figure 3. Pin Diagram of PIC16F87A7A7/874A

C. MAX 232

The MAX232 is an integrated circuit, first created by Maxim Integrated Products, that converts signals from an RS-232 serial port to signals suitable for use in TTL compatible digital logic circuits. The MAX232 is a dual driver/receiver and typically converts the RX, TX, CTS and RTS signals.

The drivers provide RS-232 voltage level outputs (approx. ± 7.5 V) from a single + 5 V supply via on-chip charge pumps and external capacitors. This makes it useful for implementing RS-232 in devices that otherwise do not need any voltages outside the 0 V to + 5 V range, as power supply design does not need to be made more complicated just for driving the RS-232 in this case.

The receivers reduce RS-232 inputs (which may be as high as ± 25 V), to standard 5 V TTL levels. These receivers have a typical threshold of 1.3 V, and a typical hysteresis of 0.5 V.

The later MAX232A is backwards compatible with the original MAX232 but may operate at higher baud rates and can use smaller external capacitors – 0.1 μF in place of the 1.0 μF capacitors used with the original device.

The newer MAX3232 is also backwards compatible, but operates at a broader voltage range, from 3 to 5.5 V.

D.RS232

In RS232 there are two data lines RX and TX. TX is the wire in which data is sent out to other device. RX is the line in which other device put the data it needs to send to the device.

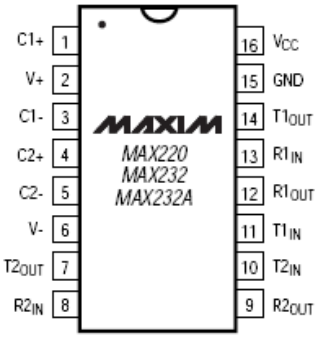

Figure 4. Pin Diagram

E. USART

The BRG supports both the Synchronous Asynchronous modes of the USART. It is a dedicated 8-bit baud rate generator. The SPBRG register controls the period of a free running 8-bit timer. In Synchronous Asynchronous mode, bit BRGH also controls the baud rate. Table 3.12 shows the formula for computation of the baud rate for different USART modes which only apply in Master Mode (internal clock). Given the desired baud rate and FOSC, the nearest integer value for the SPBRG register can be calculated using the formula in Table 3.12. From this, the error in baud ratecan is determined. It may be advantageous to use the high baud rate (BRGH = 1), even for slower baud clocks. This is because the FOSC/ (16(X + 1)) equation can reduce the baud rate error in some cases. Writing a new value to the SPBRG register causes the BRG timer to be reset (or cleared). This ensures the BRG does not wait for a timer overflow before outputting the new baud rate.

F. IR SENSORS

IR Transmitter and receiver are used to control any device wirelessly. TV remote and TV are the best example of IR transmitter receiver. TV generally consist TSOP1738 as the IR receiver, which senses modulated IR pulses and convert them into electrical signal. Here in our circuit we are building IR remote and its receiver. We are using IR LED as transmitter and TSOP1738 as IR receiver. IR LED emits infrared light, means it emits light in the range of Infrared frequency. We cannot see Infrared light through our eyes; they are invisible to human eyes. The wavelength of Infrared (700nm – 1mm) is just beyond the normal visible light. Everything which produces heat, emits infrared like our human body. Infrared have the same properties as visible light, like it can be focused, reflected and polarized like visible light. Other than emitting invisible infrared light, IR LED looks like a normal LED and also operates like a normal LED.

F. Working Model

IR sensors are wired with the Traffic controller where the counter takes the count of the number of car that pass through the IR sensors. The number of cars detected by the counter is sent to the PIC controller where the code is written. The PIC controller compares the number of cars detected with the threshold value.If the number of cars detected is lesser than the threshold value then the green light times is not altered. If the number of cars detected id higher than the threshold value then the green light timer is altered accordingly. Consider that the threshold value is above 10, then the green light timer will be set for 30 seconds or else the timer will be set for 10 seconds.

Figure 5. IR sensor

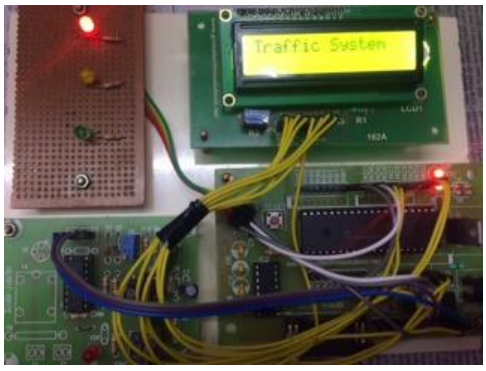

Figure 6. Complete Circuit

III. CONCLUSION

In the proposed system, a new method for traffic congestion and management has been presented. At first, cars/two wheelers that pass through the IR sensors are detected and counted by the counter. The number of cars/two wheelers is compared with the threshold value. If it is less than the threshold value then the timer of the green light is not altered. If is higher than the threshold value then the timer of the green light signal is altered accordingly.Our proposed system does not perform ambulance detection during traffic congestion. An ambulance that is stuck in traffic congestion can be cleared using a Zigbee that senses the UID of the ambulance and changes the signal to green. Then the green light timer will be set for 30 seconds or else the timer will be set for 10 seconds.means it consumes 20mA current and 3vots power. IR LEDs have light emitting angle of approx. 20-60 degree and range of approx. few centimeters to several feet; it depends upon the type of IR transmitter and the manufacturer. Some transmitters have the range in kilometers.

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Key Aggregation System for Secure Sharing of Cloud Data

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ABSTRACT

In Cloud computing, data storage is an efficient technique. This survey explains secure, efficient, and flexible method to share data with other people in cloud storage system. This survey, describe novel public-key cryptosystems. This system produce constant-size cipher texts such that efficient delegation of decryption rights for any set of cipher texts are possible. This innovation scheme can aggregate any set of secret keys and make them as a compact single key .The power of all the keys being aggregated in a single key. In other words, holder of the secret key can release a constant-size aggregate key for flexible choices of cipher text set in cloud storage .In this scheme other encrypted files outside the cipher text set remain confidential. The compact aggregate key can be suitably sent to others or be stored in a smart card with very limited secure storage.

Keywords: Cloud Storage, Data Sharing, Key-Aggregate Encryption, Patient-Controlled Encryption.

I. INTRODUCTION

Cloud Storage

Cloud storage is gain popularity in recent year. In enterprise settings, demand for data outsourcing is increased today. Data outsourcing should be assists in the strategic management of corporate data. This scheme is also used as a core technology behind many online services. These online services used for online application. Currently this scheme was easy to apply for free accounts for mail, photograph album, sharing of file with storage size more than 25GB. Together by using the current wireless technology, cloud users can access almost all of their files, directories and emails by a mobile phone in any corner of the world.

Data Privacy in Cloud Computing Environment

Considering data privacy in cloud computing environment, a traditional way to ensure data privacy is to rely on the server to enforce the access control after authentication, which means any unexpected privilege increase will expose all data. In a shared-lease cloud computing environment, things become even bad. Data from different users can be hosted on separate virtual machines (VMs) but reside on a single physical machine. Data in a target VirtualMachine could be stolen by instantiating another Virtual Machine co-occupant with the target one.

Data Availability In Cloud Storage

Regarding availability and security of files, there are a more number of cryptographic schemes were proposed. This scheme allowing a third-party auditor to check the availability of files on behalf of the data owner without leaking any information regarding the information, or without compromising the data owner's secrecy.

Cryptography schemes for data storage

Similarly, cloud users will not hold the strong belief that the cloud server is doing a good quality job in terms of privacy. A cryptographic solution, with proven security relied on number-theoretic assumptions is more attractive. Whenever the user is not perfectly happy with trusting the security of the VM or the honesty of the technical staff. Those users are motivated to encrypt their data with their own keys before uploading the data to the server.

Data Sharing in Cloud

Data sharing is an important functionality in cloud storage. For example, bloggers can allow their friends view a subset of their private pictures; an enterprise may allow his/her employees access to a portion of susceptible data. The challenging problem is how to efficiently share encrypted data. Users can download the encrypted data from the storage and decrypt them, and then send them to other people for sharing, but it may lose the value of cloud storage.

Key Sharing Methodology

Based on two methods

- Alice encrypts all files with a single encryption key and gives Bob the corresponding secret key directly.
- Alice encrypts files with distinct keys and sends Bob to the corresponding secret keys.

Types of Encryption keys Encryption keys also come with two flavors - symmetric key or asymmetric (public) key.

- **Symmetric Key Encryption**

Using symmetric encryption, when Alice wants the data to be originated from a third party, she has to give the encryptor her secret key.

- **Asymmetric Key Encryption**

By contrast, the encryption key and decryption key are different in public-key encryption. The use of public-key encryption gives more flexibility for our applications. For example, in enterprise settings, every employee can upload encrypted data on the cloud storage server without the knowledge of the company's master-secret key. Therefore, the best solution for the above problem is that Alice encrypts files with separate public-keys, but only sends Bob a single constant-size decryption key. The decryption key should be sent via a secure channel and kept secret. The small key size is always desirable.

For example, we cannot anticipate large storage for decryption keys in the resource-constraint devices like smart phones, smart cards or wireless sensor nodes. Especially, these secret keys are usually stored in the tamper-proof memory, which is relatively expensive. The present research efforts mainly focus on minimizing the communication requirements (such as bandwidth, rounds of communication) like aggregate signature.

II. METHODS AND MATERIAL

A. Existing System

Attribute Based Encryption for Fine Grained Access Control of Encrypted data

This paper develops a new cryptosystem for fine-grained sharing of encrypted data. This scheme was called Key-Policy Attribute-Based Encryption (KP-ABE). In our cryptosystem, cipher texts are labeled with sets of attributes and private keys are associated with access structures that control which cipher texts a user is able to decrypt.

Advantages

Applicability of KP-ABE scheme is to sharing of audit-log information and broadcast encryption

Multi-Identity Single-Key Decryption without Random Oracles

This Paper produce Multi-Identity Single-Key Decryption (MISKD).It is an Identity-Based Encryption (IBE) system where a private decryption key can map multiple public keys (identities). More exactly, in MISKD, a single private key can be used to decrypt multiple cipher texts encrypted with different public keys associated to the private key.

Advantages

Multi-Identity Single-Key Decryption scheme is more efficient in decryption.

Patient Controlled Encryption: Ensuring Privacy of Electronic Medical Records

This system builds an efficient system that allows patients both to share partial access rights with others,

and to perform searches over their records. We formalize the requirements of a Patient Controlled Encryption scheme, and give several instances, based on existing cryptographic primitives and protocols, each achieving a different set of properties.

Advantages

- The patient can easily grant access to a category
- Similarly, doctors can add subcategories with arbitrary names, without assistance from the patient. This will be particularly useful if we can't predict the names of all possible subcategories,
- If a doctor needs to add a category for a new type of test, or if categories are labeled by visit dates.

Dynamic and Efficient Key Management for Access Hierarchies

The proposed solution has the following properties: (i) only hash functions are used for a node to derive a descendant's key from its own key; (ii) the space complexity of the public information is the same as that of storing the hierarchy; (iii) the private information at a class consists of a single key associated with that class; (iv) updates (revocations, additions, etc.) are handled locally in the hierarchy; (v) the scheme is provably secure against collusion; and (vi) key derivation by a node of its descendant's key is bounded by the number of bit operations linear in the length of the path between the nodes.

Advantages

- The dynamic scheme achieve a worst- and average-case number of bit operations for key derivation that exponentially better than the depth of a balanced hierarchy.

B. Problem Statement

- Constant-size decryption key require pre-defined hierarchical relationship.
- The fixed hierarchy is used. In that there is only one way in which we can partition the record. If we want to give out access rights based on something else (e.g. based on document type or sensitivity of data) we will have to look at all the low-level categories involved, and give a separate decryption key for each.
- More number of decryption key was used.

III. RESULT AND DISCUSSION

Key Aggregate Crypto- System

The proposed system design an efficient public-key encryption scheme which supports flexible allocation. In this scheme any subset of the cipher texts (produced by the encryption scheme) is decrypt by a constant-size decryption key (generated by the proprietor of the master-secret key). We solve this problem by introducing a special type of public-key encryption called key-aggregate cryptosystem (KAC). In KAC, users encrypt a message not only under a public-key, but also under an identifier of cipher text called class. Such that cipher texts are further categorized into different classes. The owner of the key holds a master-secret called Master secret key

The master-secret can be used to extract secret keys for different classes. More importantly, the extracted key have can be an aggregate key which is as compact as a secret key for a single class, but aggregates the power of many such keys, such that the decryption power for any subset of cipher text classes. By this solution, Alice can simply send Bob a single aggregate key via a secure channel like email. Bob can download the encrypted photos from Alice's Drop box space and then use this aggregate key to decrypt these encrypted photographs. The scenario is depicted in Figure 1.

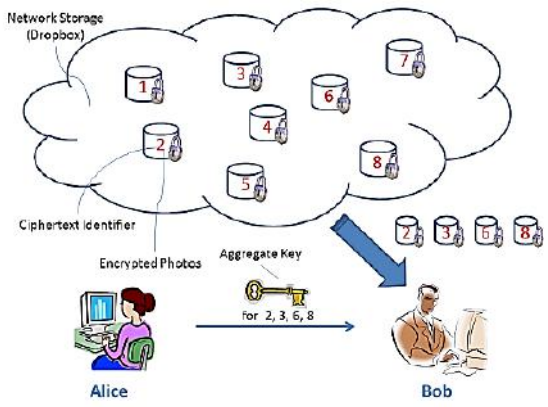

Fig. 1. Alice shares files with identifiers 2, 3, 6 and 8 with Bob by sending him a single aggregate key.

Advantages

- The size of master-secret key, cipher text, public-key, and aggregate key in our KAC schemes are all are kept constant size.
- KAC scheme is flexible in the sense that there is, no special relation is required between the classes.
- A canonical application of KAC is efficient data sharing scheme.
- The key aggregation property is especially useful when the delegation key to be efficient and flexible.
- The schemes enable a content provider to share her data in a confidential and selective way, with a fixed and small cipher text expansion, by distributing to each authorized user a single, compact, small aggregate key.
- The delegation of decryption can be efficiently implemented with the aggregate key.
- Number of cipher text classes is large.
- It is easy to key management.
- Particular Member can view their messages.

IV. CONCLUSION

In this survey, we study how to compress secret keys in public-key cryptosystems. This compressed key support delegation of secret keys for different cipher text classes in cloud storage. Our approach is more flexible than hierarchical key assignment. The compressed key can only save spaces if all key-holders share a similar set of privileges.

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Comparison between Square and Rectangular Cross Section Muffler to Predict Noise Attenuation with Same Gas Volume

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ABSTRACT

The paper shows the measurement of the acoustical transmission loss of square and rectangular cross section expansion chamber muffler with same gas volume. A muffler (silencer) is an important noise control element for reduction of machinery exhaust noises other noise source which involves the flow of gases. Mufflers are typically arranged along the exhaust pipe as the part of the exhaust system of an internal combustion engine to reduce its noise. Here basic term is used for noise attenuation namely transmission loss (TL). An experimental method for muffler's transmission loss (TL) measurement for central inlet and central outlet muffler shows the validation of result. Finite element analysis tools comsol multiphysics used to validate the results. The wave 1-D used as a simulation tool. This paper is investigating the shape of muffler which is capable to reduce noise level.

Keywords : Rectangular Cross Section Muffler, FEA Acoustic Module- wave 1-D, Sound Transmission loss

I. INTRODUCTION

The UK based term muffler (silencer in US, or back box in Irish English) is a device for reducing the amount of noise emitted by the exhaust of an internal combustion engine [1]. In recent scenario growths of automobile vehicle are in increasing day by day. Basically a muffler for an automobile is characterized by numerous parameters like Insertion Loss (IL), Transmission Loss (TL). The best used parameter to evaluate the sound radiation characteristics of muffler is Transmission loss (TL). Transmission Loss is defined as difference between power incident on muffler proper and that transmitted downstream into an anechoic termination. It is independent of source and presumes an anechoic termination at tail pipe. It describes performance of a muffler. [5] Sound waves propagating along a pipe can be attenuated using either a dissipative or a reactive muffler. A dissipative muffler uses sound absorbing material to take energy out of the acoustic motion in the wave, as it propagates through the muffler. Noise levels of more than 80 dB are injurious for human beings [3]. Hence to reduce noise from internal combustion engines they are equipped with an important noise control element known as silencer or exhaust muffler which suppresses the acoustic pulse generated by the combustion processes [4]. This is only the one of the most frequently used physical parameters of the muffler. Numerical methods are very useful for optimization of model of having complicated shapes and also where the cost is involved. So that it is essential to optimize the model by Finite Element Analysis and validate it by experimental methods. Validation of experimental setup it is necessary to test the results of model of which analytical, numerical results are known [2]. It describe that the transmission losses can be determined reliably with the test rig setup. Many tools are available to simulate the transmission loss characteristics of a muffler. Experimentally Two-load method is commonly used to predict the transmission loss of an Acoustic muffler.[6] Finite Element Method is also used to show the comparative study of Transmission Loss of Muffler. Muffler Designing is a complex function that affects the noise characteristics and fuel efficiency of the vehicle. In this paper, muffler is simulated by Finite Element Analysis tool Comsol is used to predict muffler's transmission loss performances. As well Muffler's Transmission loss also predicted by Two Load Method [12]. Firstly evaluation of Transmission loss for cylindrical muffler is compared

with 1-D Wave simulation, Comsol and Two Load method. Than after transmission loss is evaluated for square and rectangular cross section muffler.

II. METHODS AND MATERIAL

A. Objectives And Modeling

For evaluation of transmission loss of muffler the volume of Expansion chamber is keeping constant like cylindrical muffler then changing the cross section of muffler with rectangular and square cross section. Than the FEA result simulate by using acoustical simulation tool wave 1-D, comsol which is already proven software [10][11].

Following design conditions are applied to analyzing the transmission loss of the simple expansion chamber:

1. Dimensions of test muffler, the length of expansion chamber as constant i.e., 500 mm with diameter 130 mm which is validated with transfer matrix method, two load method, wave 1-D and comsol.
2. Volume of the Expansion chamber is kept constant for throughout the modeling and analysis.
3. Modeling of rectangular and square expansion chamber by keeping the constant cross section like 177 mm X177 mm for square section and 306.17 mm X 102.39 mm for rectangular cross section i.e. 31329 mm^2.

B. Acoustic Module Wave 1-D Modeling

A Sound Analyzer is a testing and measurement instrument which is used to quantify the audio performance of electronic and electro-acoustical devices. Audio quality measurements covers a wide variety of parameters like level gain, noise and inter modulation distortion, frequency response, and relative phase of signals. The circuit comprises of mike for taking audio input, mike interfacing assembly for sensitivity selection, low-noise mike preamplifier circuit with variable gain adjustment, bandwidth adjustment from more than one octave down to a tenth of an octave, frequency range selection from 20 Hz to 20 KHz in three bands selection. An NE5534 op-amp is used for the mike preamplifier stage because of its low input noise.[7][12] Noise level of 40 dB of gain is sufficient for most microphones, since the white noise will be played through the speakers at a moderately high level.

Figure 1: Layout of Actual Experimental Test Rig Setup

C. Post Processing By Using Wave 1-D And Comsol

WAVE is a 1-dimensional gas dynamics code which is based on finite volume method for simulating engine cycle performance. Tools using this one dimensional approach accurately predict all engine breathing characteristics. This enables engineers to Consider air system and combustion effects during analysis. A. F. Seybert model is used to compare the wave result. The working fluid was perfect air having following boundary conditions [8] [9]:

1. Gas Volume approximately: 6636500 mm^3.
2. Exhaust gas Temperature: 300 K.
3. Exhaust Gas pressure: 1.0 bar.
4. Initial fluid composition: Fresh Air.
5. Upper frequency Limit: 3000 Hz.
6. Lower Frequency Limit: 25 Hz.

Model is prepared on wave build 3D with inlet & outlet boundary condition shown in figure 2.

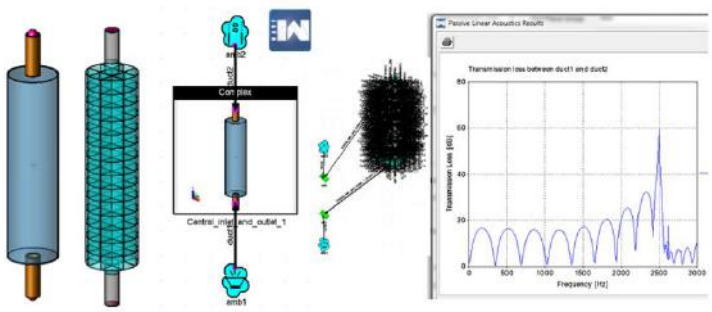

Figure 2: GUI for Post Processing of Wave 1-D.

The same dimension is simulated in Comsol tool the result shown in figure 3.

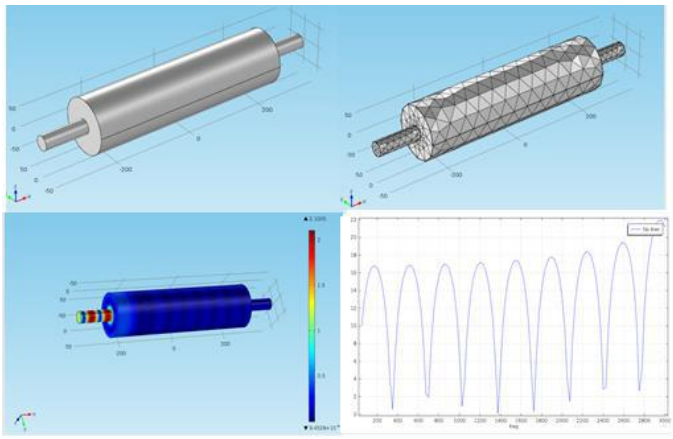

Figure 3 : GUI for Post Processing of Comsol

III. RESULT AND DISCUSSION

A. Comparison Of Experimental And Acoustic Tool Results

Attenuation curves represent among two observations clearly shows that by the comparison with two results experimental (two load method) and FEA tools like Ricardo wave 1-D and comsol the transmission loss are equally are comparable. Small deviation is appeared with FEA tool is due to meshing parameter. Now any shape of muffler can be modeled to predict the TL measurement. In recent scenario so many complicated geometry where the practical analysis proves too expensive and complicated. Therefore the FEA Tool can be the best approach to achieve the expected outcomes regarding the transmission loss of Muffler shown in figure 4.

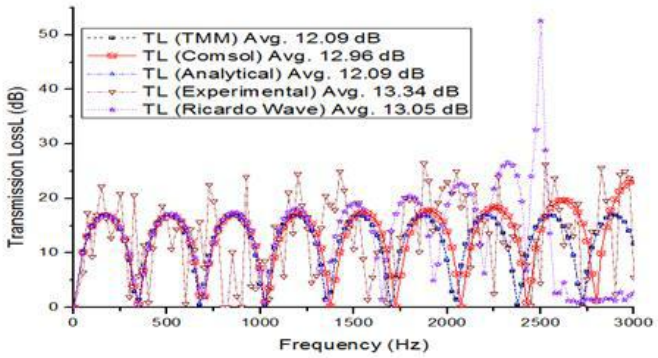

Figure 4 : Result comparison of TL for all methods

B. Simulation for Square And Rectangular Cross Section Duct

In the case of square and rectangular cross section expansion chambers, the dimensions of chambers are taken in such a way to observe complete wave propagation phemenon. The length to diameter ratio was also so chosen that one dimensional calculation becomes realistic for a sufficiently wide frequency range in table 1. The transmission loss has been chosen as suitable magnitude representative of the frequency response of a given mufflershown in figure 5.

S No.	Types of Duct	Cross Section of duct with length of 210 mm	Aspect ratio with constant gas volume	Average Transmission Loss (dB)
1	Square Duct	177 mm X177 mm	1	15.01 dB
2	Rectangular Duct	306.17 mm X 102.39	3	14.54 dB

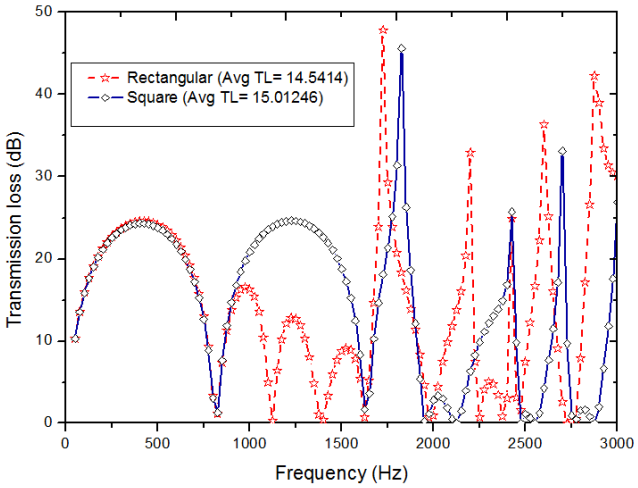

Figure 6 : Transmission for square and rectangular cross section duct

DISCUSSION

This research paper shows the results of Transmission loss of Single Expansion Muffler which are verified by experimental method. The experimental results show good agreement with the numerical results. From this result it can be concluded that the developed experimental setup can measure the performance of Muffler's Transmission loss. The small deviation in the result of experiment from the numerical results may be due to sound leakage, low surface finish of impedance

tube, and problems in generating white noise from the FFT sometimes it is not accurate. The transmission loss is evaluated in the two cases of square and rectangular cross section expansion chambers which are having same gas volume. The result shows that the maximum Transmission Loss achieved in case of square Duct (15.01 dB) as compared to rectangular cross section. Attenuation curve shows clearly that the square duct attenuate the noise level from low to medium zone.

IV. CONCLUSION

Multiple types of equations can be easily built and edited. The program code is object oriented. After niques, Java script proved a powerful tool. The excellent results are made more so by the rapid development time of the project, which is largely due to Java script ease of use and simple syntax. It also proved an excellent solution for programming a GUI. Its thorough class documentation and solid code ensured a reliable equation editor.

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Soil Stabilization with Fly ash and Industrial Waste

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ABSTRACT

In this present work, it is aimed at developing a new building material from the lime scrap, an industrial The objective of this paper is to upgrade expansive soil as a construction material using industrial waste and fly ash, which are waste materials. Remolded expansive clay was blended with industrial waste and fly ash and strength tests were conducted. The potential of industrial waste -fly ash blend as a swell reduction layer between the footing of a foundation and sub grade was studied. In order to examine the importance of the study, a cost comparison was made for the preparation of the sub-base of a highway project with and without the admixture stabilizations. Stress strain behavior of unconfined compressive strength showed that failure stress and strains increased by 106% and 50% respectively when the fly ash content was increased from 0 to 25%. When the industrial waste content was increased from 0 to 12%, Unconfined Compressive Stress increased by 97% while CBR improved by 47%. Therefore, an industrial waste content of 12% and a fly ash content of 25% are recommended for strengthening the expansive sub grade soil. A fly ash content of 15% is recommended for blending into industrial waste for forming a swell reduction layer because of its satisfactory performance in the laboratory tests.

Keywords : Industrial waste, Fly ash.

I. INTRODUCTION

Soil stabilization is the process of improving the engineering properties of the soil and thus making it more stable. It is required when the soil available for construction is not suitable for the intend purpose. A land-based structure of any type is only as strong as its foundation. For that reason soil is element influencing the success of a construction project. Soil is either part of the foundation or one of the raw materials used in the construction process. Soil stabilization is required to increase the bearing capacity of foundation of soils. It is used to controlling the grading of soil and aggregates in the construction of bases and sub bases of the high ways & airfields. Geotechnical properties of problematic soils such as softfine-grained and expansive soils are improved by various methods. The problematic soil is removed and replaced by a good quality material or treated using mechanical and/or chemical stabilization. Different methods can be used to improve and treat the geotechnical properties of the problematic soils (such as strength and the stiffness) by treating it *in situ*. These methods include densifying treatments (such as compaction or preloading), pore water pressure reduction techniques (such as dewatering or electro-osmosis), the bonding of soil particles (by ground freezing, grouting, and chemical stabilization), and use of reinforcing elements (such as geotextiles and stone columns) (William Powrie, 1997). The chemical stabilization of the problematic soils (soft fine-grained and expansive soils) is very important for many of the geotechnical engineering applications such as pavement structures, roadways, building foundations, channel and reservoir linings, irrigation systems, water lines, and sewer lines to avoid the damage due to the settlement of the soft soil or to the swelling action (heave) of the expansive soils. Generally, the concept of stabilization can be dated to 5000 years ago. McDowell (1959) reported that stabilized earth roads were used in ancient Mesopotamia and Egypt, and that the Greek and the Romans used soil-lime mixtures. Kézdi (1979) mentioned that the first experiments on soil stabilization

were achieved in the USA with sand/clay mixtures round 1906. In the 20th century, especially in the thirties, the soil stabilization relevant to road construction was applied in Europe. Aim of this research is to stabilize the locally available red soil around tirupur district. The stabilization is done for the following reasons. Soil stabilization is widely used in connection with road, pavement and foundation construction. It improves the engineering properties of the soil, e.g : Strength - to increase the strength and bearing capacity, Volume stability - to control the swell-shrink characteristics caused by moisture changes, Durability - to increase the resistance to erosion, weathering or traffic loading.

II. METHODS AND MATERIAL

A. Purpose

The purpose of manual is to provide general over view of soil stabilization used in the construction and maintenance of structure designed for supporting motor vehicle use. It is only qualified geo technical engineer can take recommendation on the techniques and material required for suitable sub-base design. It is used to reduce the permeability and compressibility of the soil mass in the earth structures and to increase its shear strength .It is also used to make an area trafficable within short period of time for military and other emergency purpose and used for city and sub urban streets to make them more noise-absorbing.

B. What is Soil Stabilization?

Soil is one of nature's most abundant construction materials. Almost all construction is built with or upon soil. When unstable construction conditions are encountered, a contractor has four options:

1) Find a new construction site
2) Redesign the structure so it can be constructed on the poor soil
3) Remove the poor soil and replace it with good soil
4) Improve the engineering properties of the soils

C. Test on Soils

Laboratory Tests:

Following laboratory tests have been carried out as per IS: 2720. The tests were carried out both on natural soil and stabilized soil with fly ash collected from Ennore Thermal Power Plant.

(i) Grain Size Analysis
(ii) Atterberg Limit Test
(iii) Proctor Compaction Test
(iv) Unconfined Compression Test
(v) Permeability Test Fly Ash India 2005, New Delhi Fly Ash Utilization Programme (FAUP), TIFAC, DST, New Delhi – 110016 VIII 5.3 After removing impurities like vegetation, stones etc. The soil was mixed with fly ash in varying proportion by volume. The Mixing was thoroughly carried out manually and the tests were conducted as per standard procedures. The liquid limit and plastic limit of the soil with varying percentage of fly ash is given in Table 1. The proctor tests carried out is summarized in Fig.1. The grain size analysis of the borrow soil and the fly ash is shown in Fig. 2. Unconfined compression strength tests have been carried out on cylindrical samples of 36 mm diameter and 72 mm high prepared using miniature compaction apparatus with 15% moisture content. The samples were allowed to cure by air drying for 15 days. The samples were tested with a constant strain rate of 0.625 mm/min. The permeability of natural soil and stabilized soil was measured using a falling head test in the laboratory.

Atterbergs Limits Tests

Atterberg limits are a basic measure of the critical water contents of a fine-grained soil, such as its shrinkage limit, plastic limit, and liquid limit. As a dry, clayey soil takes on increasing amounts of water, it undergoes dramatic and distinct changes in behavior and consistency. Depending on the water content of the soil, it may appear in four states: solid, semi-solid, plastic and liquid. In each state, the consistency and behavior of a soil is different and consequently so are its engineering properties. Thus, the boundary between each state can be defined based on a change in the soil's behavior. The Atterberg limits can be used to distinguish between silt and clay, and it can distinguish between different types of silts and clays. These limits were created by Albert Atterberg, a Swedish chemist. They were later refined by Arthur Casagrande. These

distinctions in soil are used in assessing the soils that are to have structures built on. Soils when wet retain water and some expand in volume. The amount of expansion is related to the ability of the soil to take in water and its structural make-up (the type of atoms present). These tests are mainly used on clayey or silty soils since these are the soils that expand and shrink due to moisture content. Clays and silts react with the water and thus change sizes and have varying shear strengths. Thus these tests are used widely in the preliminary stages of designing any structure to ensure that the soil will have the correct amount of shear strength and not too much change in volume as it expands and shrinks with different moisture contents. AS a hard, rigid solid in the dry state, soil becomes a crumbly (friable) semisolid when certain moisture content, termed the shrinkage limit, is reached. If it is an expansive soil, this soil will also begin to swell in volume as this moisture content is exceeded. Increasing the water content beyond the soil's plastic limit will transform it into a malleable, plastic mass, which causes additional swelling. The soil will remain in this plastic state until its liquid limit is exceeded, which causes it to transform into a viscous liquid that flows when jarred.

Liquid limit

Figure 1. Casagrande Cup in Action

The liquid limit (LL) is often conceptually defined as the water content at which the behavior of a clayey soil changes from plastic to liquid. Actually, clayey soil does have very small shear strength at the liquid limit and the strength decreases as water content increases; the transition from plastic to liquid behavior occurs over a range of water contents. The precise definition of the liquid limit is based on standard test procedures described below. The original liquid limit test of Atterberg's involved mixing a part of clay in a round-bottomed porcelain bowl of 10–12 cm diameter. A groove was cut through the pat of clay with a spatula, and the bowl was then struck many times against the palm of one hand. Casagrande subsequently standardized the apparatus and the procedures to make the measurement more repeatable. Soil is placed into the metal cup portion of the device and a groove is made down its center with a standardized tool of 13.5 millimeters (0.53 in) width. The cup is repeatedly dropped 10 mm onto a hard rubber base at a rate of 120 blows per minute, during which the groove closes up gradually as a result of the impact. The number of blows for the groove to close is recorded. The moisture content at which it takes 25 drops of the cup to cause the groove to close over a distance of 13.5 millimeters (0.53 in) is defined as the liquid limit. The test is normally run at several moisture contents, and the moisture content which requires 25 blows to close the groove is interpolated from the test results. The Liquid Limit test is defined by ASTM standard test method D 4318 The test method also allows running the test at one moisture content where 20 to 30 blows are required to close the groove; then a correction factor is applied to obtain the liquid limit from the moisture content.

The following is when one should record the N in number of blows needed to close this 1/2-inch gap : The materials needed to do a liquid limit test are as follows

- Casagrande cup (liquid limit device)
- Grooving tool
- Soil pat before test
- Soil pat after test

Another method for measuring the liquid limit is the fall cone test. It is based on the measurement of penetration into the soil of a standardized cone of specific mass. Although the Casagrande test is widely used across North America, the fall cone test is much more prevalent in Europe due to being less dependent on the operator in determining the Liquid Limit.

Importance of Liquid Limit Test:

The importance of the liquid limit test is to classify soils. Different soils have varying liquid limits. Also, one must use the plastic limit to determine its plasticity index.

Plastic Limit

The plastic limit (PL) is determined by rolling out a thread of the fine portion of a soil on a flat, non-porous surface. The procedure is defined in ASTM Standard D 4318..If the soil is plastic, this thread will retain its shape down to a very narrow diameter. The sample can then be remolded and the test repeated. As the moisture content falls due to evaporation, the thread will begin to break apart at larger diameters. The plastic limit is defined as the moisture content where the thread breaks apart at a diameter of 3.2 mm (about 1/8 inch).A soil is considered non-plastic if a thread cannot be rolled out down to 3.2 mm at any moisture. "Plastic limit is the lowest moisture content, expressed as a per-centage by weight of the oven-dry soil, at which the soil can be rolled into threacls $ inch in diameter without breaking into pieces' Soil which cannot be rolled into threads at any moisture content is considered non-plastic.

Plasticity Index:

The plasticity index (PI) is a measure of the plasticity of a soil. The plasticity index is the size of the range of water contents where the soil exhibits plastic properties. The PI is the difference between the liquid limit and the plastic limit (PI = LL-PL). Soils with a high PI tend to be clay, those with a lower PI tend to be silt, and those with a PI of 0 (non-plastic) tend to have little or no silt or clay. Plastic index is the difference between the liquid limit and the plastic Limit .It is the range of moisture content through which a soils plastic. When the plastic limit is equal to or greater than the liquid.

PI and their meanings

- (0-3)- Nonplastic
- (3-15) - Slightly plastic
- (15-30) - Medium plastic
- >30 - Highly plastic

Plasticity Index (IP) = WL-WP

= 64.5-41.9

= 22.6%

D. Properties of soil:

Physical properties of soil:

Natural black cotton soil was obtained from Gadag district in Karnataka State. The soil was excavated from a depth of 2.0 m from the natural ground level. The soil is dark grey to black in color with high clay content. The obtained soil was air dried, pulverized manually and soil passing through 425 μ IS sieved was used. This soil has a property of high moisture retentively and develops cracks in summer. This soil predominantly consists of expansive montmorillonite as the principal clay mineral. The physical properties of the soil used in this investigation are given in Table Sieve analysis**,** hydrometer analysis, and Atterberg's limits were performed to classify the soil the index properties, Compaction characteristics and unconfined compressive strength test were carried out for both fine and coarse soil mixtures. The soils were classified in accordance with Indian Standard classification of soils for engineering purpose.

E. Specific Gravity of Soil

The specific gravity of soil is defined as the ratio of the mass of given volume of soil to the mass of an equal volume of water.

The specific gravity of solids for natural soils falls in the general range of 2.50 to 2.70.

Properties of Industrial Waste:

Physical Properties:

Composed of calcite or dolomite, or a combination of both, Marble is a metamorphic rock, which finds wide usage in buildings, monuments, and sculptures. Commercially however, all calcareous rocks produced by nature and capable being polished are called marbles. The heat and pressure in the earth's crust leads to re-crystallization of limestone over a period of time, which forces the limestone to change its texture and makeup. Fossilized materials in the limestone, along with its original carbonate minerals, re-crystallize and form large, coarse grains of calcite. Impurities present in the limestone during re-crystallization affect the mineral composition of the marble that forms. The minerals that

result from impurities give marble wide variety of colors. The purest calcite marble is white in color. So in broader sense True Marble is metamorphosed limestone. Aesthetically more beautiful and available in wider range of colors, Marbles are valued more than limestone, though they share similar characteristics and applications to limestones. Extremely pure calcite marble is used for most statues. Large blocks of colored marble are, used for columns, floors, and other parts of buildings. Smaller pieces of such marble are crushed or finely ground and used as abrasives in soaps and other products. Crushed or ground marble is also used in paving roads and in manufacturing roofing materials and soil treatment products. Valued for its beauty and strength, this precious stone is resistant to fire and erosion.

PHYSICAL PROPERTIES	
Hardness	3 to 4 on Moh's Scale
Density	2.5 to 2.65 Kg/m3
Compressive Strength	1800 to 2100 Kg/cm2
Water Absorption	Less than 1%
Porosity	Quite low
Weather Impact	Resistant

- Physical properties of rock linked with texture and microstructure;
- Laboratory studies yield information's about rock texture and microstructure and therefore inferences about physical properties;
- Development of texture and microstructure related to geological history of rock;
- Field geology and laboratory studies allow estimating the microstructure and texture expected in an area.

Properties of Fly ash:

Physical properties of Fly ash:

Fly ash is a fine residue collected from the burning of pulverized coal in thermal power plants. The worldwide production of fly ash is growing every year. Fly ash is silt – size non-cohesive material having a relatively smaller specific gravity than the normal soils. The disposal of the fly ash is a serious hazard to the environment that consumes millions of rupees towards the cost of its disposal. Fly ash has been used in a variety of construction applications, such as compacted fills, concretes, bricks, liners, construction of embankments in many countries including India. Fly ash by itself has little cementations value but in the presence of moisture it reacts chemically and forms cementations compounds and attributes to the improvement of strength and compressibility characteristics of soils. In the present study, fly ash. The fly ash used was grey in color and the physical properties and chemical composition of fly ash are given below

Specific gravity of Fly ash:

The specific gravity of Fly Ash is defined as the ratio of the mass of given volume of Fly Ash to the mass of an equal volume of water. The specific gravity of solids for Fly Ash falls in the general range of 2.10to 3.The specific gravity of the soil with varying percentage of Fly Ash is given in tale 5 and fig5

Compaction Tests:

Compaction of soil:

Compaction is the process of increasing the Bulk Density of a soil or aggregate by driving out air. For any soil, at a given comp active effort, the density obtained depends on the moisture content. An "Optimum Moisture Content" exists at which it will achieve a maximum density. Compaction is the method of mechanically increasing the density of soil. The densification of soil is achieved by reducing air void space. During compaction, air voids reduces, but not water content It is not possible to compact saturated soil. It should be noted that higher the density of soil mass, stronger, stiffer, more durable will be the soil mass.

Hence, Compaction

1) Increases density
2) Increases strength characteristics
3) Increases load-bearing capacity
4) Decreases undesirable settlement
5) Increases stability of slopes and embankments
6) Decreases permeability
7) Reduces water seepage
8) Reduces Swelling & Shrinkage
9) Reduces frost damage

- In construction of highway embankments, earth dams and many other engineering structures, loose soils must be compacted to improve their strength by increasing their unit weight;
- Compaction -Densification of soil by removing air voids using mechanical equipment;
- The degree of compaction is measured in terms of its dry unit weight.

Three identical samples were prepared for their Maximum Dry Density and Optimum Moisture content based on the compaction curves obtained. The sample was subjected to various curing periods (1, 7, 14, 28 days) according to their trial combination chosen. Samples intended for long term testing were kept in desiccators to maintain 100% humidity and to prevent loss of moisture from samples. Water was sprinkled at regular intervals and was cured in the desiccators. All the samples intended for immediate testing were tested immediately. The unconfined compression test was carried out according to IS 2720(part 10) - 1973. The test was conducted using unconfined Compressive test apparatus at a strain rate of 1.25 mm/ minute. The specimen to be tested was placed centrally in between the lower and upper platform of testing machine. Proving ring reading was noted for 30 divisions on a deformation dial gauge. The loading was continued until three or more consecutive reading of the load dial showed a decreasing or a constant strain rate of 20% had been reached.

There are 4 control factors affecting the extent of compaction:
1. Compaction effort;
2. Soil type and gradation;
3. Moisture content; and
4. Dry unit weight (dry density).

Standard Proctor Compaction Test:

- The standard was originally developed to simulate field compaction in the lab
- Purpose: Find the optimum moisture content at which the maximum dry unit weight is attained

Equipments:

–Standard Proctor
1/30 ft3mold
5.5 lb hammer
3 layers of soil
25 blows / layer

Compaction Effort Compaction Effort is calculated with the following parameters

Mould volume = 2250
Compact in 3 layers
25 blows/layer
5.5 lb hammer

III. RESULT AND DISCUSSION

Soil-fly Ash-Industrial Waste:

Industrial waste-fly-ash-soil mixtures were prepared at several Industrial waste- fly-ash -soil ratios (i.e. 0, 5, 10, and15% Industrial waste and fly-ash content by weight), and then tested for their engineering properties relevant to embankment construction, including the compaction properties, compressive strength, and permeability. The mixing of the Industrial waste- fly-ash-soil as shown in fig .15.

Figure 2. Mixing of soil-fly ash- industrial waste

Compaction of Soil-Fly Ash-Industrial Waste:

The unit weight of Industrial waste- fly-ash-soil mixture is an important parameter since it controls the strength, compressibility, and permeability. Densification of ash improves the engineering properties. The unit weight of the compacted mixtures depends on the method of energy application, and moisture content at compaction. Gray and reported the engineering properties of compacted Industrial waste and fly-ash and found that properly compacted and stabilized fly ash has the requisite properties for use in load-bearing fills or highway sub-bases. Standard proctor compaction tests were performed on the Industrial waste- fly-ash-soil mixture at different Industrial waste- fly-ash-soil ratios. A premeasured amount of Industrial waste, fly-ash measured as percent of dry soil by weight, was mixed thoroughly to produce a homogeneous Industrial waste-fly-ash-soil mixture. Water was added (i.e. 6,9,11 and 14%) slowly mixing.

IV. ACKNOWLEDGMENTS

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V. CONCLUSION

Based on the data accumulated from above research following conclusions have been made.

1. The borrowed clay soil has bearing capacity of 5 kg/mm2.
2. The stabilized clay soil with 5% ,10% ,and15% percentage of Fly Ash and industrial waste achieves bearing capacity of 35kg/mm2
3. The CBR value of borrowed clay soil is 3.1. From design curve in ‟ type traffic, pavement thickness for corresflying soil is 12 inches.
4. CBR value of stabilized soil is 4.82. Pavement thickness corresflying to this value is8.5inches.
5. Compaction of soil with adding fly ash and adding water content strength will be increase to compare compaction of soil only
6. Compaction of soil with adding flyash+industrial waste and adding water content strength will be increase to compare compaction of soil+flyash
7. Strength will be increase adding flyash+industrial waste with increasing water percentage at some level

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Effect of Characteristic Strength of Concrete by Replacing Cement Partially with Hypo Sludge

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ABSTRACT

The results of the analysis on the shear force, bending moment and torsion are compared. The results are presented in tabular and graphical form. The results on the drift and displacement are checked with serviceability conditions and are compared and presented in tabular form. The Zone wise results are also c Hypo Sludge is a waste produced in the paper manufacturing industry. Paper mills generate more than 4 million tons of sludge each year for disposal. Hypo Sludge is known to contain useful fibers and chemicals, as my project to get good results by adding of ferrous oxide to the hypo sludge to the fly ash improve the strength, durability, and life span of concrete structures exposed to weather. Paper making generally produces a large amount of solid waste. Paper fibers can be recycled only a limited number of times before they become too short or weak to make high quality paper. It means that the broken, low-quality paper fibers are separated out to become waste sludge. All the inks, dyes, coatings, pigments, staples and "stickiest" (tape, plastic films, etc.) are also washed off the recycled fibers to join the waste solids. The shiny finish on glossy magazine-type paper is produced using a fine kaolin clay coating, which also becomes solid waste during recycling. This paper mill sludge consumes a large percentage of local landfill space for each and every year. Worse yet, some of the wastes are land spread on cropland as a disposal technique, raising concerns about trace contaminants building up in soil or running off into area lakes and streams. Some companies burn their sludge in incinerators, contributing to our serious air pollution problems. To reduce disposal and pollution problems emanating from these industrial wastes, it is most essential to develop profitable building materials from them. Keeping this in view, investigations were undertaken to produce low cast concrete by blending various ratios of cement with hypo sludge. This research work describes the feasibility of using the Hypo Sludge in concrete production as replacement of cement by weight. The use of Hypo Sludge in concrete formulations as a supplementary cementations material was tested as an alternative to conventional concrete. The mix has been replaced by Hypo Sludge accordingly in the range of 0% (without Hypo Sludge, fly ash, ferrous oxide), 10%, 20%, 30% and 40% by weight of cement for M-20 mix.Concrete mixtures were produced, tested and compared in terms of compressive strength, durability& life span to the conventional concrete. These tests were carried out to evaluate the mechanical properties. For the test results for compressive strength up to 56 days are taken.When government implement the projects for temporary shelters for who those affected by natural disaster, this material can be used for economic feasibility. To investigate the utilization of Hypo Sludge and fly ash as Supplementary Cementations Materials (SCM) and influence of these hypo sludge and fly ash on the Strength of concretes made with different Cement replacement levels and compare with ordinary concrete. Investigate low cost concrete by using hypo sludge and fly ash as Supplementary Cementations Materials (SCM) and compare the cost of each per meter cube.

Keywords: Hypo sludge, Supplementary Cementations Materials (SCM).

I. INTRODUCTION

Paper mill sludge is a major economic and environmental problem for the paper and board industry. The material is a by-product of the de-inking and re-pulping of paper. The total quantity of paper mill sludge produced in the world is many million tones. The main recycling and disposal routes for paper sludge are land-spreading as agricultural fertilizer, producing paper sludge ash, or disposal to landfill. In functional terms, paper sludge consists of cellulose fibers, fillers such as calcium carbonate and china clay and residual chemicals bound up with water. The moisture content is typically up to 40%. The material is viscous, sticky and hard to dry and can vary in viscosity and lumpiness. It has an energy content that makes it a useful candidate as an alternative fuel for the manufacture of Portland cement. Paper production is a highly capital and labour intensive activity. Wood pulp is the fibrous material that results when wood is separated into its constituent fibers by chemical or mechanical means. Waste paper is composed of previously discarded paper or paperboard products. So, by using this paper waste we can solve the disposal problem. In urban cities, Solid waste management is one of the most challenging issues, which are facing a serious pollution problem due to the generation of huge quantities of solid waste. In this paper presents making hypo sludge from paper waste, which is use as a construction material. A use of hypo sludge in the construction industry is in the production of structural concrete. Hypo sludge contributes beneficial properties to the concrete while helping to maintain economy. The use of hypo sludge, the paper industrial waste in concrete formulations as a supplementary cementations material was tested as an alternative to traditional concrete. Hypo sludge contains, low calcium and maximum calcium chloride and minimum amount of silica. Hypo sludge behaves like cement because of silica and magnesium properties. This silica and magnesium improve the setting of the concrete. Paper sludge consists of cellulose fibers, calcium carbonate and china clay and residual chemicals bound up with water.Paper making generally produces a large amount of solid waste. Paper fibers can be recycled only a limited number of times before they become too short or weak to make high quality paper. This paper mill sludge consumes a large percentage of local landfill space for each and every year. To reduce disposal and pollution problems emanating from these industrial wastes, it is most essential to develop profitable building materials from them. The quantity of sludge varies from mill to mill. The amount of sludge generated by a recycled paper mill is greatly dependent on the type of furnish being used and end product being manufactured. This study includes different concrete mixtures to determine the influence of hypo sludge derived from Rayalaseema paper mill Pvt.Ltd, plant near the northern bank of river Tungabhadra near Kurnool town Gondiparlla village in the State of A.P. Different percentage of hypo sludge replacement. The testing is just carried out after 56 days of casting. The resting specimen was 150mm diameter and 300 mm height cylinder, 150mmX150mmX150mm cube and 600X150X150mm beam. There were total of five batches of concrete mixes, consists of every 10% increment of hypo sludge, fly ash, ferrous oxide replacement from 0%, 10%, 20%, 30% and 40% by its weight.The new technology will offer the pulp and paper industry a practical and economical solution for waste disposal. It will also provide the concrete industry with a low-cost source of fibers to produce a better product for its customers. Government purchases of concrete could potentially decrease by one-third, equal to 20 million cubic yards of concrete annually. By avoiding that amount of concrete production, the industry's annual energy use and carbon dioxide emissions will be significantly reduced, which, along with keeping the mill sludge out of landfills, will be of significant benefit to the environment. The utilization of paper industry waste hypo sludge can reduce the consumption of natural resources, reduce the quantity of expensive cement, reduce environmental pollution and make cement concrete structures denser and thus improve their durability. In recent years, many researchers have established that the use of supplementary cementations materials (SCMs) like fly ash, blast furnace slag, silica fume, met kaolin, rice husk ash and hypo sludge etc. can, not only improve the various properties of concrete both in its fresh and hardened states, but also can contribute to economy in construction costs .Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for the nation. Fly ash is one of the types of coal combustion by- products .The use of these by-products offers environmental advantages divert the material from the waste stream, reduce the energy used in processing

virgin materials, use of virgin materials, and decreases pollution. India is a resourceful country for fly ash generation with an annual output of over 110 million tones, but utilization is still below 20 % in spite of quantum jump in last three to four years. Availability of consistent quality fly ash across the country and awareness of positive effects of using fly ash in concrete are pre requisite for change of perception of fly ash from a 'A waste material' to 'A resource material. Although fly ash offers environmental advantages, it also improves the performance and quality of concrete. Fly ash affects the plastic properties of concrete by improving workability, reducing water demand, reducing segregation and bleeding, and lowering heat of hydration. Fly ash increases strength, reduces permeability, reduces corrosion of reinforcing steel, increases sulphate resistance, and reduces alkali-aggregate reaction. The paper mill sludge consumes a large percentage of local landfill space for each and every year. Worse yet, some of the wastes are land spread on agricultural land or running off into area lakes and streams. Some companies burn their sludge in incinerators, contributing to our serious air pollution problems. To reduce disposal and pollution problems emanating from these industrial wastes, it is most desire to develop profitable materials from them. Keeping this in view, investigations were undertaken to produce low cost concrete by blending various ratios of cement with hypo sludge. So we take hypo sludge and fly ash for compare it with cement.Fly ash is a waste by-product from thermal power plants, which use coal as fuel. It is estimated that about 125 million tons of fly ash is being produced from different thermal power plants in India. It consumes thousands of hectares of agriculture land for its disposal. It causes serious health and environmental problems. In spite of continuous efforts made and incentives offered by the government, hardly very few percentage of the produced ash is being used for gainful purposes like brick making, cement manufacture, soil stabilization and fill material. In order to utilize fly ash in bulk quantities, ways and means are being explored all over the world to use it for the construction of embankments and roads. Paper mill sludge is a major economic and environmental problem for the paper and board industry. The total quantity of paper mill sludge produced in the world is many million tones. The main recycling and disposal routes for paper sludge are land-spreading as agricultural fertilizer, producing paper sludge ash, or disposal to landfill. In functional terms, paper sludge consists of cellulose fibers, fillers such as calcium carbonate and china clay and residual chemicals bound up with water. The moisture content is typically up to40%. The material is viscous, sticky and hard to dry and can vary in viscosity and lumpiness. It has an energy content that makes it a useful candidate as an alternative fuel for the manufacture of Portland cement. As it is happening in most major areas, the waste management problem has already become severe in the world. The problem is compounded by the rapidly increasing amounts of industrial wastes of complex nature and composition. Energy plays a crucial role in growth of developing countries like India. In the context of low availability of non-renewable energy resources coupled with the requirements of large quantities of energy for Building Materials like cement, the importance of using industrial waste cannot be underestimated. Many research organizations are doing extensive work on waste materials concerning the viability and environmental suitability.

II. METHODS AND MATERIAL

Study on Hypo Sludge, Fly Ash & Iron Oxide

Hypo Sludge : Fig show the hypo sludge chemical properties and comparison between cement and hypo sludge

Figure 1. Hypo Sludge

Chemical Composition of Paper:

The chemical composition of paper will depends on the type or grade of paper. Typically most grades of paper consist of organic and inorganic material. Organic portion consisting of cellulose, hemi-cellulose, lignin and or various compound of lignin (Na-lignite etc.) may be 70 to 100%. Inorganic portion consisting of mainly

filling and loading material such as calcium carbonate, clay, titanium oxide etc., may be 0 - 30% of paper.

Table-1 Chemical Composition of Paper

Type/Grade of Paper	Organic	Inorganic
1. Newsprint	>95%	<5%
2. Corrugated (Media & Liner)	>95%	<5%
3. Writing, printing, copying & book paper	70-100%	0-30%
4. Hygiene Tissue	>98%	<2%

PROPERTIES OF PAPER:

BASIS WEIGHT OR GRAMMAGE:

The basis weight, substance or gram mage is obviously most fundamental property of paper board. The Basis weight of paper is the weight per unit area. This can be expressed as the weight in grams per square meter (GSM or g/m^2), pounds per 1000 sq. ft. or weight in Kg s or pounds per ream (500 sheets) of a specific size. Paper is sold by weight but the buyer is interested in area of paper. The basis weight is what determines, how much area the buyer gets for a given weight. e.g., if basis weight is 50 g/m^2, for every 1 kg weight, the buyer gets 20 m^2.When the basis weight is expressed as ream weight, it tells the buyers how many reams he/she getting for a given weight. For papermaker basis weight is important from point of view of production rate. For a given machine deckle and machine speed, the production rate per day in MT will be = Machine Deckle(m) * Machine Speed (m/min) * Basis Weight (g/m^2) * 1440/1000000.

BULK:

Bulk is another very important parameter of paper particularly for printers. Bulk is a term used to indicate volume or thickness in relation to weight. It is the reciprocal of density (weight per unit volume). It is calculated from caliper and basis weight. Bulk (cubic centimeter/g) = Thickness (mm)* 1000/ Basis Weight (g/m^2). Sheet bulk relates to many other sheet properties. Decrease in bulk or in other words increase in density makes the sheet smoother, glossier, less opaque, darker, lower in strength etc.High bulk is desirable in absorbent papers while lower bulk is preferred for printing papers particularly bible paper, dictionary paper etc. Book Bulk: It is defined as the overall thickness in mm of a given number of paper sheets. The bulking number is defined as number. Cellulose fibers (main constituent of paper) swell in diameter from 15 to 20% from dry condition to saturation point. Since most of the fiber in paper sheet are aligned in the machine run direction, absorption and de-absorption of moisture by paper causes the change in CD dimension. Such changes in dimension may seriously affect register in printing processes and interfere with the use of such items as tabulating cards. Dimensional changes in paper originate in the swelling and contraction of the individual fibers Change that occurs in the dimensions of paper with variation in the moisture content is an important consideration in the use of paper.

FORMATION:

Formation is an indicator of how uniformly the fibers and fillers are distributed in the sheet. Formation plays an important role as most of the paper properties depend on it. A paper is as strong as its weakest point. A poorly formed sheet will have more weak and thin or thick spots. These will affect properties like strength, coating capabilities and printing characteristics of the paper, etc. There is no standard method or unit to express formation.

MOISTURE:

Almost all grade of paper has some percentage of moisture. Moisture in paper varies from 2 - 12% depending on relative humidity, type of pulp used, degree of refining and chemical used. Most physical properties of paper undergo change as a result of variations in moisture content. Water has the effect of plasticizing the cellulose fiber and of relaxing and weakening the inter-fiber bonding. The absorption and reflectance of certain bands of infrared and microwave radiation by paper are affected by its moisture content. The amount of water present in a sheet of paper is usually expressed as a percent. The amount of water plays an important role in calendaring, printing and converting process. Moisture control is also significant to the economic aspect of paper making. Water comes free. Poor moisture control can adversely affect many paper properties. The absolute moisture content is

expressed as a % of the paper/paperboard weight. The sample is generally not conditioned while doing this test.

SMOOTHNESS:

It is most important parameter for printer. Smoothness is concerned with the surface contour of paper. It is the flatness of the surface under testing conditions which considers roughness, levelness, and compressibility. In most of the uses of paper, the character of the surface is of great importance. It is common to say that paper has a "smooth" or a "rough" texture. The terms "finish" and "pattern" are frequently used in describing the contour or appearance of paper surfaces. Smoothness is important for writing, where it affects the ease of travel of the pen over the paper surface. Finish is important in bag paper as it is related to the tendency of the bag to slide when stacked. Smoothness of the paper will often determine whether or not it can be successfully printed. Smoothness also gives eye appeal as a rough paper is unattractive.

TEMPERATURE AND HUMIDITY:

CONDITIONING OF PAPER

As explained above it is important to control the moisture content of paper and keep it stable during converting operation. To keep moisture content constant, it is important that paper is conditioned. Conditioning of paper is also of important in many printing and converting operations. The tendency for paper to develop static becomes greater with increasing dryness. Cellulose fibers are hygroscopic i.e. they are capable of absorbing water from the surrounding atmosphere. The amount of absorbed water depends on the humidity and the temperature of the air in contact with the paper. Hence, changes in temperature and humidity, even slight changes, can often affect the test results. So, it is necessary to maintain standard conditions of humidity and temperature for conditioning.

Table-2 Chemical Requirements for Fly Ash Classification

Properties	Fly Ash Class	
	Class F	Class C
Silicon dioxide (SiO_2) plus aluminum oxide (Al_2O_3) plus iron oxide (Fe_2O_3), min, %	70.0	50.0
Sulfur trioxide (SO_3), max, %	5.0	5.0
Moisture Content, max, %	3.0	3.0
Loss on ignition, max, %	6.0	6.0
The use of class F fly ash containing up to 12% loss of ignition may be approved by the user if acceptable performance results are available		

III. RESULT AND DISCUSSION

COMPRESSIVE STRENGTH @ 0, 10, 20, 30 & 40% of Hypo Sludge

Days	Comp. strength	Comp. strength	Comp. strength	Comp. strength	Comp. strength
	0	10	20	30	40
3	21.05	24.80	21.12	17.43	13.07
7	29.12	30.17	27.82	27.82	19.44
28	46.83	48.28	45.93	39.22	35.20
56	96.77	71.96	57.28	58.23	54.18

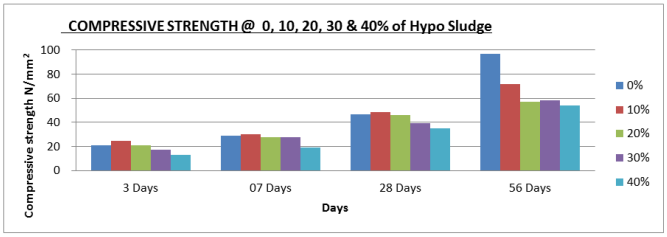

Figure 2. Bar chart of Compressive strength of different percentages by adding Hypo sludge

IV. ACKNOWLEDGMENTS

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V. CONCLUSION

Based on limited experimental investigations concerning the compressive strength of concrete, the following conclusions are drawn:

[1] The 0% replacement of cement in M_{20} grade of concrete gives compressive strength of 46.83 N/mm^2 and 96.77 $N/mm^2$for 28 days and 56 days.

[2] The 10% replacement of cement by hypo sludge in M_{20} grade of concrete gives compressive strength of 48.28 N/mm^2 and 71.96 $N/mm^2$for 28 days and 56 days.

[3] The 20% replacement of cement by hypo sludge in M_{20} grade of concrete gives compressive strength of 45.93 N/mm^2 and 57.28 N/mm^2 28 days and 56 days.

[4] The 30% replacement of cement by hypo sludge in M_{20} grade of concrete gives compressive strength of 39.22 N/mm^2 and 58.23 N/mm^2 28 days and 56 days.

[5] By above results we know that the use of Hypo Sludge should in between of 10-15 % will increase the strength of concrete.

[6] Use of Hypo Sludge reduces the amount of cement content. Thus, the construction work with Hypo sludge in cement becomes environmentally safe and also economical.

[7] When compare in between flyash and Hypo sludge concrete compressive strength is more upto 20% replacement of cement by Hypo sludge.

[8] In flyash cement concrete strength is increases up to 30% replacement of cement then when add extra 10% or more then strength of concrete is decreases.

[9] In Hypo sludge cement concrete strength is increases up to 20% replacement of cement then when add extra 10% or more then strength of concrete is decreases.

[10] Use of hypo sludge in concrete can save the paper industry disposal costs and produces a sustainable concrete for construction.

[11] Disposal problem of the hypo sludge can be minimized by this project now days it is a big problem of getting the landfill.

[12] Workability of the concrete can be increased with the increase in hypo sludge.

VI. FUTURE SCOPE

Large scale exploitation of lime stone for producing cement and emission of carbon from cement, it has become necessary to find any other alternative cementations material. Replacement of cement will not only save the natural sources for future generation but will also prevent the environment by using waste material as cement.

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Secure and Trusted Information Brokering In Cloud Computing

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ABSTRACT

To facilitate extensive collaborations, today's organizations raise increasing needs for information sharing via on-demand information access. Information Brokering System (IBS) a top a peer-to-peer overlay has been proposed to support information sharing among loosely federated data sources. It consists of diverse data servers and brokering components, which help client queries to locate the data servers. However, many existing IBSs adopt server side access control deployment and honest assumptions on brokers, and shed little attention on privacy of data and metadata stored and exchanged within the IBS. In this article, we study the problem of privacy protection in information brokering process. We first give a formal presentation of the threat models with a focus on two attacks: attribute-correlation attack and inference attack. Then, we propose a broker-coordinator overlay, as well as two schemes, automaton segmentation scheme and query segment encryption scheme, to share the secure query routing function among a set of brokering servers. With comprehensive analysis on privacy, end to- end performance, and scalability, we show that the proposed system can integrate security enforcement and query routing while preserving system-wide privacy with reasonable overhead. Finally, T-broker uses a lightweight feedback mechanism, which can effectively reduce networking risk and improve system efficiency. The experimental results show that, compared with the existing approaches, our T-broker yields very good results in many typical cases, and the proposed system is robust to deal with various numbers of dynamic service behavior from multiple cloud sites.

Keywords: Information Broking System, Automation segmentation, coordinates broker, privacy preserving, and Attribute-correlation attack

I. INTRODUCTION

In recent years, we have observed an explosion of information shared among organizations in many realms ranging from business to government agencies. To facilitate efficient large-scale information sharing, many efforts have been devoted to reconcile data heterogeneity and provide interoperability across geographically distributed data sources.

In the context of sensitive data and autonomous data owners, a more practical and adaptable solution is to construct a data centric overlay including the data sources and a set of brokers helping to locate data sources for queries Such infrastructure builds up semantic-aware index mechanisms to route the queries based on their content, which allows users to submit queries without knowing data or server location. In our previous study, such a distributed system providing data access through a set of brokers is referred to as Information Brokering System (IBS).

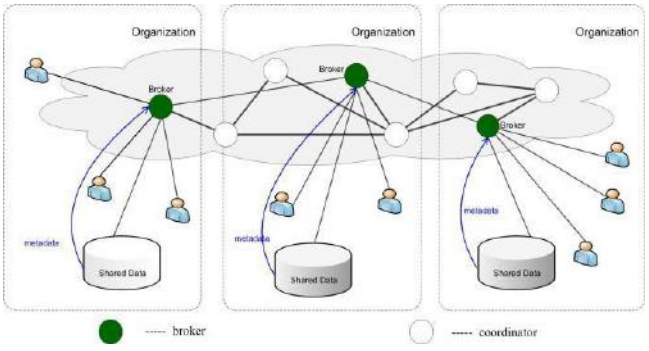

Figure 1: An overview of the IBS infrastructure.

While the IBS approach provides scalability and server autonomy, privacy concerns arise, as brokers are no

longer assumed fully trustable – they may be abused by insiders or compromised by outsiders. In this article, we present a general solution to the privacy-preserving information sharing problem. First, to address the need for privacy protection, we propose a novel IBS, named Privacy Preserving Information Brokering (PPIB). It is an overlay infrastructure consisting of two types of brokering components: brokers and coordinators. The brokers, acting as mix anonymizers, are mainly responsible for user authentication and query forwarding. The coordinators, concatenated in a tree structure, enforce access control and query routing based on the embedded nondeterministic finite automata – the query brokering automata. To prevent curious or corrupted coordinators from inferring private information, we design two novel schemes: (a) to segment the query brokering automata, and (b) to encrypt corresponding query segments. While providing full capability to enforce in-network access control and to route queries to the right data sources, these two schemes ensure that a curious or corrupted coordinator is not capable to collect enough information to infer privacy, such as "which data is being queried", "where certain data is located", or "what are the access control policies", etc. We show that PPIB provides comprehensive privacy protection for on-demand information brokering, with insignificant overhead and very good scalability.

1.1 Related Work

Research areas such as information integration, peer-to-peer file sharing systems and publish-subscribe systems provide partial solutions to the problem of large scale data sharing. Information integration approaches focus on providing an integrated view over large numbers of heterogeneous data sources by exploiting the semantic relationship between schemas of different sources. The PPIB study assumes that a global schema exists within the consortium, therefore, information integration is out of our scope. Peer-to-peer systems are designed to share files and data sets (e.g. in collaborative science applications). Distributed hash table technology is adopted to locate replicas based on keyword queries. The coarse granularity (e.g. files and documents) still makes them short of our expressiveness needs. Further, P2P systems may not provide complete set of answers to a request while we need to locate all relevant data.

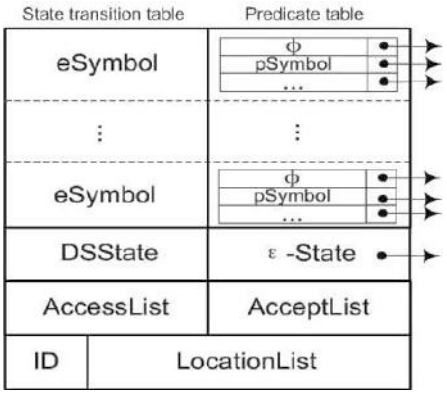

Figure 2 : Data structure of an NFA state.

1.2 Vulnerabilities and the Threat Model

In a typical information brokering scenario, there are three types of stakeholders, namely data owners, data providers, and data requestors. Each stakeholder has its own privacy:

(1) The privacy of a data owner (e.g. a patient in RHIO) is identifiable data and the information carried by this data (e.g. medical records). Data owners usually sign strict privacy agreements with data providers to protect their privacy from unauthorized disclosure/use.

(2) Data providers store collected data, and create two types of metadata, namely routing metadata and access control metadata, for data brokering. Both types of metadata are considered privacy of a data provider. (3) Data requestors disclose identifiable and private information in the querying process. For example, a query about AIDS treatment reveals the (possible) disease of the requestor.

We adopt the semi-honest (i.e., honest-but-curious) assumption for the brokers, and assume two types of adversaries, outside attackers and curious or corrupted brokering components. Outside attackers passively eaves drop communication channels. Curious or corrupted brokering components follow the protocols properly to fulfill their functions, while trying their best to infer others' private information from the information disclosed in the querying process

1.3 Attribute-correlation attack

An attacker intercepts a query (in plaintext), which typically contains several predicates. Each predicate

describes a condition, which sometimes involves sensitive and private data (e.g. name, SSN or credit card number, etc.). If a query has multiple predicates or composite predicate expressions, the attacker can "correlate" the corresponding attributes to infer sensitive information about the data owner. This attack is known as the attribute correlation attack:

Example 1. A tourist Diana is sent to the emergency room at California Hospital. Doctor Bob queries for her medical records through a medicare IBS. Since Diana has the symptom of leukemia, the query has two predicates: [name="Diana"], and [symptom="leukemia"]. Any malicious broker that has helped routing the query could guess "Diana has a blood cancer" by correlating two predicates in the query.

II. METHODS AND MATERIAL

2. Previous Implementation

2.1 Privacy-Preserving Query Brokering Scheme

While QBroker seamlessly integrates the content-based indexing function into the NFA-based access control mechanism, it heavily relies on the QBroker for the enforcement and shifts all the data (i.e., the ACR, index rules, and user queries) to it. However, if the QBroker is compromised or no longer assumed fully trusted (e.g. under the honest-but-curious assumption as in our study), the privacy of both the requestor and the data owner is under risk. To tackle the problem, we present a privacy-preserving information brokering (PPIB) infrastructure with two core schemes. The automata segmentation scheme divides the QBroker into multiple logically independent components so that each component only needs to process a piece of an user query but still can fulfill the original brokering functions via collaboration. The query segment encryption scheme allows to encrypt query pieces with different keys so that one automaton component can decrypt the responsible piece(s) for further processing, while not hurdling the original distributed indexing function. The existing brokering architecture for cloud computing do not consider user feedback only relying on some direct monitoring information.

There is no doubt that the efficiency of a trust system is an important requirement for multiple cloud environments. That is, the trust brokering system should be fast convergence and light-weight to serve for a large number of users and providers. However, existing studies paid little attention to this question, which greatly affects scalability and availability of the trust system.

2.1.1 Automaton Segmentation

In the context of distributed information brokering, multiple organizations join a consortium and agree to share the data within the consortium. While different organizations may have different schemas, we assume a global schema exists by aligning and merging the local schemas. Thus, the access control rules and index rules for all the organizations can be crafted following the same shared schema and captured by a global automaton, the global QBroker. The key idea of the automaton segmentation scheme is to logically divide the global automaton into multiple independent yet connected segments, and physically distribute the segments onto different brokering servers.

Segmentation: The atomic unit in the segmentation is an NFA state of the original automaton. Each segment is allowed to hold one or several NFA states. We further define the granularity level to denote the greatest distance between any two NFA states contained in one segment. Given a granularity level k, for each segmentation, the next i 2 [1; k] NFA states will be divided into one segment with a probability 1=k. Obviously, a larger granularity level indicates that each segment contains more NFA states, resulting in a smaller number of segments and less end-to-end overhead in distributed query processing. On the contrary, a coarse partition is more likely to increase the privacy risk. The tradeoff between the processing complexity and the privacy requirements should be considered in deciding the granularity level. As privacy protection is of the primary concern of this work, we suggest a granularity level

1) To reserve the logical connection between the segments after segmentation, we define heuristic segmentation rules:
2) Multiple NFA states in the same segment should be connected via parent-child links;

3) No sibling NFA states should not be put in the same segment without the parent state; and
4) The "accept state" of the original global automaton should be put in separate segments. To ensure the segments are logically connected,
5) We change the last states of each segment to be "dummy" accept states, which point to the segments holding the child states in the original global automaton.

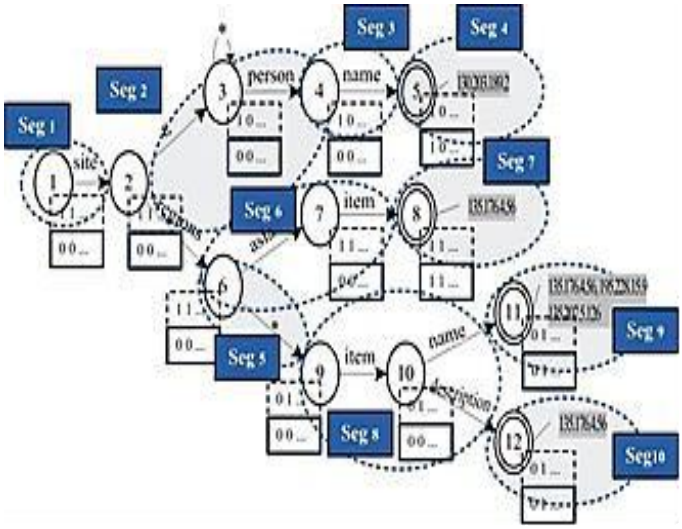

Figure 3 : Divide the global automaton with granularity

3. System Implementation

As mentioned above, most current cloud brokering systems do not provide trust management capabilities to make trust decisions, which will greatly hinder the development of cloud computing. depicts the brokering scenario in existing and Aeolus We can see that this existing brokering architecture for cloud computing do not consider user feedback only relying on some direct monitoring information. As depicted T-broker architecture, a service brokering system is proposed based on direct monitoring information and indirect feedbacks for the multiple cloud environments, in which T-broker is designed as the TTP for cloud trust management and resource matching. Before introducing the principles for assessing, representing and computing trust, we first present the basic architecture of T-broker and a brief description of its internal components.

3.1 Sensor-Based Service Monitoring (SSM)

This module is used to monitor the real-time service data of allocated resources in order to guarantee the SLA (Service Level Agreement) with the users. In the interactive process, this module dynamically monitors the service parameters and is responsible for getting run-time service data. The monitored data is stored in the evidence base, which is maintained by the broker. To calculating QoS-based trustworthiness of a resource we mainly focus on five Kinds of trusted attributes of cloud services, which consist of node spec profile, average resource usage information, average response time, average task success ratio, and the number of malicious access.

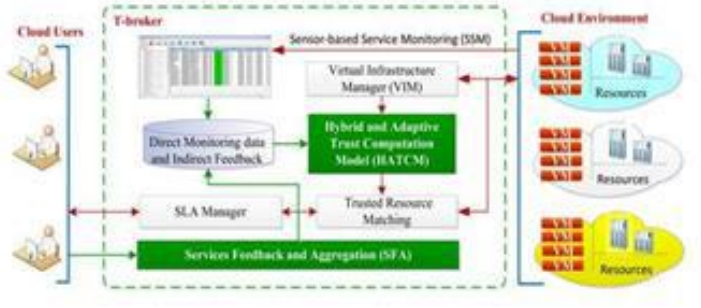

Figure 4 : Proposed Architecture

The node spec profile includes four trusted evidences: CPU frequency, memory size, hard disk capacity and network bandwidth. The average resource usage information consists of the current CPU utilization rate, current memory utilization rate, current harddisk utilization rate and current bandwidth utilization rate. The number of malicious access includes the number of illegal connections and the times of scanning sensitive ports.

3.2 Proposed Model

The proposed system is robust to deal with various numbers of dynamic service behavior from multiple cloud sites. Some hybrid trust models are proposed for cloud computing environment It is no doubt that how to adaptively fuse direct trust (first-hand trust) and indirect trust (users' feedback) should be an important problem, however, most current studies in hybrid trust models either ignore the problem or using subjective or manual methods to assign weight to this two trust factors (first-hand trust and users' feedback).

The proposed trust management framework for a multi-cloud environment is based on the proposed trust evaluation model and the trust propagation network. First, a trusted third party-based service brokering architecture is proposed for multiple cloud environments, in which the T-broker acts as a middleware for cloud trust management and service matching. T-broker uses a hybrid and adaptive trust model to compute the overall trust degree of service resources, in which trust is defined as a fusion evaluation result from adaptively combining the direct monitored evidence with the social feedback of the service resources.

3.2.1 Cloud User Module

Cloud users can send request to the T-broker for accessing the cloud resources, the feedback system collects locally-generated users' ratings and aggregates these ratings to yield the global evaluation scores. After a user completes a transaction, the user will provide his or her rating as a reference for other users in future transactions.

3.2.2 Cloud Resources Module (Admin)

Cloud resource module will provide the cloud resources. web based cloud computing managing tool for managing cloud infrastructure from multiple providers. Right Scale enables organizations to easily deploy and manage business-critical applications across public, private, and hybrid clouds. Spot Cloud provides a structured cloud capacity marketplace where service providers sell the extra capacity they have and the buyers can take advantage of cheap rates selecting the best service provider at each moment. a cloud is modeled in seven layers: Facility, network, hardware, OS, middle ware, application, and the user. These layers can be controlled by either the cloud provider or the cloud customer.

3.2.3 T-Broker Module

In this module T-broker uses some sub modules,

(1)Trust-aware brokering architecture

In which the broker itself acts as the TTP for trust management and resource scheduling. Through distributed soft-sensors, this brokering architecture can real-time monitor both dynamic service behavior of resource providers and feedbacks from users.

(2)Hybrid and Adaptive Trust Computation Model (HATCM)

A hybrid and adaptive trust model to compute the overall trust degree of service resources, in which trust is defined as a fusion evaluation result from adaptively combining dynamic service behavior with the social feedback of the service resources. The HATCM allows cloud users to specify their requirements and opinions when accessing the trust score of cloud providers. That is, users can specify their own preferences, according to their business policy and requirements, to get a customized trust value of the cloud providers

(3) Maximizing deviation method (MDM)

A maximizing deviation method to compute the direct trust of service resource, which can overcome the limitations of traditional trust models, in which the trusted attributes are weighted manually or subjectively. At the same time, this method has a faster convergence than other existing approaches.

(4) Sensor-Based Service Monitoring (SSM)

This module is used to monitor the real-time service data of allocated resources in+ order to guarantee the SLA (Service Level Agreement) with the users. In the interactive process, this module dynamically monitors the service parameters and is responsible for getting run-time service data. The monitored data is stored in the evidence base, which is maintained by the broker. To calculating QoS-based trustworthiness of a resource we mainly focus on five kinds of trusted attributes of cloud services, which consists of node spec profile, average resource usage information, average response time, average task success ratio, and the number of malicious access.

(5)Virtual Infrastructure Manager (VIM)

Each cloud provider offers several VM configurations, often referred to as instance types. An instance type is defined in terms of hardware metrics such as CPU

frequency, memory size, hard disk capacity, etc. In this work, the VIM component is based on the OpenNebula virtual infrastructure manager this module is used to collect and index all these resources information from multiple cloud providers. It obtains the information from each particular cloud provider and acts as a resource management interface for monitoring system. Cloud providers register their resource information through the VIM module to be able to act as sellers in a multi-cloud marketplace. This component is also responsible for the deployment of each VM in the selected cloud as specified by the VM template, as well as for the management of the VM life-cycle. The VIM caters for user interaction with the virtual infrastructure by making the respective IP addresses of the infrastructure components available to the user once it has deployed all VMs.

(6)Service level agreement Manager (SLA)

In the multiple cloud computing environment, SLA can offer an appropriate guarantee for the service of quality of resource providers, and it serves as the foundation for the expected level of service between the users and the providers An SLA is a contract agreed between a user and a provider which defines a series of service quality characters. Adding trust mechanism into the SLA management cloud brokering system can prepare the best trustworthiness resources for each service request in advance, and allocate the best resources to users.

3.3 Multiple Clouds Computing:

MULTIPLE cloud theories and technologies are the hot directions in the cloud computing industry, which a lot of companies and government are putting much concern to make sure that they have benefited from this new innovation However, compared with traditional networks, multiple cloud computing environment has manyunique features such as resources belonging to each cloud provider, and such resources being completely distributed, heterogeneous, and totally virtualized; these features indicate that unmodified traditional trust mechanisms can no longer be used in multiple cloud computing environments. A lack of trust between cloud users and providers has hindered the universal acceptance of clouds as outsourced computing services.

3.4 Feedback Aggregation:

The "Trust as a Service" (TaaS) framework to improve ways on trust management in cloud environments. In particular, the authors introduce an adaptive credibility model that distinguishes between credible trust feedbacks and malicious feedbacks by considering cloud service consumers' capability and majority consensus of their feedbacks. However, this framework does not allow to assess trustworthiness based on monitoring information as well as users' feedback. In large-scale distributed systems, such as grid computing, P2P computing, wireless sensor networks, and so on, feedback provides an efficient and effective way to build a socialevaluation based trust relationship among network entities. By the same token, feedback also cans provider important reference in evaluating cloud resource trustworthiness. Consider large-scale cloud collaborative computing environment which host hundreds of machines and handles thousands of requests per second, the delay induced by trust system can be one big problem. So, there is no doubt that the computational efficiency of a feedback aggregating mechanism is the most fundamental requirement. As depicted in Fig. 3, we build cloud social evaluation system using feedback technology among virtualized data centers and distributed cloud users, and we use a lightweight feedback mechanism, which can effectively reduce networking risk and improve system efficiency.

Table 1: Service of Behaviours

Trust attributes	QoS indicators (service behavior)
node spec profiles	CPU frequency memory size hard disk capacity network bandwidth
average resource usage information	current CPU utilization rate current memory utilization rate current hard disk utilization rate current bandwidth utilization rate
average response time	average response time
average task success ratio	average task success ratio
the number of malicious access	the number of illegal connections the times of scanning sensitive ports

III. RESULT AND DISCUSSION

4.1 Accuracy Evaluation

The value of εri (λ) is used to measure the degree of deviation of calculating results; thus, the closer its value is to zero, the higher the calculating accuracy. First, observing MAD under conditions with different number of training samples(Note: we gather a training sample dt = (dt1, dt2, . . . , dtm) at each time-stamp t, so the number of training samples equals to the number of time-stamps). In order to observe experimental results under different scale of training samples, we use two kinds of inputting samples, a small number of training samples and a large number of training samples.

In the first group of experiments, the total number of training samples changes from 10 to 50. shows that the number of training samples has a direct effect on the accuracy of the trust models. When the number of training samples is small (t < 30), the MADs of three models are more than 0.20. When the number of training samples is set larger (t ≥ 30), the MADs of the other two models are more than 0.23. The MAD of our trust model is less than 0.20, the MAD of our trust model is much smaller than that of STM and FTM, which reflects that our model's performance is better than that of other models under conditions with different number of training samples.

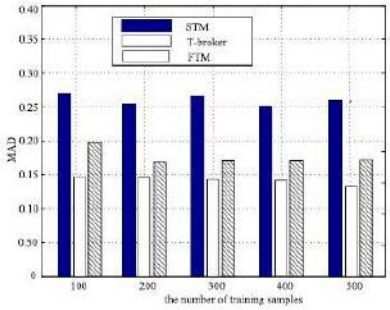

Figure 5: The values of MAD with a large number of training samples.

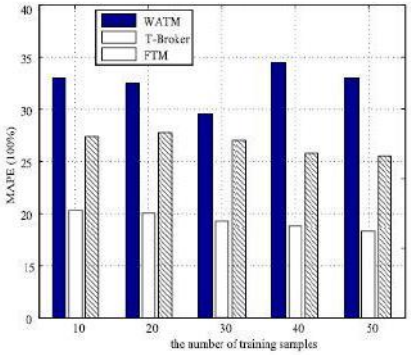

Figure 6 : The values of MAPE with a small number of training samples.

The MAPE is a measure of accuracy in a fitted time series value in statistics, specifically trending. It usually expresses accuracy as a percentage. MAPE can reflect the unbiasedness of the calculating model. A smaller value of MAPE reflects the calculating model has better and unbiased accuracy. We also use two kinds of inputting samples to evaluate the MAPE of the three models, a small number of training samples and a large number of training samples.

IV. CONCLUSION

In this paper, we present T-broker, a trust-aware service brokering system for efficient matching multiple cloud services to satisfy various user requests. Experimental results show that T-broker yields very good results in many typical cases, and the proposed mechanism is robust to deal with various number of service resources. In the future, we will continue our research from two aspects. First is how to accurately calculate the trust value of resources with only few monitored evidences reports and how to motivate more users to submit their feedback to the trust measurement engine. Implementing and evaluating the proposed mechanism in a large-scale multiple cloud system, such as distributed data sharing and remote computing, is another important direction for future research.

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Voice over IP Via IEEE 802.11 Wireless LAN

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ABSTRACT

The purpose of this project is to design and implement an android application that uses WIFI as a means of communication between mobile phones to provide voice communication at no cost. Wi-Fi is a WLAN standard which is used to share data over the transmission range larger than Bluetooth. Wi-Fi can also be used to share the voice from one mobile to another by receiving the data from one mobile (user) and sending the data to the destination user. The basic concept behind this data transferring is VOIP (voice over protocol).Voice telephony over mobile is currently supported at a cost using service provider such as GSM, or using IP service provider at cheaper cost. The system will allow users to search for other individuals within WIFI range and to establish free voice connections. If the users are not in the specific range, they are not allowed to establish free voice connections; they are provided communication by means of service providers. In time this will become a cheap and secure way to communicate and will have a large effect on university, business and personal communication.

Keywords: Wireless Local Area Network, Voice Over Internet Protocol

I. INTRODUCTION

Voice over Internet Protocol or IP telephony is the routing conversations over a public network (Internet) or private network (Intranet).VoIP services allows users to make Internet calls from their Smart Phones with the use of VOIP apps. People are gradually shifting from traditional voice calling to Voice over IP. This gradual migration is beginning to lower the revenue earned from voice minutes. This is leading to loss to the telecom sector as low data rates make VoIP an attractive alternative to traditional calling.

In the past, the goal of telecom engineers was to provide better services at whatever costs. The costs were then being levied on the customer. To this end, only the rich could afford these services. Over the years, there have been changes to this situation. The industry is driving to the positive direction where better services are being provided at very low charges to the customer. In addition, telecom companies have in recent years multiplied, which has led to a high level of competition among them. At the same time, the number of customers has also grown tremendously. Thus, there is then need for better management of resources such as optimization of the quality of the services they provide to these and other carrier customers. The basic concept behind this data transferring is VOIP(voice over protocol). Voice telephony over mobile is currently supported at a cost using service provider such as GSM, or using IP service provider at cheaper cost. The purpose of this research is to design and implement a telephony program that uses WIFI in p2p (Peer-to-Peer) or WLAN (Wireless Local Area Network) as a means of communication between mobile phones at no cost. The challenge is to provide the same service over mobile phone at no cost paper. This system is based on the concept of connecting devices wirelessly instead of cables. It uses 2.4GHz UHF and 5GHz SHF radio. The major advantage of WIFI is that it is compatible with almost every operating system. This paper investigates mobile phone WI-FI calling sissues. A finding from this paper has indicated positive effects on the use of WI-FI calling hence consequently a need for more in-depth and longitudinal research into the issues related to this splendid technology Chances of intrusion in wireless network are high. We can protect Wireless LAN by some tools like Air-Defense, Isomair wireless sentry, Wireless security auditor. In paper, this system is based on the factors involving high quality VOIP call and efficient use of bandwidth. A large

number of factors are involved in making a high-quality VoIP call. These factors include the speech codec, packetization, packet loss, delay, delay variation, and the network architecture to provide QoS. Other factors involved in making a successful VOIP call include the call setup signaling protocol, call admission control, security concerns, and the ability to traverse NAT and firewall. The application on implementing Sinch-based VoIP (Voice over internet protocol) is for Smartphone Android OS mobile. The purpose of this application is to implement a program that uses VoIP as a means of communication between mobile phones at no cost. The system will allow users to search for other individuals within WIFI range and to establish free connection for voice communication. If the users are not within the WIFI range, they cannot communicate with each other. If the users are not connected with WIFI, they can also communicate with other users by means of mobile data network.

II. METHODS AND MATERIAL

The main components of the proposed system are clearly depicted below. Whenever user wants to make a call, he has to log-in into the application and enter the credentials. After validation, users can make call by entering their name and recipient name and thus the call initiates.

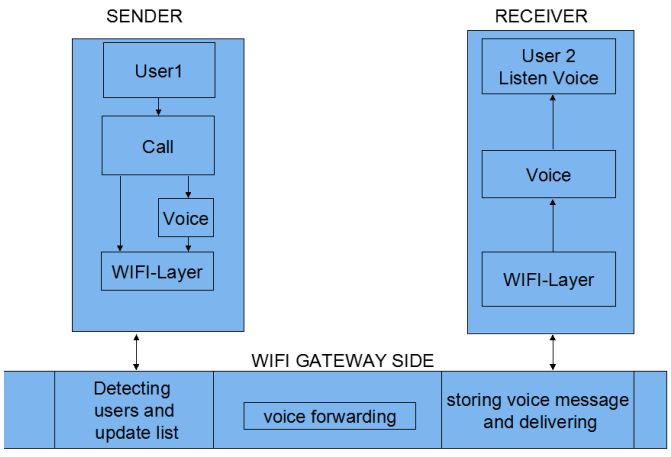


Figure 1: System Architecture.

A Use Case diagram in the Unified Modelling Language (UML) is a type of behavioural diagram defined by and created from a Use Case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as Use Cases), and any dependencies between those Use Cases. In this Use Case diagram of our system, we have three actors. We have six possible Use Cases that interact with each other as a flow. The cascade begins with the user registration and log-in and after credentials validation. It moves on till the user makes a call.

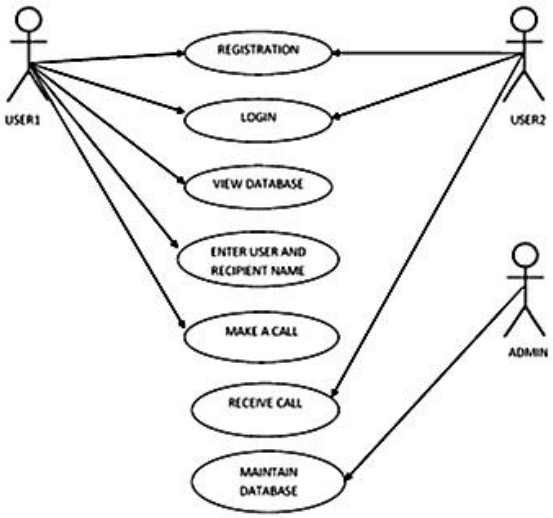


Figure 2 : Use Case diagram

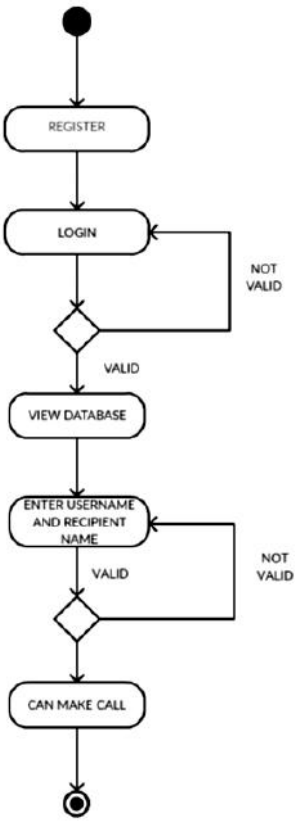


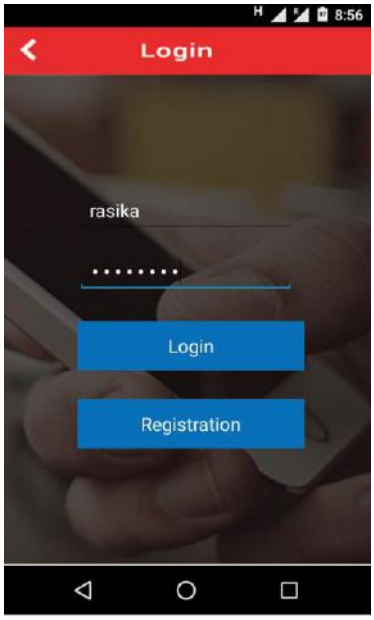
Figure 3 : Activity Diagram

Activity Diagram is basically a flow chart to represent the flow from one activity to another activity. It captures the dynamic message flow from one activity to another. In this project the activity starts with the register activity. When the user is new, he must register first and then log-in. User is allowed to make calls only if the details he entered are valid. Once the user has registered and logged in, he is allowed to see the database and enter his name and the recipient name to place the call. The call gets established only if the entered user name and recipient name are valid.

III. RESULT AND DISCUSSION

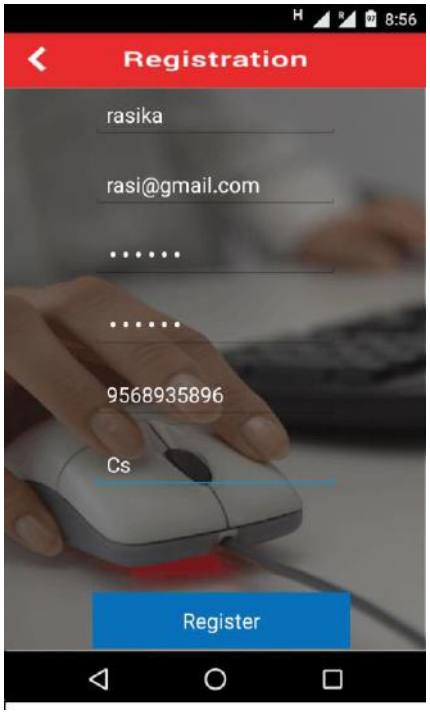
Login Screen

This is the first screen when the application get *Started up*.



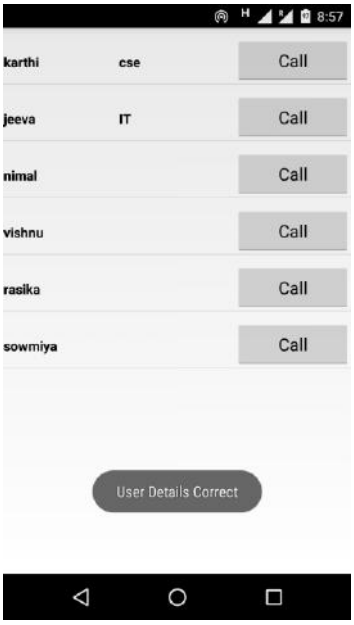
Register Screen

After clicking Register button, Registration Screen will be displayed.



User Details

After Login button, Database listing user details will be displayed.

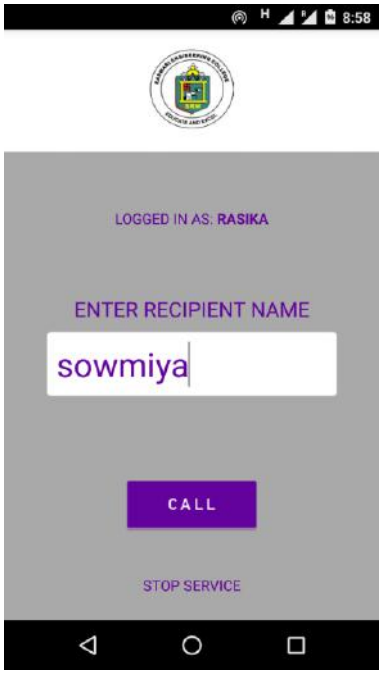


User name Screen

After pressing call button,It will ask to enter user name.

Recipient Name screen

After entering user name, next step is to enter recipient name, whom the user wants to call.



Outgoing call screen

After entering the user name and recipient name, outgoing call will be initiated.

Incoming call screen

Incoming call is received by recipient, he can either accept the call or decline the call.

A. Performance Analysis

On an analysis, Indian telecom companies, are losing Rs. 5000 crore per year due to immense popularity of these free OTT apps. Further research indicates that loss may extend up to Rs. 16000 crore in the next 2-3 years as user base for such free mobile apps is continuing to soar. In addition, users have literally ditched SMS services provided by telecom companies as average SMS being sent by Indians have fallen to an all-time low

of 2 per day. A message costs a few rupees in local and twice the amount when on roaming whereas a message over WhatsApp costs a few paisa because of the small amount of data used.

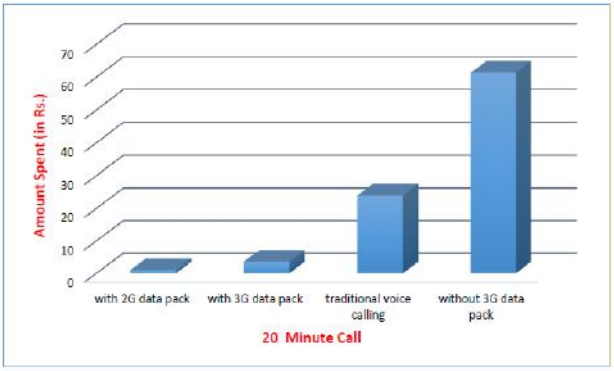


Figure 7: Performance Graph

IV. CONCLUSION

In this system, an Android based mobile application for making calls via WIFI is presented. The application offers reliability, saves costs and easy control. The application is error-free and there is no delay and noise disturbance when the user communicates. The only drawback is that the users cannot communicate when server gets shutdown.

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Integration of Healthcare System with its Experts for Improving the Life Expectancy of Medical Devices : A Review

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ABSTRACT

This paper provides the structure of healthcare system in India and analyses recent developments in the derivation of bio-medical equipment's maintenance & management strategies, and proposes some specific points to consider and offer to perform them during operation. We also envisage the new challenges in the healthcare system in India which represent an important economic position and are subject of everyday optimization attempts. For this purpose by now exists a huge number of tools which conduce more likely to a complexness of the problem by a comprehensive implementation. In the future, we envision that new paradigms to be structured to overcome the present strategies which will benefit & upgrade the rural and urban healthcare system with reduction in patient risks, and in the longer term, provide an alternative source for maintenance and management of medical devices at hospitals in the form of biomedical engineering department.

Keywords: Biomedical equipment's, Hospitals, Healthcare Technology Management (HTM), Medical Devices, Medical Technology

I. INTRODUCTION

Health technologies are essential for a functioning health system. Medical devices in particular are crucial in the prevention, diagnosis, and treatment of illness and disease, as well as patient rehabilitation. Recognizing this important role of health technologies, the World Health Assembly adopted resolution WHA60.29 in May 2007. The resolution covers issues arising from the inappropriate deployment and use of health technologies, and the need to establish priorities in the selection and management of health technologies, specifically medical devices. By adopting this resolution, delegations from Member States acknowledged the importance of health technologies for achieving health-related development goals; urged expansion of expertise in the field of health technologies, in particular medical devices; and requested that the World Health Organization (WHO) take specific actions to support Member States. One of WHO's strategic objectives is to "ensure improved access, quality and use of medical products and technologies."

A medical equipment inventory provides a technical assessment of the technology on hand, giving details of the type and quantity of equipment and the current operating status.

In a modern hospital, most diagnostic, therapeutic, and rehabilitation activity is based on the extensive use of medical technologies. The management tools to make strategic decisions depend on the quality of information. One of the equipment manager's most critical duties is determining whether to repair or replace a piece of equipment [1]. Hospital is an integral part of a social and medical organization, the function of which is to provide for the population complete health care, both curative and preventive; the hospital is also a centre for the training of health workers and bio-social research (World Health Organization). Hospital is much more complex than other manufacturing organizations, for it undertakes medical and health responsibilities that deal with the lives of people, and it must also account for health economics which is different from economic production in important respects [2].The documentation

of equipment maintenance and risk ranking is an extremely important duty relating to these activities [3], [4]. A good maintenance system is required for almost all equipment in order to guarantee its performance, prevent failures and to extend its life expectancy [5].
The inventory provides the basis for effective asset management, including facilitating scheduling of preventive maintenance and tracking of maintenance, repairs, alerts and recalls. The inventory can provide financial information to support economic and budget assessments.

The inventory is the foundation needed to organize an effective HTM department. Items such as equipment history files and logbooks, operating and service manuals, testing and quality assurance procedures and indicators are created, managed and maintained under the umbrella of the equipment inventory. Furthermore, accessories, consumables and spare parts inventories are directly correlated with the main medical equipment inventory. Corrective maintenance is more costly and time intensive than preventive maintenance, but only occurs when a machine fails. A good preventive maintenance policy considers the trade-offs between more frequent preventive maintenances and the more expensive corrective maintenances [6].

On the one hand, the importance of medical equipment, effective management of such equipment, and advances of this technology in prevention, diagnosis, and treatment of diseases is evident. Without medical equipment, diagnosis and treatment will be done at very basic, insufficient levels. On the other hand, for years extortionate costs have been paid for procurement and maintenance of hospital equipment in the health and medical facilities and the equipment has been largely supplied by foreign countries. This certainly has had negative consequences for the country and necessitates attention, care, maintenance, and proper use of hospital equipment.
Moreover, incorrect use of medical equipment leads to detrimental consequences for the safety and health of the patient, and malfunctioning equipment due to inappropriate maintenance can affect the health of patients and the performance of hospitals.
The breakdown of medical equipment in service is of particular concern because of its possible use in critical conditions. The signs of equipment failure may not always be apparent to the clinical staff. Therefore scheduled inspections help ensure the safety and efficacy of the medical equipment [7]. Time series forecasting is an important area of forecasting in which past observations of the same variable are collected and analysed to develop a model describing the underlying relationship. The model is then used to extrapolate the time series into the future, with a promising application in the area of maintenance of medical equipment.

The purpose of this document is to provide an overview of health-care technology inventory for people working within the health-care field. It is important to understand that maintaining an accurate inventory is not the end of the HTM process. Rather, the inventory serves as an input to the many different activities within the HTM cycle (Figure 1). The role of an equipment inventory in each step of the cycle is discussed in order to emphasize the importance it plays in all facets of HTM.

This paper maps out the situation of service management as well as facility management of medical technology and demonstrates a new integrative approach to optimize consisting downtime service maintenance. The concept arose against the backdrop of foreseeable social and technical developments. As a result of social change acting, hospitals and medical technology (equipment and services) providers have to rise to new challenges at the healthcare market.

In this paper the brief model of healthcare system at different levels in fully functional way is analysed to predict the future status of medical equipment to support decision making. The models are based on real data observation to determine some key parameters of the medical equipment such as Availability, Reliability, Management and Performance Efficiency.

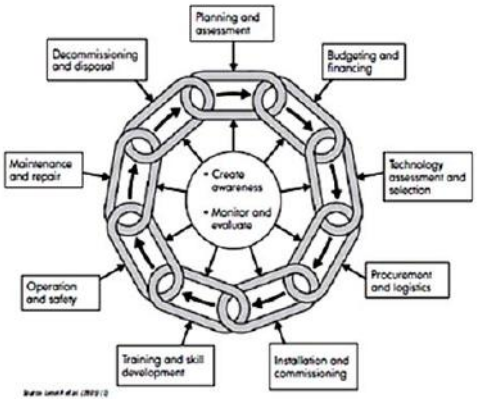

Figure 1: Healthcare Technology Management cycle

II. HEALTHCARE IN INDIA

The equipment inventory is an important input in determining the tools and test equipment required for maintenance and the budget required for acquiring, calibrating and maintaining the instruments [8]. It is imperative for any organization intending to run an effective medical equipment management programme to have and maintain an equipment inventory. The inventory serves as the basis for the programme. Intervals for inspection, testing and maintenance are defined by the initial risk analysis that determines a piece of equipment's inclusion in the inventory. All equipment has an expected lifetime and will eventually need to be replaced or disposed of. Service histories associated with inventory items can be assessed to determine when equipment is no longer serviceable, relevant, safe or cost-effective.

This information can help to develop policies for the replacement or disposal of equipment. Subsequently, this information can be used to prepare budgets for new capital purchases, repair services and so on.

Despite of having huge budget in healthcare, India is lacking the healthcare technology maintenance and management in comparison with other developing nations. The two initiative taken by the Health department, the National Health Systems Resources centre (NHSRC) at central wing and the Drug and medical supplies corporations at state level draw attention towards the poor attribute towards the technical and management strategies in the hospitals leading to huge loss and risking the patient lives at different levels.
The prospective study of availability and utilization of major equipment at District Hospital Gurgaon, Haryana by O.P. Lathwal, Alok Banerjee [9] was carried out in nine different departments and ten service areas in order to find out their availability and utilization of various major equipment's in the respective areas. The actual utilization of available equipment's was found to be only 39.3%, the rest were either non-functional (35.5%), or not in use (25.2%) and kept as reserve. Majority of the non-functional/breakdown equipment were just lying for condemnation (28.2%), only 7.3% kept for repair, out of the available total equipment of 369.

The initiative taken by NHSRC in the recent years on biomedical equipment's known as Project Mapping on biomedical equipment's inventory, across the nation.
This project is based on collecting the data of biomedical equipment's and reviewing the status of medical devices in the hospitals. This initiative is still in progress and as per experts working says that the conditions of equipment's are extremely poor and the devices are calling the maintenance experts for their care.
Wang and Levenson (2000) [10] emphasized that the consideration of mission criticality and utilization rates is essential when deciding which equipment should be included in an inventory. Mission criticality identifies how important the equipment is to the overall goal of the hospital.

To manage their investments effectively, to identify priorities, to attain goals (according to a financial plan) and to maximize financial returns, hospitals need to develop medical technology management programs. These programs can integrate relevant information and a planning methodology for the purchase of new equipment, and for optimizing equipment inventories: upgrades, replacements, annual expenditures related with equipment repairs, among others. This efficient management of medical technology will enable the specialization, differentiation and innovation of medical organizations. In turn, this will improve the delivery of healthcare and allow the recruitment and retention of high quality professionals, along with increasing research and revenues (Orlikowski, 2000) (Brach et al., 2008) (Teplensky et al., 1995)[11] [12] [13]. So, due to the increasing dependence of such equipment's, it is fundamental to create and implement assessment and management methodologies of technologies, including medical hospital equipment (Jahnke and David, 2005) [14].

According to the Mapping project, the outcomes at certain places was found that more than 50% of medical equipment's were non-functional unless being maintained and around 30% of equipment's were defunct and condemn. Wang et al. (2006) [15] discuss further different strategies for determining equipment to be included in an inventory and within a medical equipment management programme. In a medical equipment inventory, each piece of equipment is assigned a unique number to allow it to be identified

from among all other pieces of equipment in the inventory.

The Association for the Advancement of Medical Instrumentation (AAMI), in its widely recognized standard recommended practice for a medical equipment management program [16], requires that inventory inclusion criteria take into account the function of the equipment, the physical risks associated with the equipment, the maintenance requirements of the equipment and the incident history of the equipment. The biomedical engineering department determines the identification numbering and labelling system to be used within the organization, which, the department is not found in any healthcare institution in India.

III.PROCUREMENT OF MEDICAL DEVICES

Cost effectiveness is of major importance in providing technology support services to hospitals. United States experience in the wake of the global financial crisis is that considerable cost savings and efficiency gains can be made by reverting to in-house biomedical/clinical engineering services responsible for equipment specification, procurement, commissioning, quality management and maintenance as against outsourced or externally managed services.

When equipment is replaced or disposed of, it usually needs to be replaced through purchase or donation [17]. Tracking inventory levels and trends over time in conjunction with performing a needs assessment of required technologies can help the health-care facility identify equipment that it needs to acquire. This information can be developed into a purchasing plan, identifying critical equipment that needs to be purchased in the short term, and establishing goals for future acquisition.

The procurement of medical equipment's in hospitals are directly managed and procured by management committee comprising the members of specialized doctors, head of the institution , some management members etc., without consulting or having any technical member in the procurement board. The reason behind lagging the technical person in the committee is the absence of biomedical engineering department in the hospitals or in any zonal health department.

Assessment might show that standardization would lead to lower spare parts prices, lower costs required for training more individuals on one type of technology, and lower costs for tool and equipment purchases.
As economic constraint bites there is a trend to replace outsourcing with in-house services as being more cost effective and this can apply to both small and large organizations.

Reporting from a "small" organization, Lolos [18], the assistant administrator (medical) from a multispecialty clinic indicated operational savings in the order of $500,000 p.a. over 8 years from developing an in-house Biomedical Engineering (BME)/Clinical Engineering (CE) Unit to manage services. During the period where asset value increased within the range $15.5 million to $29 million, service and maintenance costs reduced from 6.6% to 4.2% of the asset value. At the other end of the spectrum, the manager of a clinical engineering organization [19] within a 13 hospital medical service, when confronted with budget cutbacks worked with management to re-engineer practices to achieve the required savings; in this case set as $2.5 million in two years.

IV.MAINTENANCE & HEALTCARE MANAGEMENT

Medical hospital equipment's are systems employed in healthcare delivery to general population, and are typically operated by physicians, nurses or technicians. These equipment's usually carry mechanical, electronic, hydraulic and pneumatic mechanisms, and incorporate software (Carmo et al., 2007) [20]. They can be used in prevention, diagnosis, treatment or in the creation of the necessary comfort for the patient and medical personnel when performing diagnostic, therapeutic and prophylactic measures (Kabatov, 1970) [21].

The equipment inventory workshops are not established in the hospitals, hence we cannot find the properly maintained work orders and service history records to identify equipment failures, malfunctions and misuse due to inadequate training. Training deficiencies may be identified by equipment (such as new technology that is difficult to learn to use), by department (such as incorrect application of the technology) and by person (such as where an error is repeated by the same person) [22]. It is important to note that training may be for

either or both technical and clinical staff. Where clinical staff members are expected to maintain and update equipment inventory records (such as in small clinics and other resource-limited settings), training on inventory recordkeeping is essential. Additionally, the arrival of a new piece of equipment typically sparks a series of training activities within the health-care facility, such as appropriate use and technique (required for clinical staff but also useful for maintenance staff), general maintenance, proper cleaning and storage of the equipment (for both clinical and maintenance staff). For specialized equipment, the initial inventory inclusion data for new equipment can be used to schedule periodic mandatory refresher training sessions for all personnel.

In healthcare system, most of times support from external service providers is required to undertake the service and repair activities for medical or test equipment. This is often the case for highly specialized equipment and equipment under warranty. The inventory can help identify which equipment needs external service and can also assist in determining the budget required and available for such service.

It is imperative for any healthcare organization intending to run an effective medical equipment management programme within the presence of biomedical engineering department to have and maintain an equipment inventory. The inventory serves as the basis for the programme. Intervals for inspection, testing and maintenance are defined by the initial risk analysis that determines a piece of equipment's inclusion in the inventory.

V.CONSEQUENCES OF POOR HEALTHCARE

The ineffective use and subsequent poor operational performance of medical equipment and the chronic lack of functioning medical equipment is generally regarded as an important contributor to the poor quality of health care delivery in India.

A study conducted in low and medium income economies, indicate that as much as half of the equipment in urban and rural medical institutions is inoperable and not in use. As a result the efforts of medical and para-medical personnel are seriously impaired.

Despite progress been made over the past few decades, the fact remains that a large proportion of the population in India does not have access to adequate health care. Recent statistics show that infant mortality is still as much higher than in other developing nations. High incidence of disease and high mortality rates contribute to a poor quality of life. The economic consequences of poor health are also considerable, in that a poor state of health directly and indirectly contributes to the economic burden carried by the country. This concern is expressed in a recent publication by The World Bank.

The poor state of healthcare in India has led the specialized medical personnel to opt to go other countries to work in better healthcare standard. The reasons given are multiple and often complex. McKie [23], for example, attributes the medical equipment problem in developing countries to poor management of health care technology. He states that "shortcomings in managerial procedures and practices are familiar and often described, however the root causes of the disease are seldom probed". He also speaks, in this respect, of a "disease with multiple causes".

VI.MONITORING OF BIOMEDICAL INVENTORY

Monitoring workflow applications have been already deployed in many enterprises related to manufacturing process. But maintenance of medical equipment's has some particularities that require a special infrastructure.

The monitoring process consists on the following steps:

1) Acquire the data required for monitoring;
2) Data processing to obtain monitoring parameters;
3) Condition monitoring, i.e. evaluation of parameters of condition and determination of their status with respect to their nominal operation conditions;
4) Perform a reactive action in case of failure; and
5) Perform a proactive action to improve the maintenance workflow.

In addition, the start-up of the monitoring process should be also considered.

A. Data Acquisition

The required data to track maintenance workflows is related to actors, events and steps, as stated above. Thus, data acquisition is related to obtain these data, as for example,

-a device status information,
-a spare part has arrived,
-an in-house technician is absent or ill.

This data should be acquired directly from the medical equipment and the hospital information services. Thus,

the key issue here is to build an appropriate interface to connect medical equipment and hospital information services in a common infrastructure that enables the maintenance workflow monitoring.

B. Data Processing

This step consists on processing the acquired data so that the appropriate maintenance events can be generated. That is, data acquisition is related to raw data sent by different applications/ interfaces. This data should then be interpreted as maintenance events to be handled in the maintenance infrastructure. For example,

-from a device code a failure maintenance event is generated, and thus a maintenance workflow instance should be initiated,

-from a spare part arrival, a maintenance task should be either continued or started,

-from the information about the sick leave the maintenance escalation event should be activated and the maintenance task reassigned to another technician.

C. Condition Monitoring

Conditioning monitoring is related to determine the current status of a maintenance workflow instance. Three condition states can be detected:

-Start, when a workflow maintenance instance should be initiated due to a device failure or a device preventive maintenance operation (scheduled maintenance).

-Failure, if a delay is incurred.

-Predictive, when, for example, an overload due to an increase on maintenance operations can be detected and a possible delay on non-priority maintenance tasks can be predicted.

Each condition monitoring state requires a different actuation on the maintenance workflow. First, starting a maintenance workflow instance involves the initiation of a new monitoring process. Second, a failure should be corrected as soon as possible in what it is called the reactive maintenance. And third, a predictive state requires a proactive maintenance.

D. Monitoring Start up

For each maintenance workflow running a monitoring process should be started. Since several workflows should be controlled at a time, concurrent approaches should be followed when implementing the workflow monitoring. In this line, agent technology offers, for example, the possibility of organizing the different workflow instances according to several criteria, as the in-house technician responsible of the maintenances and the kind of medical equipment, among other. An additional agent should also assume the role of coordinator, dealing with possible preventive and predictive issues.

E. Reactive Action

When a failure occurs, there is a delay in the workflow progress. For this purpose the escalation procedure involved in the workflow should be activated. As a result, the workflow would be dynamically adapted to the new circumstances. This includes the actuation on the current patient scheduling so that the delays should be informed to the medical staff.

F. Proactive Action

When some information in the system predicts that there could be a failure in the current maintenance workflow instances, several actuations are possible among them, to dedicate more resources to the current maintenance operations, to give priority to some of them, and so on [26].

VII. STANDARDIZATION & DOCUMENTATION RISKS IN MEDICAL EQUIPMENTS

Importantly, the link between AS 3551, AS3200 [24] and IEC 60601[25] introduces the concept of “essential performance” or the performance necessary to achieve freedom from unacceptable risk; a concept not dissimilar to zero down time in IT and engineering terms. While this is fundamental to patient safety, it also places increased onus on the risk manager, preferably the clinical engineer, to be fully on top of the system at all times.

In a medical equipment inventory, each piece of equipment is assigned a unique number to allow it to be identified from among all other pieces of equipment in the inventory. All information gathered about this piece of equipment in the equipment management process, such as service history, preventive maintenance procedures and schedules, repair history and spare part usage, is linked to this identification number for optimal organization of data. Once the inventory identification number is assigned, each piece of equipment is labelled with that number. The clinical engineering department

determines the identification numbering and labelling system to be used within the organization.

VIII. COMPUTERISED INVENTORY MAINTENANCE & MANAGEMENT

Current advances in medical devices allow us to think in a scenario in which all medical equipment's involved in a hospital will be connected to a communication infrastructure. The maintenance operations related to all this devices can then be approached in an automated way taking advantage of the current hospital information applications, as for example, planning tools, data bases of human resources (technicians), etc. Thus, instead of dealing with a burden workflow execution based on manual interaction, the maintenance workflow can be controlled with a computer program.

The inventory may be integrated into a Computerized Maintenance Management System (CMMS), which generally combines inventory, repair and maintenance history, and work-order control into one system.

Other information as needed may also be included in a CMMS. A CMMS may have the capability to record all repair and maintenance history for a particular item included in the inventory. Work-order tracking is another important feature of a robust CMMS program. This tracks all work orders opened for maintenance within an entire clinical engineering department. For a health-care facility to have any intention of implementing a high-quality HTM programme, the first and most important step is to perfect the equipment inventory.

IX.ROLE OF BIOMEDICAL ENGINEERING

It is contended that biomedical engineering services, including the clinical engineering specialty, should be recognized primarily as a clinical support service, and should be aligned with the clinical services of the hospital for the purpose of representation, management and governance. By necessity, Clinical Engineers work across all clinical specialties and areas of medical practice within the hospital and their reporting structures within the organization should reflect this role if their contribution is to be fully realized.

Clinical engineering is at the point where significant additional change is necessary if it is to realize the potential for it to be an effective agent of change and a full partner in managing strategic planning of the medical technology asset in the healthcare sector into the future.

There is an oblique reference to biomedical engineering in the sister report from the Productivity Commission in 2005 looking at the "skills and availability of health professions and other complementary inputs", stating that the "use of medical technology at the very least requires the services and knowledge of a medical professional and may also require other inputs, such as other skilled professionals (e.g. technicians and nurses), capital equipment and infrastructure".

The Health Workforce Issues Paper 2 in 2005 [25] and a preceding study by Lehoux (Canada 2002) confirms the reference to biomedical engineering in relation to the health workforce, with the recommendation that training programs and CPD should be increased to strengthen the human capital (including biomedical engineers) required for the appropriate use and maintenance of the technologies, to guarantee technical compliance and to ensure appropriate staff resources.

The fact that the bureaucracy and government do not acknowledge biomedical engineers as being in the group with direct responsibility for the patient in areas of critical care, safety and treatment outcomes, must set the alarm bells ringing. This can mean two things; either hospital managers do not realize (or want to recognize) the risk involved in allowing management of the medical equipment inventory by other than competent clinical engineers or, the informed public knows so little of the critical role played by clinical engineers that the profession is simply not on the political radar. There is currently no requirement for a biomedical engineer with the appropriate qualification and experience to be responsible for this critical aspect of patient care.

A. Discussion and challenges on Role of Biomedical engineer in healthcare organization

In seeking to have influence, reporting relationships are important and in this respect, clinical engineering as a service entity in the hospital setting is vulnerable. It is

unlikely that clinical engineering will ever be one of the power blocks within a hospital, purely on weight of numbers and current incumbency. Hospitals are identified by the medical and nursing professions, to a lesser extent by allied health and increasingly, by the generic management professions linked directly to Treasury and Government.

The concern is to determine which of these organizational streams is most likely to respect the clinical engineering role and which of the streams will allow the clinical engineer to contribute in their own right and to set an independent and yet, supportive agenda.

The challenge in achieving this should not be underestimated as in many cases organizational trends have already been determined, possibly to the detriment of clinical engineering and its future. The risk in getting this wrong is that clinical engineers can find themselves relegated to the role of information provider only and distanced from the actual decision making process. Increasingly where this has happened, medical equipment is seen by executive management to be the province of the nursing officer, the IT consultant or the facilities manager and this "ownership" tends to become entrenched and isolating where the reporting authority itself is competing for recognition and influence in the organization.

The integration of biomedical engineering across hospitals and other healthcare facilities has been discussed in the context of operational flexibility and cost efficiency. The other advantage of integration is that it forms a presence and identifies biomedical engineering as an entity in its own right, avoiding or reducing the anonymity that can result if individual practitioners are dispersed and isolated within the organization.

X. CONCLUSION

Review of several available methods reveals that there are multiple paths that lead from management of medical equipment's to at least a maintenance of medical equipment's that more closely resembles lack of biomedical-clinical support in the hospital's. This apparent incomplete differentiation state likely results from our poor understanding of the mechanisms underlying the developmental shift from support staff to biomedical engineering wing. Moreover, the existing lack of standardization of specification, structure, and functional operations of medical devices has made comparisons between published papers challenging, if not impossible. In this review, we have illustrated the importance of extensive structural and functional operations in the healthcare institution and we encourage the community to apply various standards during in use medical equipment's. In addition, the use of well-documented and functional biomedical equipment's reference controls is key to the future improvement of maintenance and management strategy generation. This advance will lead to the rapid adoption of ecumenical paradigm and their use in a variety of applications including the study of the mechanisms of human disease and development, and, perhaps in the longer term, as a platform for biomedical/clinical engineering and to evaluate the efficiency and effectiveness of biomedical equipment's.

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Ayurvedic and Allopathic Antidiabetic Formulations Avilable in Market

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ABSTRACT

Diabetes is one of the first diseases described with an Egyptian manuscript from c. 1500 BCE mentioning "too great emptying of the urine. Diabetes is one of the hardest diseases to live with." The first described cases are believed to be of type I diabetes. Indian physicians around the same time identified the disease and classified it as *madhumeha* or *honey urine* noting that the urine would attract ants. The term "diabetes" or "to pass through" was first used in 250 BCE by the Greek Apollonius of Memphis. Type I and type II diabetes were identified as separate conditions for the first time by the Indian physicians Sushruta and Charaka in 400-500 CE with type 1 associated with youth and type II with obesity. The term "mellitus" or "from honey" was added by Thomas Willis in the late 1600s to separate the condition from diabetes insipidus which is also associated with frequent urination. The first complete clinical description of diabetes was given by the Ancient Greek physician Aretaeus of Cappadocia (fl. 1st century CE), who also noted the excessive amount of urine which passed through the kidneys." Diabetes mellitus appears to have been a death sentence in the ancient era. Hippocrates makes no mention of it, which may indicate that he felt the disease was incurable. Aretaeus did attempt to treat it but could not give a good prognosis; he commented that "life (with diabetes) is short, disgusting and painful." The disease must have been rare during the time of the Roman empire with Galen commenting that he had only see two cases during his career.[1]

Keywords: Antidiabetic drugs, *Momordica charantia*, *Gymnema sylvestre*, Insulin

I. INTRODUCTION

1. History

Diabetes is one of the first diseases described with an Egyptian manuscript from c. 1500 BCE mentioning "too great emptying of the urine. Diabetes is one of the hardest diseases to live with." The first described cases are believed to be of type I diabetes. Indian physicians around the same time identified the disease and classified it as *madhumeha* or *honey urine* noting that the urine would attract ants.

The term "diabetes" or "to pass through" was first used in 250 BCE by the Greek Apollonius of Memphis. Type I and type II diabetes were identified as separate conditions for the first time by the Indian physicians Sushruta and Charaka in 400-500 CE with type 1 associated with youth and type II with obesity.

The term "mellitus" or "from honey" was added by Thomas Willis in the late 1600s to separate the condition from diabetes insipidus which is also associated with frequent urination.

The first complete clinical description of diabetes was given by the Ancient Greek physician Aretaeus of Cappadocia (fl. 1st century CE), who also noted the excessive amount of urine which passed through the kidneys."

Diabetes mellitus appears to have been a death sentence in the ancient era. Hippocrates makes no mention of it, which may indicate that he felt the disease was incurable. Aretaeus did attempt to treat it but could not give a good prognosis; he commented that "life (with diabetes) is short, disgusting and painful." The disease must have been rare during the time of the Roman empire with Galen commenting that he had only see two cases during his career.[1]

Diabetes:-

A chronic disease – Diabetes is widespread globally ranking as one of the most common chronic disease. Millions of people all over the world suffer from diabetes for years and increasing every year

What is Diabetes?

Glucose is used by our cells for the production of energy, and this takes place only in the presence of a hormone produced in the pancreas called Insulin. In the absence of insulin, glucose cannot be utilized by the tissues. It is accumulated in the blood rise above 180 mg percentage, it starts leaking into urine this is called Diabetes mellitus or Diabetes. The normal range of blood sugar level is 80-110 mg/dl.

Types of Diabetes:

Type I:-
Diabetes was previously called Insulin-dependent diabetes mellitus (DDM) or juvenile onset diabetes. Type I diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the insulin that regulates blood glucose.

This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. Type I diabetes may account for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type I diabetes may include autoimmune, genetic and environmental factors.

Types II:
Diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. Type II diabetes may account for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce insulin.
Gestational diabetes, African Americans, Hispanic\Latino, Americans, American Indians and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type II diabetes. Type II diabetes is increasingly being diagnosed in children and adolescents.

Gestational diabetes is a form of glucose intolerance that is diagnosed in some women during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans and American Indians. It is also more common among obese women and women with a family history of diabetes.
During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose levels to avoid complications in the infant. After pregnancy, 5% to 10% of women with gestational diabetes are found to have type II diabetes. Women who have had gestational diabetes have a 20% to 50% chance of developing diabetes in the next 5-10 years.

Other specific types of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth), surgery, drugs, malnutrition, infections and other illnesses. Such types of diabetes may account for 1% to 5% of all diagnosed cases of diabetes.[2]

II. METHODS AND MATERIAL

CAUSES OF DIABETES:-

Diabetes mellitus occurs when the pancreas doesn't make enough or any of the hormone insulin, or when the insulin produced doesn't work effectively. In diabetes, this causes the level of glucose in the blood to be too high.

In Type I Diabetes the cells in the pancreas that make insulin are destroyed, causing a severe lack of insulin. This is thought to be the result of the body attacking and destroying its own cells in the pancreas-known as an autoimmune reaction.

It's not clear why this happens, but a number of explanations and possible triggers of this reaction have been proposed. These include:

- Infection with a specific virus or bacteria;
- Exposure to food-borne chemical toxins; and
- Exposure as a very young infant to cow's mil where an as yet unidentified component of th triggers the autoimmune reaction in the body.

However, these are only hypotheses and are by r means proven causes.

Type II diabetes is believed to develop when:

- The receptors on cells in the body that normall respond to the action of insulin fail to be stimulate by it-this is known as insulin resistance. In respons to this more insulin may be produced, and this ove production exhausts the insulin-manufacturing cel in the pancreas;
- There is simply insufficient insulin available; and
- The insulin that is available may be abnormal ar therefore doesn't work properly.

The following risk factors increase the chances someone development Type II diabetes:

- Increasing age
- Obesity;
- Physical inactivity.

Rarer causes of diabetes include:-

- Certain medicines;
- Pregnancy (gestational diabetes); and
- Any illness or disease that damages the pancreas ar affects its ability to produce insulin e. pancreatitis.[3]

AYURVEDIC ANTIDIABETIC FORMULATION AVILABLE IN MARKET

Divya Madhunashini Vati

Divya madhunashini vati is very effective Herb medicine to control diabetes naturally. It helps in achieving better control over blood sugar levels and increases insulin secretion from pancreas. Diabetes (madhumeh) reduces vitality of whole body and specially effects nerves and blood vessels. Regular course of madhunashini improves overall health in a diabetic and protects nerves, heart, blood vessels, eyes and kidneys. So take madhunashini herbal medicine regularly to get long and healthy life.

Ingredients of Divya Madhunashini Vati

Each 500 mg tablet contains Herbs:-

- Shilajit - Asphalatum
- Ashwagandha - Withania somnifera
- Gurmaar - Gymnema sylvestre
- Nimba - Azadirachta indica
- Harar choti - Terminalia chebula
- Giloy - Tinospora cordifolia
- Kutaj - Holarrhena antidysentrica
- Gokhrudana - Tribulus terrestris
- Bahera - Terminalia bellirica -
- Amala - Emblica officinalis
- Belpatra - Aegle marmelos
- Kachoor - Curcuma zedoaria
- Vasa - Adhatota vasica
- Badjata - Ficus bengalensis
- Kikarfali - Acacia arabica
- Kuchla Shudh - Strychnos nux-vomica
- Kaali jeeri - Centratherum anthelminticum
- Kutki - Picrorhiza Kurroa
- Jamun guthli - Syzgium cumini
- Chirayata - Swertia chirata
- Haldi - Curcuma longa- Turmeric
- Methi - Trigonella foenum-graecum
- Saptrangi - Salacia chinens

Mode of Administration

- Should be taken one hour before breakfast & dinner or after breakfast & dinner with lukewarm water or milk.
- If patient is taking insulin or allopathic medicine then he/she should test the level of his/her blood sugar two weeks after the intake of this medicine. If the level of sugar becomes normal then the dose of allopathic medicine should be reduced gradually.
- After the stoppage of allopathic medicine when the level of blood sugar reduces & becomes normal, the dose of this medicine should also be reduced gradually.

Uses & benefits of Divya Madhunashini Vati

This herbal remedy activates the pancreas & helps it to secrete a balanced quantity of Insulin, through which extra Glucose gets converted into Glycogen.

- It removes irritation and weakness as well as increases the capacity of brain by making it strong.

- This Ayurvedic medicine is useful in the numbness of hands and feet and makes the nervous system very strong.
- It removes complications like weakness, exhaustion & tension due to diabetes.
- It protects the patient from thirst, frequent urination, loss of body weight, blurred of eye vision, tingling sensation, tiredness, infections of skin, gums and urethra.
- This Ayurvedic tonic strengthens the immune system and increases hope as well as self-confidence.

Dosage of Divya Madhunashini Vati

Take 1 - 2 tablets twice a day.

Advice for Sugar patient

- Diabetes patient is advised to do Yoga and breathing exercises regularly to control diabetes. Anuloma viloma, Kapalbhati pranayama are very important.
- Bitter melon or bitter gourd (Karela) juice is very effective in diabetes.
- Shilajit is specially adviced for diabetes

Diabecon DS

Ingredients:

Gymnema's *(Meshashringi)* principal constituent is gymnemic acid, which has antidiabetic properties. It reduces excessive blood sugar. It also has a regenerative effect on pancreatic beta cells and is insulinotropic, which means that it stimulates the production and activity of insulin. Gymnema temporarily abolishes the taste for sugar and helps decrease sugar cravings. It increases the activity of enzymes responsible for glucose absorption and utilization.

Indian Kino Tree's *(Pitasara)* principal constituent, epicatechin, has alpha-glucosidase inhibitory properties and regularizes key metabolic enzymes involved in carbohydrate metabolism.

Shilajeet decreases hepatic glucose production and prevents hyperglycemia. Shilajeet has a protective action on b-c

ells of the pancreas, and promotes unrestricted endogenous insulin action

Action:

Diabecon DS is a double strength phytopharmaceutical formulation for the effective management of type II

Combats diabetes: The natural ingredients in Diabecon increase insulin secretion in the body. By reducing the glycated hemoglobin level (form of hemoglobin used to measure glucose content in the blood), normalizing microalbuminuria (a condition which is an important prognostic marker for kidney disease in diabetes mellitus) and modulating the lipid profile, Diabecon minimizes long-term diabetic complications. The drug also increases hepatic and muscle glycogen content, which enhances the peripheral utilization of glucose.

Anti-hyperglycemic: Diabecon reduces high glucose content in the blood. Effective hyperglycemic control is important in preventing micro- and macrovascular complications (large and small blood vessels) complications arising from diabetes.

Indications:

- For non-insulin-dependent diabetes mellitus (NIDDM/type II), as a monotherapy or as an adjuvant to other oral antidiabetic drugs
- For NIDDM with signs and symptoms of hyperlipidemia
- For NIDDM with early retinopathy
- For NIDDM with microalbuminuria
- As an adjuvant in insulin-dependent diabetes mellitus (IDDM/type I)

Himalaya Karela

Bitter Melon / Bitter Gourd / *(Momordicacharantia)*
Karela Facts:

Botanical Name : MOMORDICA CHARANTIA
Family Name : CUCURBITACEAE
Common Name : BITTER MELON, BITTER GOURD, BALSAM PEAR, BALSAM APPLE, MELEGA SAGA
Karela is widely grown in India. It is a climbing vine and the fruits are used.
In Ayurveda, the fruit is considered as emetic, laxative, antibilous, tonic, stomachic, stimulant and alternative. Several studies have shown it to be extremely good for maintaining normal glucose levels in the blood and urine. Karela also supports the health of the pancreas, liver and spleen. It detoxifies and purifies blood.

Benefits of Karela:

Supports normal blood sugar levels, Promotes healthy sugar metabolism

Himalaya Karela is a pure herb extract. Karela also known as Bitter Melon or *MomordicaCharantia* is a herb that helps maintain normal blood sugar levels and keeps body functions operating normally.

Eating Karela over long period of time promotes normal glucose levels in the blood and urine. At least three different groups of constituents in Bitter Melon have been reported to have benefits in maintaining normal blood sugar levels. These include a mixture of steroidal saponins known as charantin, insulin-like peptides, and alkaloids. Karela contains Gurmarin, a polypeptide considered to be similar to bovine insulin, which has been shown in experimental studies to achieve a positive sugar regulating effect by suppressing the neural response to sweet taste stimuli.

Karela fruit is regularly used in the Indian diet. Bitter melon is rich in iron and has twice the beta carotene of broccoli, twice the calcium of spinach, twice the potassium of bananas, and contains vitamins C and B 1 to 3, phosphorus and good dietary fiber. It is believed to be good for the liver and has been proven by western scientists to contain insulin. At least 32 active constituents have been identified in bitter melon so far, including beta-sitosterol-d-glucoside, citrulline, GABA, lutein, lycopene and zeaxanthin. Nutritional analysis reveals that bitter melon is also rich in potassium, calcium, iron, beta-carotene, vitamins B1, B2, B3 and C.

Benefits of Karela / Bitter Melon

- Karela promotes normal sugar levels in blood and urine
- Karela helps achieve positive sugar regulating effect by suppressing the neural response to sweet taste stimuli.
- Karela helps to support is a good blood purifier
- Karela a polypeptide which is similar to bovine insulin
- Karela promotes health of the pancreas
- Karela supports liver health
- Karela helps in digestion
- Karela promotes the body's natural metabolism
- Karela is considered to be a powerful detoxifier
- Karela helps maintain a normal level of triglycerides and cholesterol in the liver and blood.
- Karela helps support a normal immune system function.

Karela in Ayurveda:

According to Ayurveda, Karela is kapha and pitta suppressant. Due to its properties it is very helpful in cooling the body so as to suppress the skin related problems caused by the excess of pitta. It also promotes wound healing. Due to its rasa it is very useful in normalizing the digestive tract and also helps in improving peristaltic movements in the body. Due to its bitter taste it is useful in suppressing worm infestation. It also helps in regularizing the urinary tract. It has remarkable properties in maintaining blood sugar levels. As per Ayurveda, Karela'sgunna or properties are that it is laghu (light) and ruksh (dry). It's rasa or taste is katu

or pungent and tickta or bitter. Its Virya or potency is ushan or hot

Directions for taking Himalaya Karela 1 capsule twice a day after meals. Allow several weeks for long lasting benefits. The use of natural products provides progressive but l

DIA BETA PLUS

UNIQUE & EFFECTIVE HERBAL SUPPLEMENT FOR DIABETES

- Dia-beta capsules work well for hypoglycemic patients
- Type-2 diabetes is managed using Dia-beta capsules
- Best for diabetic neuropathy
- Fights weakness and fatigue brought on by diabetes

III. RESULT AND DISCUSSION

INGRADIENTS

Sr.No	Herb used	Latin name	Quantity
1	Saptarangi	Salacia chinesis	50 mg
2	Vijayasar	Pterocarpus marsupium	50 mg
3	Gurmar	Gymnema sylvestre	150 mg
4	Ashwagandha	Withania somnifera	50mg
5	Tulsi	Ocimum tenuiflorum	50 mg
6	Karela	Momordica charnita	150 mg

WHAT ARE THE BENEFITS OF DIA BETA PLUS?

Dia Beta Plus capsules are formed using a combination of various anti-diabetic herbs that individual work well for diabetes. Their combination works excellently well for diabetes. Dia Beta Plus capsules naturally control the blood sugar levels. The Dia Beta plus capsules are very effective against diabetic neuropathy. These capsules help rejuvenate the overall health. Works very well for stamina. Dia Beta Plus capsules work very well to decrease the fatigue levels of the diabetic victim. Prevents fluctuations in sugar levels in the body.

GURMAAR (GYMNEMA SYLVESTRAE):

In the native Indian language Hindi, Gurmaar is known as the 'Sugar Killer'. Physicians since the ancient times have been using Gurmaar for diabetes control. The research studies have shown that it contains gymnemic acids that are responsible for the anti-diabetic effects. These acid molecules inhibit the entry of glucose molecules in the intestines. This controls the blood sugar levels and therefore controls diabetes.

KARELA (MOMORDICA CHARANTIA):

Being very low in fat and calorie content, it is especially suited to people with diabetes and other metabolic disorders. It is worth noting that Bitter melons contain twice as much beta-carotene as broccoli, twice the amount of potassium of that of a banana, twice the calcium of spinach, and a very high content of iron. Bitter melon's diabetic results are excellent. A natural herbal product to manage diabetes in a natural way. A polypeptide present in Bitter melon acts like insulin to help fight diabetes. Bitter gourds can also be used in case of eye problems like far-sightedness and near-sightedness.

- It helps to prevent blood related disorders.
- It has wonderful blood-purifying actions and therefore provide relieves from toxemia and blood related diseases.

VIZAYSAAR (PTEROCARPUS MARSUPIUM):

It is a famous herb for diabetes.

- The bark of the tree is made into a wooden glass and this glass is called as the 'Miracle reliever of diabetes'.
- This glass is used to manage diabetes. The glass is filled with water and kept overnight. This water is had in the morning.
- Our product Dia Beta Plus has the miraculous effects of this herb.

SAPTRANGI (SALACIA OBLONGA):

- Physicians have used this herb since ages for diabetes.
- The Bark of the tree has anti-diabetic properties.

DIRECTION:

Dia Beta Plus Ayurvedic capsules are an easily available convenient to use veggie capsule formulation that should be consumed as a whole with water.

- Adults can take a daily dosage of 1-2 capsules with milk or water after meals.
- For children one capsule per day is the recommended dose.

The natural, herbal nature of Dia Beta Plus leaves behind no side effects. Its regular usage for long periods is considered safe. The capsules can be used as per choice and there are no withdrawal or habit forming symptoms seen.

Caution: However, Dia Beta Plus has no known side effects, pregnant females and lactating mothers should consume it only under medical supervision. The product is generally well tolerated by most of the users, excessive intake or intolerance can lead to mild abdominal pain and/or diarrhea. People consuming hypoglycemic drugs may need to alter the dosage of their drugs along with this product. Antidiabetic drugs may be subdivided into six groups: insulin, sufonylureas, alpha-glucosidase inhibitors, biguanides, meglitindes and thiazolidinediones.

GENERAL ALLOPATHIC TREATMENT OF DIABETES:

Description: Antidiabetic drugs may be subdivided into six groups: Insulin, Sufonylureas, alpha-glucosidase inhibitors, Biguanides, Meglitindes and Thiazolidinediones.

1.1 Insulin (Humulin, Novolin):

Insulin is the hormone responsible or glucose utilization. It is effective in both types of diabetes, since, even in insulin resistance, some sensitivity remains and the condition can be treated with larger doses of insulin.

Most insulin are now produced by recombinant DNA techniques, and are chemically identical to natural human insulin. Isophane insulin suspension, insulin zinc suspension, and other formulations are intended to extend the duration of action of insulin, and permit glucose control over longer periods of time.[4(6)]

1.2 Sulphonylureas (chlorpropamide diabinese, tolazmide Tolinase, glipizide glucotrol and others):

Sulphonylureas act by increasing insulin release from the beta cells of the pancrease. Glimepirie (Amaryl), a member of this class, appears to have a useful secondary action in increasing insulin sensitivity in peripheral cells.

1.3 Alpha Glucosidase Inhibitors - acarbose Precise, miglitol Glyset do not enhance insulin secretion. Rather, they inhibit the conversion of disaccharide and complex carbohydrates to glucose. This mechanism does not prevent conversions, but only delays it, reducing the peak blood glucose levels. Alpha-glucosidase inhibitors are useful for either monotherapy or in combination therapy with sulfonylurea's or other hypoglycemic agents.

1.4 Biguanides:

Metformin (Glucophage) is the only available member of the biguanide class. Metformin decreases hepatic glucose production, decreases intestinal absorption of glucose uptake and utilization. Metformin may be used as monotherapy, or in combination therapy with a sulfonylurea.[6]

1.5 Meglitinide Class:

There are two members of the meglitinide class: repaglinide (Prandin) and nareglitinide (Stralix). The mechanism of action of the meglitinides is to stimulate insulin production. This activity is both doses dependent on the presence of glucose, so that the drugs have reduced effectiveness in the presence of low blood glucose levels.

The meglitinides may be used alone, or in combination with metformin. The manufacturer warns that nateglitinide should not be used in combination with other drugs which enhance insulin secretion.

1.6 Thiazolidine Class:

Rosiglitazone (Avandia) and pioglitazone (Actos) and the members of the thizolidinedione class. They act by both reducing glucose production in the liver, and increasing insulin dependent glucose uptake in muscle cells. They do not increase insulin production. These drugs may be used in combination with metoformin or a sulfonylurea.

A) Treatment for type I diabetes :

People with type I diabetes no longer produce insulin, and they must have insulin injections to use the glucose they obtain from eating. People with type I diabetes must give themselves insulin every day. Insulin can either be injected, which involves the use of a needle and syringe, or it can be given by an external or internal insulin pump, insulin pen, jet injector, or insulin patch. Extra amounts of insulin A may be taken before meals, depending on the blood glucose level and food to be eaten. Insulin cannot be taken as a pill. Because it is a protein, it would be broken down during digestion just like the protein in food. I must be injected into the fat under the skin for insulin to get into the blood. The amount of insulin needed depends on height, weight, age, food intake, and activity level. Insulin doses must be balanced with meal times and activities, and dosage levels can be affected by illness, stress, or unexpected events.

B) Treatment for Type II diabetes:

People with type II diabetes make insulin, but their bodies do not correctly use it. Some people with type II diabetes need diabetes medication or extra insulin to help their bodies use their own insulin better.

Diet and exercise can often bring blood enough; the next step is the addition of medications that lower blood glucose levels.

Oral medications may include:

- Sulfonylurea drugs, which stimulate the production of insulin in the pancreas
- Biguanides, which decrease the amount of sugar made in the liver.
- Alpha-glucosidase inhibitors, which stimulate the production of insulin in the pancreas.
- Thiazolidinediones, which makes the body more sensitive to insulin.

Only people with type II diabetes can use oral medications; they are not helpful for a person with type I diabetes, whose pancreas has lost all ability to produce insulin.

Maintaining a proper diet and exercise program is important even when taking diabetes oral medications.

COMPLICATION OF DIABETES:

Both forms of diabetes ultimately lead to high blood sugar levels, a condition called hyperglycemia over a long period of time. Hyperglycemia damages the retina of the eye, the kidneys; the nerves, and the blood vessels. Damage to the retina from diabetes (diabetic retinopathy) is a leading cause of blindness.

Damage to the kidneys from diabetes (diabetic nephropathy) is a leading cause of kidney failure.

Damage to the nerves from diabetes (diabetic neuropathy) is a leading cause of foot wounds and ulcers, which frequently lead to foot and leg amputations.

- Damage to the nerves in the autonomic nervous system can lead to paralysis of the stomach (gastroparesis), chronic diarrhea, and an inability to control heart rate and blood pressure during postural changes.
- Diabetes accelerates atherosclerosis (the formation of fatty plaques inside the arteries), which can lead to blockages or a clot (thrombus). Such changes can then lead to heart attack, stroke, and decreased circulation in the arms and legs (peripheral vascular disease).[5]

3. GLUCOMETER

ALLOPATHIC AVILABLE MARKETED FORMULATIONS

MARKETED PREPARATIONS	CONTENTS	MANUFACTURED BY
1) Glyciphage-250mg Glyciphage-500 mg Glyciphage-1000 mg Glyciphage-800 mg	1) Metformin hydrochloride I.P-850mg 2) Excipients----------9.5	Franco – Indian Remidies pvt Ltd Mumbai
2) Glyciphage-G1 Glyciphage-G2 Glyciphage-PG1 Glyciphage-PG2	Each uncoated bilayered tablet contains 1) Glimeperide Usp – 1 mg 2) Metformin Hydrochloride - 500mg 3) Excipients----------9.5 4) Colour--------Red oxide of iron	Themis laboratories Pvt.Ltd.
3) Glyciphage – PG1	1) Metformin Hydrochloride---- 500 mg (In sustained release form) 2) Pioglitazone Hydrochloride---- 15 mg Equivalent to pioglitazone 3) Glimepiride U.S.P---1mg 4) Excipients------9.5 mg 5) Colour------- Lake of Erythrosine	Franco- Indian Remedies P.V.T. L.t.d. Mumbai.
4)Semi- Glynase – 5mg	Each uncoated tablet contain 1)Glipizide I.P.---2.5 mg (in beta cyclodextrin) 2)Excipients----------9.5 mg	U.S.V. Limited Ahmedabad
5)Glymase MF-5mg	1) Metformin Hydrochloride I.P.---500mg 2) Glipizide I.P.----5 mg (in beta cyclodextrin) 3) Excipients---9.5 mg	U.S.V. Limited Govandi, Mumbai
6)Glycomet----250mg Glycomet --500mg Glycomet ---850mg Glycomet---G1 Glycomet---G2	1) Metformin Hydrochloride I.P.—500mg 2) Excipients--- 9.5 mg	U.S.V. Limited Baddi, himachal Pradesh
7)Ductrol	1) Glibenclamide I.P.---5mg 2) Metformin Hydrochloride I.P.---500mg 3) Excipients--------- 9.5 mg	U.S.V. Limited Govandi, Mumbai
8)Pilgar---30mg Pilgar---15mg	1) Plitazon Hydrochloride equivalent to pioglitazone-----15mg	RANBAX lab Ltd. Tehsil nalaghar Dist. Solan (H.P.)
9)Pioz* MF 15	Each uncoated tablet contain 1) Plitazon Hydrochloride equivalent to pioglitazone-----30mg 2) Metformin Hydrochloride I.P.---500mg 3) Colour—red oxide of iron 4) Excipients--------- 9.5 mg	U.S.V. Limited Baddi, himachal pradesh
10)PiosafeMF*15	Each uncoated tablet contain 1) Plitazon Hydrochloride equivalent to pioglitazone-----30mg 2) Metformin Hydrochloride I.P.---500mg 3) Colour—quinoline yellow lake 4) Excipients--------- 9.5 mg	Otsira Genetica Aristo p'ceutical Pvt Ltd. Mandideed mumbai
11)Glpmiprex* 2	1) Glimeperide U.S.P.—2mg 2) Excipients---9.5mg	Aristo p'ceutical Pvt Ltd. Mandideed mumbai
12)Tribet—2	1) Glimeperide U.S.P.—2mg 2) Plitazon Hydrochloride equivalent to pioglitazone-----15mg 3) Metformin Hydrochloride I.P.---500mg (in extended release) 4) Colour-: brilliant blue.	Nicholas piramal india Ltd.
13)Dianorm-M	Each uncoated tablet contains 1) Glimeperide U.S.P.—80mg 2) Metformin Hydrochloride I.P.---500mg	Micro labs ltd Baddi Tehsil Nalagarh Dist-Solan
14)AZULIX 2 MF	Each uncoated tablet contains 1) Metformin Hydrochloride I.P.---500mg (In sustained released form) 2) Glimeperide U.S.P.—2mg 3) Colour:-Lake of erythraline	Tarrent Pharmaceutical Ltd. Indrad Dist-Solan
15)Gemer-1	Each uncoated tablet contains 1) Metformin Hydrochloride I.P.---500mg (In extended released form) 2) Glimeperide U.S.P.—2mg 3) Colour:-yellow oxide of iron 4) Excipients------9.5mg	Sun Pharmaceutical Industries 396191 Dadra, Jammu

Antidiabetic Herbal Products Marketed in India[7]

Sr. No.	Brand Name	Manufacturer	Ingradients
1	Diabecon	Himaliya	Balsamodendron mukul, Pterocarpus marsupium, Casearia esculenta, Gymnema sylvestre, Glycyrrhiza glabra, Tinospora cordifolia, Swertia chirata, Tribulus terrestris, Phyllanthus amarus, Gmelina arborea, Berberis aristata, Aloe vera, Eugenia jambolana, Asparagus racemosus, Boerhaavia diffusa, Sphaeranthus indicus, Gossypium herbaceum, Shilajeet and powders of Momordica charantia, Piper nigrum, Ocimum sanctum, Abutilon indicum, Curcuma longa, Rumex maritimus and Trikatu.
2	. Pancreatic tonic 180 cp	Ayurvedic herbal supplement	Pterocarpus marsupium, Cinnamomum tamala, Gymnema sylvestre, Azadirachta indica, Ficus racemosa, Aegle marmelos, Trigonella foenum graceum, Momordica charantia, Syzygium cumini
3	Bitter gourd Powder	Garry and Sun natural Remedies	Bitter gourd (Momordica charantia)
4	Diabeta	Ayurvedic cure Ayurvedic Herbal Health Products	Momordica charantia (Bitter Gourd), Zingiber officinale (Ginger), Gymnema sylvestre, Curcuma longa (Turmeric), Pterocarpus marsupium (Kino Tree), Vinca rosea (Periwinkle), Azadirachta indica (Neem), Tinospora cordifolia, Acacia arabica (Black Babhul), Syzygium cumini (Black Plum).
5	Dabur Madhu Rakshak	Dabur	Amla (phyllanthus emblica), Tejpatra (Cinnamomum tamala), Vijaysar (Pterocarpus marsupium), Gurmar (Gymnema sylvestre), Jamum seed (Eugenia jambolana), Kali marich (piper nigrum), Neem leaves (azadiracheta indiaca), Methi (trigonella foenum-graecum), Bahera (Terminalia belerica), Bhavana Dravyas, Shudh Shilajit, karela fruit (momordica charantia), Hareetaki (Terminalia chebula
6	Madhumehari Granules	Baidyanath	gudmar (gymnema sylvestre), Jamun guthali (syzygium cumini), Gulvel (Tinospora cordifolia), Kkarela Beej (Momordica charantia), Khadir Chuma (Acacla Catechu), Haldi (Curcuma Longa), Amia (Emblica-officinalis), vijay-sar (Pterocarpus Marsupium), Tejpatra (cinnamomum-Tamala), Shilajit (Asphaltum), Gularphal Chuma (Ficus Glomerata), Kutki (Picrorhiza Kurroa), Chitrak (plumbago Zeylanica) , Methi (Trigonella-foenum graecum), Bhavna of Neem Patti (Azadirachta - Indica), Bilwa Patra (Aegle Marmelos)

IV. CONCLUSION

Antidiabetics are the preparations used for the treatment of diabetes mellitus and for maintaining the sugar level in blood. Diabetes observed mostly in male (74%) and in female (24%). It is chronic disease & it get spreads day by day because of modern life style & lack of physical exercise mostly seen in elder & fatty persons. Due to long term therapy again complications are seen like nerve damage of autonomic nervous system & atherosclerosis. From servey of marketed preparations it is recognised that the most prescribe drug by the physicians is Glyciphage & its combinations. Now days a device namely glucometer is used for measurement of blood sugar level for that only a drop of blood is required. It is hand operated & does not require expert person. As diabetes is more common now a days and therefore it is must to develop a new antidiabetic agents with more therapeutic applications with less or reduced severity or complications. This survey indicates most commonly used Ayurvedic & Allopathic antidiabetic drugs available in market.

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Attention Deficit Hyperactivity Disorder

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ABSTRACT

The aim of study was to find out symptoms, diagnosis, various causes, treatment, associated risk factors among children about ADHD.ADHD is most commonly seen developmental disorder in children within 5-12 years. Children shows symptoms associate with ADHD as talk nonstop, fidget and squirm, forget things, difficulty focusing on one thing. The core behavioral symptoms of Hyperkinetic disorder (HKD) and attention deficit hyperactivity disorder (ADHD) are inappropriate patterns of inattentiveness, impulsivity, and hyperactivity. The causes that lead to the development of ADHD include genetic and environmental factors, nutritional and psychosocial factors, chemical exposure. Children are emotionally affected when they witness violence within the family.Attention deficit hyperactivity disorder (ADHD) is neurobehavioral disorder in children, characterized by symptoms as inattention , hyperactivity impulsivity. Dopamine deficit theory proposed for ADHD says that abnormalities in the dopamine modulated frontal-striatal circuits, effects on brain imaging and functioning. It also associate with the iron deficiency which is major cause of Restless Leg Syndrom (RLS), a condition related to ADHD. This study indicated that yoga may contribute to stabilising the emotions, reducing restless /impulsive behavior and reducing oppositional behavior. Negative family relationships are associated with symptoms of ADHD. Its association with the intelligence quotient reiterates the importance of the genetic and environmental basis at the origin of the disorder.

Keywords : Attention deficit hyperactivity disorder, Hyperkinetic disorder, Restless Leg Syndrome, symptoms of Attention deficit hyperactivity disorder

I. INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) has many faces and remains one of the most talked-about and controversial subjects in education. Hanging in the balance of heated debates over medication, diagnostic methods, and treatment options are children, adolescents, and adults who must manage the condition and lead productive lives on a daily basis.

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common neuropsychiatric disorders of childhood. The core behavioral symptoms of Hyperkinetic disorder (HKD) and attention deficit hyperactivity disorder (ADHD) are inappropriate patterns of inattentiveness, impulsivity, and hyperactivity Attention-deficit/hyperactivity disorder is an early-onset, highly prevalent neurobehavioral disorder, with genetic, environmental, and biologic etiologies, that persists into adolescence and adulthood in a sizable majority of afflicted children of both sexes . These disorders are common, particularly in boys, with 1 year combined prevalence rates in school-age children of 1.7% for hyperkinetic disorder and between 5 and 10% for ADHD. The impairments associated with ADHD are associated with social, interpersonal, and academic problems which often persist into adulthood.

Cognitive deficits, particularly impairments in attention and executive functions (EF), are hypothesized to be a core part of ADHD. The term EF refers to a set of cognitive functions which enable one to demonstrate goal-directed behavior, usually in novel contexts with competing response alternatives. Children who have ADHD have been reported to exhibit sub average or relatively weak performance on various tasks of

vigilance and sustained attention, motor inhibition, executive functions and verbal learning and memory.

II. METHODS AND MATERIAL

DIAGNOSIS:

Although toddlers and preschoolers, on occasion, may show characteristics of ADHD, some of these behaviors may be normal for their age or developmental stage. These behaviors must be exhibited to an abnormal degree to warrant identification as ADHD. Even with older children, other factors (including environmental influences) can produce behaviors resembling ADHD. The criteria set forth by the fourth edition of the **Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)** are used as the standardized clinical definition to determine the presence of ADHD (DSM-IV Criteria for ADHD). A person must exhibit several characteristics to be clinically diagnosed as having ADHD

Severity: The behavior in question must occur more frequently in the child than in other children at the same developmental stage.

Early onset: At least some of the symptoms must have been present prior to age 7.

Duration: The symptoms must also have been present for at least 6 months prior to the evaluation.

Impact: The symptoms must have a negative impact on the child's academic or social life. **Settings:** The symptoms must be present in multiple settings. The specific DSM-IV criteria are set forth in the following chart**.**

DSM-IV Criteria for Attention Deficit/Hyperactivity Disorder

A. According to the DSM-IV, a person with Attention Deficit / Hyperactivity Disorder must have either) or (2):
(1) Six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

Inattention

a) often fails to give close attention to details or makes careless mistakes in school work, work, or other activities.
b) Often has difficulty sustaining attention in tasks or play activities.
c) Often does not seem to listen when spoken to directly.
d) Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions).
e) Often has difficulty organizing tasks and activities 3.
f) Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework).
g) Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools).
h) Is often easily distracted by extraneous stimuli.
i) is often forgetful in daily activities.
j) Six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

Hyperactivity:

a) Often fidgets with hands or feet or squirms in seat.
b) Often leaves seat in classroom or in other situations in which remaining seated is expected.
c) often runs about or climbs excessively in situations in which it inappropriate (in adolescents or adults, may be limited to subjective feelings or restlessness).
d) Often has difficulty playing or engaging in leisure activities quietly.
e) Is often "on the go" or often acts as if "driven by a motor".
f) Often talks excessively.
g) Often blurts out answers before questions have been completed.
h) Often has difficulty awaiting turn.
i) Often interrupts or intrudes on others (e.g., butts into conversations or games).

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Disassociative Disorder, or a Personality Disorder).

Attention Deficit/Hyperactivity Disorder, Combined Type**:** if both Criteria A1 and A2 are met for the past 6 months.

Attention Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: if Criterion A1 is met but Criterion A2 is not met for the past 6 months.

SYMPTOMS:

ADHD is a disorder that has three different types of symptoms:

- Difficulty paying attention or focusing on certain tasks
- Being overactive (or hyperactive)
- Acting on impulse (without thinking)

Children or teens with ADHD may:

Get distracted easily and forget things often	Switch too quickly from one activity to the next
Have trouble following directions	Run around a lot
Daydream too much	Touch and play with everything they see
Have trouble finishing tasks like homework or chores	Be very impatient
Lose toys, books, and school supplies often	Blurt out inappropriate comments
Fidget and squirm a lot	Have trouble controlling their emotion
Talk nonstop and interrupt people	

Children may first develop ADHD symptoms at an early age (between 3 and 6 years old). However, ADHD is most often found and treated in elementary school (between 7 and 9 years old).

ADHD symptoms like hyperactivity may get better as a child gets older. However, symptoms may not disappear completely and may continue into adulthood.

Impact of food additives:

Food additives are chemicals that manufacturers add to foods for various reasons such as preserving foods or improving their appearance. Food additives can come from either natural or artificial sources. Examples of food additives include colours, preservatives and some sweeteners. In Canada, food additives must be identified in the ingredient list of foods containing them. Research indicates that that there may be a link between consumption of mixtures of certain food additives, such as artificial colours or preservatives, and hyperactivity in children. Health Canada is proposing regulatory amendments that would eliminate the manufacturers' option of simply using the word "colour," and require that individual colours be identified on food ingredient labels of pre-packaged foods sold in Canada. Improved labelling will provide consumers the choice of avoiding specific colours. If you strongly suspect a specific food ingredient is causing behavioural problems, you would need to test the relationship. Any elimination diet should be done under the supervision of a doctor or dietitian.

Sugar

You may have noticed that your child is over-active or "hyper" when there is a special occasion such as a birthday party. Some people link this over-active behaviour with eating too much sugar at the event. However, research has found that sugary foods do not affect children's behaviour. The child's over-active behaviour is probably caused by the excitement surrounding the treat (for example, the exciting games and activities at a birthday party). It's important, however, to limit the amount of sugar your child eats. These are some problems that may occur when children eat too much sugar: • Foods high in sugar may replace the nutritious foods needed for growth and development • Sticky, sugary foods, especially when eaten between

meals, can cause dental cavities • Sugary foods are also often higher in fat and calories. Too much of these foods can lead to unhealthy weightsietitian.

Caffeine

Caffeine is found in chocolate, coffee, tea, cola beverages, energy drinks, chocolate and some medicines. Too much caffeine can cause:

• Irritability
• Nervousness
• Headaches
• Problems sleeping
• Behavioural problems

For children age 12 and under, Health Canada recommends a maximum daily caffeine intake of no more than 2.5 milligrams per kilogram of body weight.

III. RESULT AND DISCUSSION

CAUASES

1. Domestic Causes:

Sociodemographic factors associated with ADHD (low income, parents low level of schooling and large families) have been investigated, as well as aspects related to the family environment (parenting style, parents-children attachment, parental psychology and family functioning). Living within dysfunctional families may predict the emergence of Family violence is a psychosocial factor that has been recently introduced in the literature about ADHD, with indications that parents of hyperactive children are more likely to use physical methods to discipline them ADHD. Besides being direct victims of family violence,children are emotionally affected when they witness of violence within the family. Children in this situation tend to present externalizing and internalizing behaviorsmore commonly.

2. Gender:

ADHD in girls was more likely to be predominantly the inattentive subtype, less likely to be associated with a learning disability in reading or mathematics, and less likely to be associated with problems in school or fewer spare-time activities than ADHD in boys. Since these gender differences were apparent in the absence of genderby- ADHD interactions, our results suggest that the risk for ADHD-associated impairments may be similarly elevated in both boys and girls, but that gender-specific variation in baseline risks may result in different rates of psychiatric morbidity and dysfunction that may adversely affect the identification of the disorder in girls. ADHD in girls was a more serious risk factor for substance use disorders than it was in boys was an unanticipated and surprising finding. In the light of ongoing concerns regarding ADHD as a putative risk factor for substance use disorders, this finding may indicatethat girls are particularly at risk in early adolescence.

3. Genetic:

Individuals cannot be randomly assigned to different environmental or genetic backgrounds. Therefore, family, adoption, and twin studies take advantage of naturally occurring events to estimate the relative influence of genetic and environmental factors on a trait or disorder.

A)Family Studies:

Previous studies demonstrate clearly that ADHD is familial. In comparison to the families of children without ADHD, the rate of ADHD is significantly higher in the biological relatives of probands with DSM-III ADD, DSM-III-R ADHD, and DSM-IV ADHD. Specifically, 30-35% of the full siblings of ADHD probands also meet criteria for ADHD, indicating that the relative risk for ADHD is 6-8 times higher among first degree relatives of probands with ADHD than the base rate of ADHD in the population.

b) Twin Studies:

By comparing the similarity of monozygotic (MZ) twins, who share all of their genes, to dizygotic (DZ) twins, who share half of their segregating genes on average, twin analyses provide direct estimates of the extent to which a trait is due to the influence of genes, shared .environmental factors, and nonshared environmental factors The most straightforward analysis of twin data involves a comparison of the rate of concordance for the disorder of interest in pairs of MZ versus DZ twins. All twin studies of ADHD that

reported concordance rates found that the rate of concordance was significantly higher among MZ pairs (58% - 82%) than same-sex DZ pairs (31% - 38%), providing further evidence that ADHD is significantly heritable.In addition, the fact that the MZ concordance was less than 100% in all studies suggests that environmental influences also play a role in the etiology of ADHD.

4. Environment & Chemical :

These include heavy metals and chemical exposures, nutritional and lifestyle/psychosocial factors. There is association between ADHD or ADHD-related symptoms and widespread environmental factors such as phthalates, bisphenol A (BPA), tobacco smoke, polycyclic aromatic hydrocarbons (PAHs), polyfluoroalkyl chemicals (PFCs) and alcohol. Medline, PubMed and Ebsco search was performed to identify the studies which analyze the association of prenatal and postnatal child exposure to environmental toxicants and lifestyle factors and ADHD or ADHD-related symptoms. Despite much research has been done on the association between environmental risk factors and ADHD or ADHD symptoms, results are not consistent. Most studies in this field, focused on exposure to tobacco smoke, found an association between that exposure and ADHD and ADHD symptoms. On the other hand, the impact of phthalates, BPA, PFCs, PAHs and alcohol is less frequently investigated and does not allow a firm conclusion regarding the association with the outcomes of interest.

Treatment:

There is no cure for ADHD, but there are treatments that can help improve symptoms. You may have heard about some treatments, such as changes in diet, use of supplements or vitamins, and others. There is not much research to say how well these treatments work, and they are not included in this summary. The two treatments below have much more research:

- Non-medicine treatments: Parental behavior training, psychosocial therapy, and school-based programmes
- Medicines

Families may use both non-medicine treatments and medicines together

Non-medicine Treatments

Several types of non-medicine treatments have been used for children with ADHD. Sometimes the whole family takes part in these treatments.

Parental Behavior Training

Parental behavior training programs teach parents better ways to help their child or teen. Often, parents and their child attend behavior training sessions together.

Usually one of the first things the programs focus on is creating a healthy bond between the parents and the child. Programs teach parents how to understand their child's behavior. Parents learn skills to help their child avoid behavior problems before they start. Parents can learn how to organize tasks in a way that makes it easier for their child or teen to complete them. Parental behavior training programs teach parents how to create a system of rewards and consequences. Program sessions usually take place in an office, and there may be weekly sessions for several weeks or months. These programs usually charge a fee. Some of these costs may be covered by your insurance.

Psychosocial Therapy

A trained therapist can talk with your child and other family members about controlling behaviors and emotions and improving social skills.

Therapy sessions usually take place in an office. The therapist may suggest weekly sessions for several weeks, months, or years, depending on the child's needs. Therapists usually charge a fee for each hour of therapy. Some of thesecosts may be covered by your insurance.

School-Based Programs

The Individuals with Disabilities Education Act (IDEA) requires public schools to offer special education services to the children who qualify. Children with ADHD are often included. Education specialists at schools help students with ADHD succeed in learning and academics. They can work with the child, the

parents, and teachers to make adjustments to the classroom, learning activities, or homework assignments.

An individual education plan (IEP) is created with education specialists, teachers, and parents. The IEP outlines the actions taken at the school to help the child succeed. These plans are reviewed at the end of the year and should be passed on to the child's next teacher. These services may be free of charge for families living within the school district.

Medicines

Two types of medicines treat ADHD symptoms: stimulants and nonstimulants. There are many different types and brands of these medicines. All ADHD medicines come with possible side effects. It is believed that these medicines work by changing the amount of certain chemicals in the brain.

TYPE	BRAND NAME	FORMULATION
Stimulants		
Mixed amphetamine salts	Adderall	Pill
Dextroamphetamine	Dexedrine	Pill
Methylphenedine	Concerta	Pill
	Daytrana	Skin patch
	Focalin	Pill
	Ritalin	Pill
Non stimulants		
Atomoxetine	Strattera	Pill
Clonidine hydrochloride	Kapvay	Pill

Play Therapy:

To put the objectives of the research into practical effect 4 hypothesis were suggested. The quadratic hypothesis of the carried out research proposed based on raised questions and the objectives of the research and formulated as followings:

- H1: Play therapy decreases attention deficit hyperactivity disorders (ADHD) in children with ADHD.
- H2: Play therapy increases social maturity in children with ADHD.
- H3: Play therapy decreases anxiety in anxious (with anxiety disorder) children.
- H4: Play therapy increases social maturity in anxious (with anxiety disorder) children.

Following are some of the play therapy techniques
The Feeling Word Game
Color-Your-Life
The Pick-Up-Sticks Game
Balloons of Anger
Beat the Clock
The Slow Motion Game

Yoga and ADHD

In recent years, meditation has become increasingly popular as treatment for psychological conditions. There is emerging evidence from randomized trials to support popular beliefs concerning the beneficial effects of yoga in the treatment of neuropsychiatric disorders such as depression or sleep disorder. The long periods of concentration required by yoga are thought to potentially help reduce attention deficits. In addition, yoga may produce a state of calmness and contentment which is lacking in patients with ADHD. combinations of the following:

"Attention Deficit Hyperactivity Disorder", "ADHD", "Yoga", "Complementary and Alternative Medicine" and "CAM". (trial study)

Yoga Techniques :

The proposed yoga program, described below, was developed and trialled successfully in a pilot and feasibility study conducted by the first author. The program incorporates standard yogic practices comprising:
Respiratory Training **:** The respiratory training incorporated selective use of oral and nasal passages for respiratory flow. These exercises increased the boys' awareness of breath as well as training them to breathe naturally through both nares. All exercises were repeated several times and in a regulated rhythmical manner.
Postural Training**:** Postural training involved stretching, load bearing, backward, forward, lateral flexion and extensions and inversions performed in sitting, standing, supine and prone positions. These were performed in combination with respiratory exercises.

Relaxation Training: Relaxation training involved exercises to heighten awareness of and to reduce bodily tension by systematically relaxing body parts and tensing and relaxing muscles.
Concentration training: concentration tainting involved a technique called trataka, which requires participants to focused on word or shape, followed by seeing the image with eyes closed and continuing to see the image on a blank piece of paper.

Ayurvedic Formulations:

Ashwagandha

Improves memory and cognition: When one takes the supplement, their memory is improved therefore allowing them to retain more information which can come in handy in an exam and even when teaching. This ensures that information dispensed is accurate therefore improving the knowledge of students as well as allowing one to pass their exams.

Lowers stress levels: Stress is the body's way of responding to different kinds of threats and demands. The supplement helps to reduce one's stress levels by producing serotonin ad other neurotransmitters in the body. This neurotransmitters help to lower stress and make one to be relaxed always.

Eliminates insomnia: Insomnia is a sleep disorder that makes one to stay awake and have difficulty sleeping. The herb contains ingredients which help to make one feel sleepy therefore allowing one to rest well during the night and eliminating frequently waking up and not going to sleep again Lowers anxiety levels

Dosage of Ashwagandha for ADHD
The recommended dosage of the supplement is 300 to 500 mg. In a day, one should take 6000 mg therefore in order to accomplish this, one should take 2000 mg for three times a day. This amounts to 4 capsules or pills each measuring 500mg.

Ginseng

Ginseng is an adaptogenic herb and the the root of the plant has been used for many conditions including as a diabetes II treatment, to treat central nervous conditions, to increase quality of life as well as a respiratory aid.

Ginkgo Biloba

Ginkgo Biloba, also known as the maidenhair tree has also been used for centuries to treat various conditions or ailments. Ginkgo has generally been used as a memory enhancer to improve concentration – which makes it a really valuable herb when trying to find an ADHD treatment without drugs.

Herbal Tea

A recent study found that children with ADHD had more problems falling asleep, sleeping soundly, and getting going in the morning. Researchers suggested that additional treatments might be helpful. Herbal teas that contain chamomile, spearmint, lemon grass, and other herbs and flowers are generally considered to be safe options for children and adults who want to relax. They're often recommended as a way to encourage rest and sleep. These teas may be best used before bedtime.

Brahmi

Brahmi (Bacopa monnieri) is also known as water hyssop. It's a marsh plant that grows wild in India. The herb is made from the leaves and stems of the plant. It has been used for centuries to improve brain function and memory. Studies on humans are mixed, but some have been positive. The herb is often recommended as

an alternative treatment for ADHD today. A 2013 study found that adults taking brahmi showed improvements in their ability to retain new information. Another study also found benefits. Participants taking a brahmi extract showed significantly improved performance in their memory and brain function.

Gotu Kola

Gotu kola (Centella asiatica) grows naturally in Asia, South Africa, and the South Pacific. It's high in nutrients that are needed for healthy brain function. These include vitamin B1, B2, and B6.

Green Oats

Green oats are unripe oats. The product, also known as "wild oat extract," comes from the crop before it matures. Green oats are sold under the name Avena sativa. They have long been thought to help calm nerves and treat stress and anxiety.

Combinations May Work Better

Some studies have indicated that combining some of these herbs may produce better results than using one alone. A small study in Canada studied children with ADHD who took both American ginseng and Ginkgo biloba twice a day for four weeks. The participants experienced improvements in social problems, hyperactivity, and impulsivity.

MENTAT SYRUP:

Action:

Enhances memory and learning capacity**:** The natural ingredients in Mentat improve mental quotient, memory span and concentration ability.

Treats neurological disorders**:** Mentat reduces the level of tribulin, an endogenous monoamine oxidase inhibitor that is elevated during anxiety. The calming effects of Mentat are beneficial in treating insomnia and convulsions.

As an adjuvant in neurological diseases: Due to its anticholinesterase, dopaminergic-neuroprotective (important neurotransmitter in the brain), adaptogenic and antioxidant properties, Mentat is useful as an adjuvant in the treatment of epilepsy and enuresis.

Key ingredients:

Thyme-Leaved Gratiola (Brahmi) maintains cognitive function. Well known for its nootropic (memory enhancer) effect, the herb enhances memory and learning. It is also known to calm restlessness and is used to treat several mental disorders.

Indian Pennywort (Madhukaparni) possesses antiepileptic properties and is commonly used as an adjuvant to epileptic drugs. It balances amino acid levels, which is beneficial in treating depression. It also prevents cognitive impairment.

Winter Cherry (Ashvagandha) is used as a mood stabilizer in clinical conditions of anxiety and depression. Withanolides, the chemical constituents present in Winter Cherry, possess rejuvenating properties. The herb also reduces oxidative stress, which can cause mental fatigue.

Directions for use:

Available as a syrup.

Side Effects :

Mentat is not known to have any side effects if taken as per the prescribed dosage.

Diet for ADHD Children:

One of the most important things in a diet for ADHD is to eat whole, natural, unprocessed oods, free artificial additives. This is important because of the sensitivity of many ADHD sufferers tochemical food additives. It is also important to identify food allergies and sensitives

and to eliminate these problematic foods. This can be done through an elimination diet, in which potentially allergenic foods are eliminated for two weeks, and then carefully reintroduced, one at a time. These foods include include dairy products, gluten-containing grains, legumes (including peanuts and soy), citrus, yeast, and eggs. Because this is not conclusive, it is also good to have an IgG blood test. (Most food intolerances are IgG mediated, but some are also IgE mediated, so it is good to have an IgE test as well.) Because blood sugar issues also have a big impact on ADHD, it is also important to eat a diet with a low glycemic load (those with ADHD benefit from the same diet that helps diabetics and others with insulin resistance issues).

Feingold Diet

The Feingold diet food list eliminates many ingredients in regular foods that are responsible for allergic reactions and behavioral problems in children, often reflected in many developmental disorders. As part of the Feingold Program, this diet list aims to eliminate synthetic food additives that are responsible for many childhood conditions such as ADHD, Hives, Dyslexia, and ADD. The Feingold diet food list contains the following items and encourages people to eat whole foods in their natural state.

Fruits And Vegetables
Broccoli
Sweet corn
Zucchini
Lemons
Potatoes
Kiwis
Sprouts
Beets
Bananas
Pears

- Non-vegetarian Food:
  Fresh seafood
  Fresh meat
  Eggs

Dairy/Cereals:

- All milk products
- Cereals without synthetic colors or additives
- Bread without preservatives

Supplements:

The following supplements may be beneficial for ADH D:

Most important Supplements:
These are some of the very top supplements for ADHD:

Essential Fatty Acid Supplements
If wild cold water fish is not included in the diet, supplementing DHA is important. Fish oil is the best way to do this.

DMAE

Other than essential fatty acids, this is probably the most important supplement to consider, and if you had to choose one single supplement, this one might be the best. DMAE boosts the production of Dopamine. It aids in concentration by improving nerve impulse transmission in brain, and may also produce antidepressant effects. Some authors caution that this should only be used for adults. However, others recommend it for children. A children's dose is 100 to 500 mg daily.

Other supplements:
These supplements may also prove useful:

Vitamins:

Vitamin C:
Vitamin C is an antistress vitamin. The dosage for adult s and children over 12 years old is
1000 mg, three times daily.
Inositol: Inositol is a B-
complex vitamin. The dosage is 20 mg per pound of bo dy weight.

Minerals:

Chromium Polynicotinate
This supplement helps regulate blood sugar levels. The dosage is 4 mcg per pound of body weight.

Amino Acids:

L¬Cysteine Use this if hair analysis reveals high levels of metals. Take on an empty stomach with water or

juice. Take with 50 mg Vitamin B6 and 100 mg Vitamin C for better absorption. L-Glutamine Dosage: 10 mg per pound of body weight. Phenylalanine Dosage: 10 mg per pound of body weight. Phenylalanine is contraindicated in in phenylketonuria Taurine Taurine has calming effects. The dosage is 500 mg, for children, or 50 mg per pound of body weight. 5-Hydroxy¬Tryptophan This supplement is only available by prescription in the United States. The dosage is 2¬3 mg per pound of body weight. N-Acetyl¬Tyrosine This is used by herbalist and nutritionist Donald Yance as part of his protocol for ADHD. It is a precursor to dopamine and norepinephrine. The dose is 6¬8 mg per pound of body weight.

Lipid Nutrients:

Evening Primrose Oil Evening primrose oil reduces inflammation and oxidative stress. A children's dose is 500 mg daily. Phosphatidylserine This is a phospholipid nutrient found in fish, green leafy vegetables, soybeans, and rice. It is essential for the normal functioning of neuronal cell membranes. It may aid in balancing neurotransmitters in the brain, and may alleviate depression. Phosphatidylserine improves behavior problems in children. Results take up to four months. The dosage is 100 mg daily for young children, and 300 mg daily for children over 50 pounds, or alternately 2¬3 mg per pound of body weight.

Neurotransmitters:

Acetylcholine Acetylcholine can can improve memory and attention. GABA GABA improves behavior problems in children. The children's dosage is 100 mg daily, or 6¬8 mg per pound of body weight.

Miscellaneous Supplements:

NADH
NADH improves behavior problems in children. The do sage is 2.5 mg daily.[50]
Octacosanol
Octacosanol is derived from wheat germ and associated with vitamin E. It was not specified how this may be helpful. The dosage is 100 mcg/lb. of body weight.[51]

IV. CONCLUSION

In our setting, alcohol dependence syndrome and mood disorders in the parents are the most important familial risk factors for ADHD, both in terms of heritability and disturbed family situations. Perinatal complications resulting out of inadequate maternal and child health care delivery system are the important environmental risk factors. Improvement in the health care delivery system, both in terms of obstetric as well as psychiatric services may improve the situation either in terms of Adult ADHD has diagnostic stability at the one year follow up. The adult ADHD subjects remained highly comorbid with other psychiatric disorders including increased substance abuse at the follow up. Only 10.5 per cent subjects remained in the regular follow up. The above findings suggest that the patients with adult ADHD should be properly psycho-educated and regularly followed up preventing or improving the outcome of ADHD children.

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A Review On : Phytochemicals as Nutraceuticals

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ABSTRACT

Nutraceuticals are food product that provides health as well as medical benefits; including the prevention and treatment of disease. Few nutraceuticals are being used as pharmaceutical and a number of other being used and purchased by the general public as self-medication. Such products may range from dietary supplements to genetically engineered foods, herbal products and processed foods. Phytochemicals of nutraceuticals importance are bioactive constituentsthat sustain or promote health and occurs at the intersection of food andpharmaceutical industries. Such substances may range from isolatednutrients, dietary supplements and specific diets to geneticallyengineered designer foods, herbal products, processed foods andbeverages. Phytochemicals are broadly described as polyphenols,flavonoids, isoflavonoids, anthocyanidins, terpenoids etc,. Theyhave tremendous impact on the health care system and mayprovidemedical health benefits including the prevention and/ or treatment ofdiseases and physiological disorders. Majority of foods, such as wholegrains, beans, fruits, vegetables and herbs contain phytochemicals.Amongst these, fruits and vegetables contribute to the significantsources of phytochemicals. These phytochemicals, either alone and/orin combination, have tremendous therapeutic potential in curing variousailments. The respective health benefits are based on science andethics, for health claims, for functional foods, and presence of certainphytochemicals. They play certain pharmacological effects in humanhealth as antioxidants, antibacterial, antifungal, anti-inflammatory, antiallergic,antispasmodic, chemopreventive, hepatoprotective,hypolipidemic, neuroprotective, hypotensive, prevent aging, diabetes,osteoporosis, DNA damage, cancer and heart diseases, induceapoptosis, diuretic, CNS stimulant, analgesic, protects from UV inducedcarcinogenesis, prevent, immuno-modulator and carminative.

Keywords: Nutraceuticals, Phytochemicals, Polyphenols, Flavonoids, Isoflavonoids

I. INTRODUCTION

The term nutraceuticals, coined by Dr. Stephen de Felice**,** is derived from the words "nutrition" and "pharmaceutical", is a food or food product that provides health and medical benefits, including the prevention and treatment of disease [(1).] Such products may range from isolated nutrients, dietary supplements and specific diets to genetically engineered foods, herbal products, and processed foods such as cereals, soups, and beverages. A nutraceutical is demonstrated to have a physiological benefit or provide protection against chronic disease. Their bioactive ingredients, the phytochemicals, sustain or promote health and occur at the intersection of food and pharmaceutical industries. Such substances may range from isolated nutrients, dietary supplements and specific diets to genetically engineered designer foods, herbal products, processed foods and beverages [(2, 3)]. They play a crucial role in maintaining optimal immune response, such that deficient or excessive intakes can have negative impact on health.

II. METHODS AND MATERIAL

Nutraceutical is a combination of 2 words:

Nutrition and Pharmaceutical.Nutraceuticals are food product that provides health aswell as medical benefits; including the prevention andtreatment of disease. Phytochemicals and antioxidantsare two specific types of nutraceuticals. Research hasproved that foods with phytochemicals may help toprovide protection from diseases such as cancer, diabetes, heart disease, and hypertension, e.g. carotenoids found in carrots. Antioxidants may be helpful in avoiding chronic

diseases, by preventing oxidative damage in our body[4] Over the last 20 years, numbers of Nutraceuticals are available for selfmedication or for sale[5] There has been a boom in sale of Nutraceutical because of -

1. Adverse effects of pharmaceuticals
2. Increased tendency of patients for self-medication
3. Aging population e.g. – arthritis

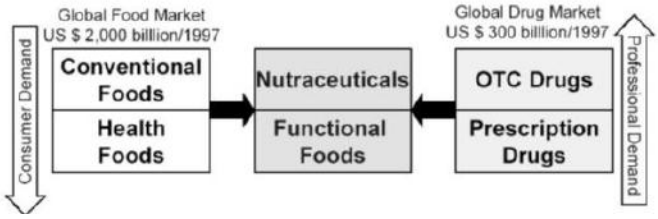


Figure 1 : Demand of Nutraceuticals

Dietary intake of phytochemicals may promote health benefits, protecting against chronic degenerative disorders, such as cancer, cardiovascular and neurodegenerative diseases. Majority of foods, such as whole grains, beans, fruits, vegetables and herbs contain phytochemicals . Amongst these, fruits and vegetables contribute to the significant sources of phytochemicals. These phytochemicals, either alone and/or in combination, have tremendous therapeutic potential in curing various ailments. Phytochemicals with nutraceutical properties present in food are of enormous significance due to their beneficial effects on human health since they offer protection against numerous diseases or disorders such as cancers,coronary heart disease, diabetes, high blood pressure, inflammation, microbial, viral and parasitic infections, psychotic diseases, spasmodic conditions, ulcers, etc .Epidemiological and animal studies suggest that the regularconsumption of fruits, vegetables and whole grains, reduces the risk of chronic diseases associated with oxidative damage (6-8). Carotenoids, tocopherols, ascorbates, lipoic acids and polyphenols are strong natural antioxidants with free radical scavenging activity. Endogenous antioxidants enzymes like super oxide dismutase (SOD), catalase, glutathione peroxidase, glutathione reductase, minerals like Se, Mn, Cu, Zn, vitamins A, C and E, carotenoids, limonoids and polyphenols exert synergistic actions in scavenging free radicals. Synthetic antioxidants such as butylatedhydroxy anisole (BHA) and butylatedhydroxytoulene (BHT) play a useful role in food and pharmaceutical industries (9). The natural antioxidant system is mainly classified into two categories namely in-vitro and in-vivo antioxidants. The present review summarizes evidence for protective and healthbeneficial effects of phytochemicals, which have the potential of being incorporatedinto foods or food supplements as nutraceuticals, or into pharmaceuticals, and to propose implications of the explosion in information for the future development, discovery use of phytochemicals as nutraceuticals. A nutraceutical is any non-toxic food extract supplement that has scientifically confirmed health benefits for both disease treatment and prevention. The protective effects of fruits and vegetables are manifested for cancers of the esophagus, lung, oral cavity, pharynx and stomach, endometrium, pancreas and colon. Among the phytonutrients mentioned as potentially providing the fortification are polyphenols, flavonoids, isoflavonoids, anthocyanidins, terpenoids etc.

CLASSIFICATION OF NUTRACEUTICALS-:

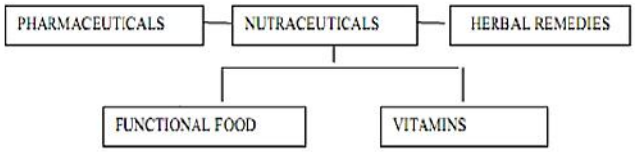


Figure 2: Classicification of Nutraceuticals

Dietary Supplements: A dietary supplement is a product that contains nutrients derived from food products .The "dietary ingredients" present in these products are: metabolites, vitamins, minerals, vitamins, herbs, and amino acids.

Functional Foods: Functional foods are designed foods which provide enriched foods close totheir natural state to consumer, rather than manufactured dietary supplements in liquid or capsule form. A process of making enriched food is called Nutrification. Functional foods provide required amount of vitamins, fat, carbohydrate, amino acid etc to body. Established requirement that functional food should possess are-

1) Functional foods should be in their naturally-occurring form,
2) Functional foods should be an essential part of our daily diet,
3) Functional foods should regulate a biological process in hopes of preventing or controlling disease.

NUTRIENTS

Substances which have established Nutritional functions e.g. Vitamins, Minerals, Amino Acids, Fatty acids, etc

• Most common Nutrients used/ supplemented as Nutraceutical are:

Minerals and Vitamins or in combination or in combination with other antioxidants

Herbals

- Herbals/ Phytochemicals: Herbs or Botanical products
- Aloe vera: Anti-inflammatory, emollient, wound healing,
- Evening Primrose oil: Dietary supplement of linoleic acid, treatment of atopic eczema,
- Garlic: Antibacterial, antifungal, antithrombotic, antiinflammatory, (e.g.allicin)
- Ginger: carminative, antiemetic, treatment of dizziness
- Ginseng: Adaptogen,
- Green tea: Antioxidant, reduces risk of CVD, enhances humoral and cell mediated Immunity,
- Vegetables, fruits, whole grain, herbs, nuts and various seeds contain an abundance of phenolic compounds, terpenoids, sulphur compounds, pigments etc. that has been associated with protection / treatment of certain disease conditions,

Phytochemicals

Phytochemicals: Phytochemicals obtained from plants provide health benefits as:

1. Substrate for biochemical reactions
2. Cofactors of enzymatic reactions
3. Inhibitors of enzymatic reactions
4. Absorbents that bind to & eliminate undesirable constituent in the intestine
5. Scavengers of reactive or toxic chemicals
6. Enhance the absorption and / or stability of essential nutrients
7. Selective growth factor for beneficial bacteria
8. Fermentation substrate for beneficial bacteria
9. Selective inhibitors of deleterious intestinal bacteria

HEALTH BENEFITS OF NUTRACEUTICALS

Health Benefits of different common nutraceuticals are as follows-

Vitamins

Fat Soluble Vitamins

- Vitamin A: Acts as antioxidant, essential for growth and development, maintains healthy vision, skin and mucous membranes, may aid in the prevention and treatment of certain cancers and in the treatment of certain skin disorders.(e.g.Retinol and retinal)
- Vitamin D: Essential for formation of bones and teeth, helps the body to absorb and use calcium (e.g.Ergocalciferol and choleclciferol)
- Vitamin E: Antioxidant, helps to form blood cells, boosts immune system (e.g.Tocopherol)
- Vitamin K: Essential for blood clotting (e.g.Phylloquinone)

Water Soluble Vitamins

- Vitamin C: Antioxidant, necessary for healthy bones, gums, teeth and skin. Helps in wound healing, prevent from common cold (e.g.Ascorbic acid)
- Vitamin B 1: Helps in carbohydrate metabolism, essential for neurological function. (e.g.Thiamine)
- Vitamin B 2: Energy metabolism, maintain healthy eye, skin and nerve function.(e.g.Riboflavin)
- Vitamin B 3: Energy metabolism, brain function(e.g.Niacin)
- Vitamin B 6: Helps to produce essential proteins, convert proteins to energy (e.g.Pyridoxine)
- Vitamin B 12: Help in producing genetic material, formation of RBC, maintenance of CNS, synthesis of amino acids, involved in metabolism of protein, fat and carbohydrate.(e.g.Cobalamine choline)
- Folic acid: Helps in RBC formation, formation of genetic material of cell, very much essential during pregnancy
- Pantothenic acid: Aids in synthesis of cholesterol, steroids, and fatty acids, crucial for intraneuronal synthesis of acetylcholine

Vitamins like Compounds

- L- Carnitine: Helps in oxidation of fatty acids, role in oxidative phosphorylation,
- Choline: Lipotropic agent, used to treat fatty liver and disturbed fat metabolism,
- Inositol: For amino acid transport and movement of Potassium and sodium,
- Taurine: Helps in retinal photoreceptor activity, bile acid conjugation, WBC antioxidant activity, CNS neuromodulation, platelet aggregation, cardiac contractibility, sperm motility, insuline activity,

Minerals:

- Calcium: essential for bone and teeth, maintaining bone strength, nerve, muscle and glandular function, blood clotting,
- Iron: energy production, Hb, oxygen transport,
- Magnesium: for healthy nerve and muscle function, bone formation,
- Phosphorous: energy production, phosphorylation process, bone and teeth, for genetic material,
- Cobalt: component of Vit. B 12 and B 12 coenzymes,
- Copper: Hb and collagen production, function of heart, energy production, absorption of Iron,
- Iodine: proper function of Thyroid gland,
- Chromium: with insulin it helps in conversion of carbohydrate and fat into energy, treatment of diabetes,
- Selenium: Antioxidant, functioning of heart muscle, part of GPX enzyme,
- Zinc: Essential for cell reproduction, for development in Neonates, wound healing, production of sperm and testosterone hormone.

Examples of Nutraceuticals Currently Available In Market

1. ***Fortified Cereals***-various cereals contain vitamins and minerals.

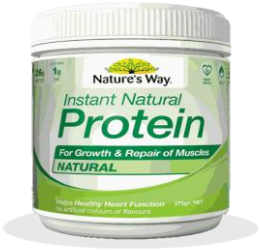
2. ***Vitamin and Mineral Supplements***-Vitamin A (Beta-Carotene), lycotenforte (lactonovaindia)

3. ***Additional Supplements***-supplements other than vitamin and minerals which have beneficial effect on health for example-cod liveroil, primrose oil, flaxseed oil (omegapure) etc.

4. ***Energy Drinks and Tablets***- Tropicana fruit Juice,Minute Maid Pulp,Frooti

5. ***For Healthy Heart***-Abcor by Nutri-pharma, claimed to reduce cholesterol by 15-20% in 4 months,novomega,carnicare,coq10,lycotenforte (lactonovaindia).

6. ***Protein Powder*** –Nutral-P ,Nutral-D ,Nutral-G (Lactonova India)



7. ***Pro-Biotics& Prebiotics*** -Bacteria containing foods that believed to improved health. For example-coloncare capsules &Sachets,A blend oprobiotics,2prebiotics along with colostrum

8. ***Sports Products*** - Glucon-D (Heinz),Glucose D (Dabur).

PHYTOCHEMICALS FROM VEGETABLES*:*

Vegetables contain various types of biologically active plant substances, so-called phytonutrients or phytochemicals that are produced by the plants to protect themselves against stress. Health experts believe that these natural substances are also beneficial for human health[10]. Natural compounds found in vegetables protect against many life threatening conditions like heart disease, arterial damage, cancer, as well as against premature ageing [11,12]The natural pigments that give vegetables and fruits their characteristic colours are one of the important group of phytochemicals. Some of the pigments in vegetables, for example beta carotene in carrots and sweet potatoes; dehydrotomatine, α-tomatine, lycopene in tomatoes and lutein in spinach, have

antioxidant properties[13]. Antioxidants have the ability to reduce damage of cell's DNA from harmful free radicals produced in the body. Each colour group has a unique combination of nutrients and phytochemicals that have been associated with specific health benefits[14]. Some phytochemicals, like Indoles, which are found in cabbages, stimulate enzymes that make the estrogen less effective and could reduce the risk for breast cancer. Allyl sulfides, another group of phytochemicals found in onion and garlic, stimulate enzymes that help the body to get rid of harmful toxins and strengthen the immune system.

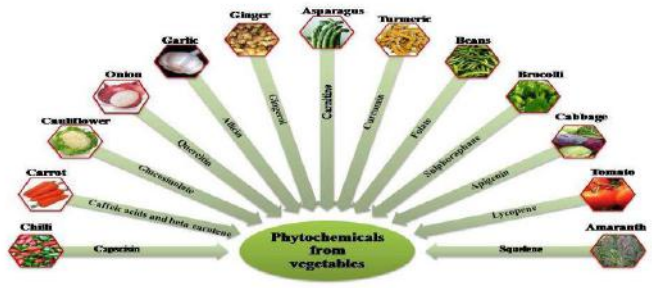


Figure 3: Different phytochemicals derived from vegetables used as nutraceutical

III. RESULT AND DISCUSSION

Table 1: List of some common chemical compounds (Nutraceuticals) isolated from vegetables

S. No.	Chemical Compounds	Plant Source	Properties
1.	Allicin (organosulfur compound)	Garlic, onion, parsnip	Antifungal; antibacterial; antioxidant; used to treat arteriosclerosis
2.	Apigenin	Cabbage, celery, lettuce	4',5,7-trihydroxyflavone is a flavone that is the aglycone of several glycosides
3.	Beta carotene	Carrots, pumpkins, sweet potatoes, winter squash, broccoli, spinach and kale	Anti aging; anti cancerous; improve lung function; reduce complications associated with diabetes
4.	Saponin	Soybeans, beans, other legumes	Reduces blood cholesterol levels and the risk of cancer
5.	Curcumin	Turmeric	Anticancerous; antioxidative
6.	Tocopherol	Broccoli, carrot, celery, onion	It is a fat-soluble antioxidant that stops the production of reactive oxygen species formed when fat undergoes oxidation
7.	Omega-3 Fatty Acids	Linseed	Omega-3 fatty acids have been associated with positive eye health; lowers cholesterol levels

Effectiveness And Safetyregulation:

Nutraceutical products also required same level of scrutiny and regulation as "dietary supplements". Companies which involved in nutraceuticals production invest more on scientific research to substantiate their manufacturing standards, products by keeping the view in mind consumer benefits and differentiate their products from "dietary supplements". Now a day many international companies move within the industry, professional organizations, academia, and health regulatory agencies to add specific legal and scientific criterion to the definition and standards for nutraceuticals.

Safety and Efficacy:

Nutraceuticals hold great potential, as an alternative to substance obtained by plant. Yet, some time they also cause harmful effect as seen with ephedrine, a widely used botanical ingredient in weight-loss products. Now days peoples are more conscious about their health and these products offer the promised health benefits. But danger is associated with some product due to lack of solid information about interaction and side effect.

IV. CONCLUSION

Nutraceutical is growing health care industry in India. Nutraceuticals is playing important role indevelopments of future therapeutics but it depends on control of purity, efficacy and safety. Nutraceutical products are used in prevention of disease not in cure of disease. Nutraceutical Products is collaborative research effort of pharma, food and chemistry.As healthcare industry is growing in India, growth of nutraceutical is also increase because people want treat their disease by improving their health with the help of Fast Moving Healthcare Goods.Nutraceuticals are present in most of the food ingredients as well as in dietary supplements with varying concentration. Concentration, time and duration of supply of nutraceuticals influence human health.Nutraceuticals, have distinctively defined the promising role in health preservation in the future to make it easier and accessible to people all over the world of all walks of life. Therefore, Nutraceuticals in Nutrition and Pharmaceuticals indeed will be positively sustaining better future in therapeutics.

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A Review On : Herbal Anticancer Drug

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ABSTRACT

Cancer is major health problem in both developed developing countries. Cancer after cardiovascular disease is the second leading cause of death. Cancer is the abnormal growth of cells in our bodies that can lead to death. Plant-derived compounds have been an important source of several clinically useful anti-cancer agents. Plant has been the beacon of therapeutic sources for curing diseases from times immemorial. Medicinal plant with their isolated lead molecules is also used as an alternative medicine for treating cancer. These chemical compounds are formulated with a view to create effective drugs against cancer. Vincristine, Vinblastine, Homoharringtonine, Honokiol, Paclitaxel, Topotecan, Maytansine, Astraguoside, Docetaxel, Elliticine, Lapochel, Oleanolic acid, Cisplatin, Etoposide, Teniposide and Resveratrol this lead molecules isolated from different medicinal plants are in use to treat cancer and chemotherapeutic side effect. In the present review, an attempt has been made to study the plants that have been used in the treatment of cancer.

Keywords: Cancer, Anti-Cancer Drugs, Vincristine, Paclitaxel

I. INTRODUCTION

In recent times, medicinal plants occupy an important position for being the paramount sources of drug discovery, irrespective of its categorized groups- herb, shrub or tree. Plants have been indispensable in treating diverse forms of diseases including cancer. According to World Health Organisation, 80% of the people living in the rural areas depend on medicinal plants as primary health care system. These practices are solely based on the knowledge of traditional use of medicinal plants. Natural products are formulated to generate different types of effective drugs to enhance anticancer activities. Proper understanding of the complex synergistic interaction of various constituent of anticancer herbs would help in formulating the design to attack the cancerous cells without harming the normal cells of the body.

India is the largest producer of medicinal plants and is rightly called the "Botanical garden of the World". And have many of plant used in cancer. The search for this cancer drug discovery from Natural sources began with the investigations done by Hartwell and his co-workers in the late 1960's with the application of Podophyllotoxin and its derivatives from the plant Podophyllium peltatum. Further discoveries lead to isolate anticancer compound from plants like Catharanthus roseus, Camptotheca acuminate, Lapacho,Cephalotaxusharringtonia,
Mangnoliagrandifloraand Taxus brevifoliabark are the established potential anticancer agents derived from these plants which are found to be effective against various types of cancer.

To the scientific mind, these translate easily into ideas. Numbers and standard letters such as n are also in the mathematical with 100s of applications and websites, allowing you to put Equations Everywhere and Anywhere.

LEUKEMIA used in leukemia therapy.

Vincristine, Vinblastine, Homoharringtonine and Honokiol this drug are Leukemia is a group of cancers that originate from blood-forming tissues. The name of the disease is derived from the Greek word 'leukos' for 'white blood' Leukemia is classified into four main

categories or subtypes according to cell type and rate of growth: acute lymphocytic leukemia (ALL) derived from immature T- or B-lymphocytes, most common in children; acute myeloid leukemia (AML) from immature myeloid cells, most common in adults; chronic lymphocytic leukemia (CLL) from mature B-lymphocytes, mostly an adult disorder; and chronic myelogenous leukemia (CML) from granulocyte precursors, most common in adults.

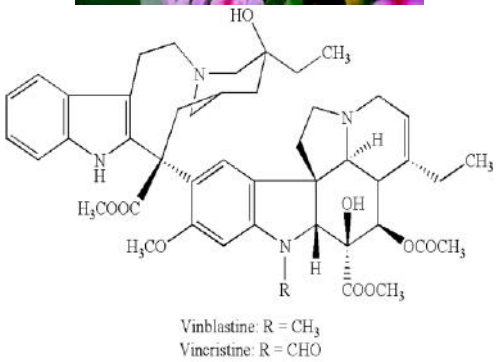
Vincristine works partly by binding to the tubulin protein, stopping the cell from separating its chromosomes during the metaphase; the cell then undergoes apoptosis.[1] **Vinblastine** at very low concentrations they suppress microtubule dynamics and at higher concentrations they reduce microtubule polymer mass.[2]

Homoharringtonine is a protein translation inhibitor. It inhibits protein translation by preventing the initial elongation step of protein synthesis. It interacts with the ribosomal A-site and prevents the correct positioning of amino acid side chains of incoming aminoacyl-tRNAs.[4]

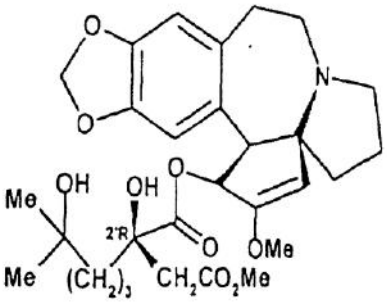
[6]**Honokiol** inhibits phosphorylation of Akt,p44/42 mitogen-activated protein kinase (MAPK), and src. Additionally, honokiol regulates the nuclear factor kappa B (NF-κB) activation pathway, an upstream effector of vascular endothelial growth factor (VEGF), MCL1, and cyclooxygenase 2 (COX-2), all significant pro-angiogenic and survival factors[8-9]

Marketed preparation

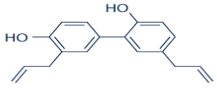
1 Vincristine sulph 1mg, methyl paraben 0.13%,propyl paraben 0.02%.[3]
2 Vinblastine sulph. 1mg, sodium chloride 9mg benzyl alcohol 0.9%v/v/ml.[3]
3 Omacetaxine synribo: 1.25 mg/m^2 administered by subcutaneous injection twice daily for 7 consecutive days of a 28-day cycle. 5 mg/m2 for seven days, 7 mg/m2 for seven days, and 5 mg/m2 for nine days.[7]
4 Honokiol90 : 60-330 mg for a 150lb person 220-440 mg for a 200lb person 270-550 mg for a 250lb person.[10]



CatharanthusroseusVinblastine R=CH_3 Vincristine R=CHO



Cephalotaxusharringtonia Homoharrigtonine



Mangnoliagrandiflora Honokiol

LUNG CANCER

Paclitaxel, Topotecan, Maytansine and Astragalus this drug are used in lung cancer therapy.

Lung cancer starts when cells of the lung become abnormal and begin to grow out of control. As more cancer cells develop, they can form into a tumor and spread to other areas of the body. Lung cancer happens when the cells in your lungs start togrow in an uncontrolled way and form tumours. Tumours are lumps of tissue made up of abnormal cells.There are two main types of lung cancer.Small cell lung cancer (a type of cancer made up ofsmall round cells in the lungs).Non-small cell lung cancer (cancer which grows in cellsother than small cells inside the lungs).

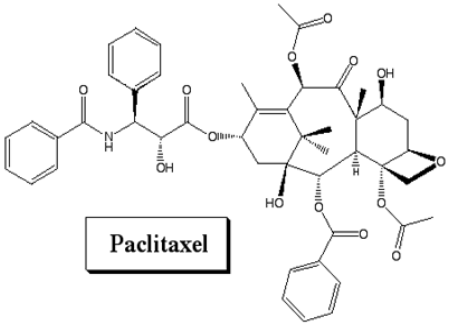
Paclitaxel(Taxol)binds to the N-terminal 31 amino acids of the beta-tubulin subunit of tubulin polymers (3). Unlike the vinca alkaloids, which prevent microtubule assembly, the taxanes decrease the lag time and shift the dynamic equilibrium between tubulin dimers and microtubules toward polymerization, thereby stabilizing microtubules (4). These effects occur even in the absence of GTP- and microtubule-associated proteins, which are usually essential for this function.[12]**Topotecan** binds to the topoisomerase I-DNA complex and prevents religation of these single strand breaks. The cytotoxicity of topotecan is thought to be due to double strand DNA damage produced during DNA synthesis, when replication enzymes interact with the ternary complex formed by topotecan, topoisomerase I, and DNA. Mammalian cells cannot efficiently repair these double strand breaks. [13]

Maytansine inhibits the assembly of microtubules by binding to tubulin at the rhizoxin binding site.[14-15]**Astragalosides**inhibits free radical production, increases superoxide dismutase and decreases lipid peroxidation. It is thought to improve the immune response by potentiating the effects of interferon and it has been confirmed to enhance the immune system in in vitro and in vivo investigations. Astragalus also seems to increase antibody levels of IgA and IgG in nasal secretions.[16-21]

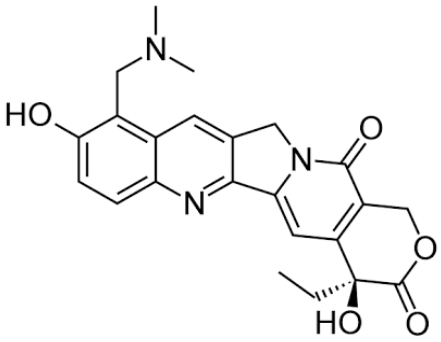
Marketed preparation

1. Paclitaxelis available in 30 mg (5 mL), 100 mg (16.7 mL), and 300 mg (50 mL) multidose vials.[11]
2. Topotecan Injection 1.5 mg/m2 by intravenous infusion over 30 minutes daily on days 1 to 5 of each 21-day cycle.[13]

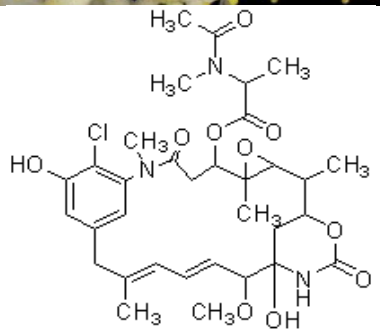
3.



***Taxus brevifolia*bark. Paclitaxel**



Camptotheca Acuminata Topotecan



Maytanus Maytansine

BREAST CANCER

Docetaxel, Elliticine, Lapochel and Oleanolic acid this drug used in breast cancer therapy.

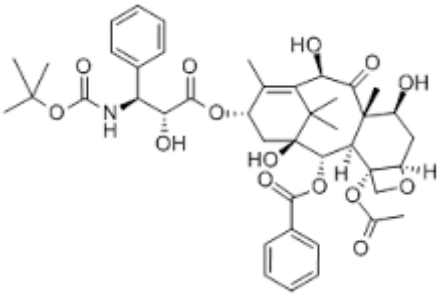
Breast cancer is a malignant tumor that starts in the cells of the breast. A malignant tumor is a group of cancer cells that can grow into (invade) surrounding tissues or spread (metastasize) to distant areas of the body. Most breast cancers are *carcinomas*, a type of cancer that starts in the cells (epithelial cells) that line organs and tissues like the breast. In fact, breast cancers are often a type of carcinoma called *adenocarcinoma*, which is carcinoma that starts in glandular tissue. Other types of cancers can occur in the breast, too, such as sarcomas, which start in the cells of muscle, fat, or connective tissue.[30]

Docetaxel has been shown in vitro to disrupt the microtubular network in cells which is essential for vital mitotic and interphase cellular functions.[23]**Ellipticine** antitumor, mutagenic and cytotoxic activities were suggested to be intercalation into DNA and inhibition of DNA topoisomerase II activity.[25-26]

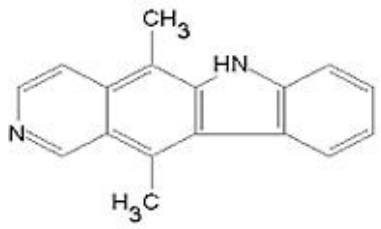
Lapachol has been proposed that interaction of the naphthoquinone moiety between base pairs of the DNA helix occurs with subsequent inhibition of DNA replication and RNA synthesis.[27]**Oleanolic** acid induces metabolic adaptation in cancer cells by activating the AMP-activated protein kinase pathway.

Marketed preparation

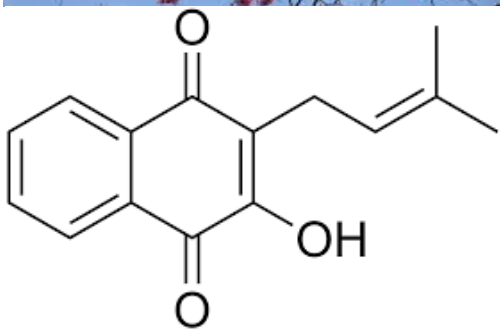
1. Injection containing 20 or 80 mg of docetaxel per 1.0 Or 4.0mL, respectively, in 50/50 (v/v)polysorbate 80/ethanol (anhydrous).[23]
2. Ellipticine-polyvinylpyrrolidone was compared with that of the hydrochloride salt and ellipticine in suspension following oral administration at 250 mg/kg.[24]
3. Lapachol concentration levels (20, 40 or 60 mg/ mxzL).[27]
4. Treated with various concentrations of oleanolic acid (0, 5, 25, 50 μM) for 72 h.[29]



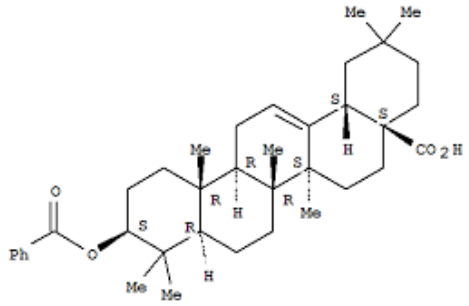
***Taxusbrevifolia*bark. Docetaxel**



Ochorsiaelliptica Ellipticine



Handroanthus Lapochol



Phytolacca Americana Oleanolic acid

SKIN CANCER :

Cisplatin, Etoposide,Teniposide andResveratrol are used in skin cancer therapy.

Skin cancerare two types of skin cancer: malignant melanoma of the skin and non-melanoma skin cancer (NMSC). Malignant melanoma is the most serious type of skin cancer. NMSC is much more common than malignant melanoma, and in the vast majority of cases it is detected early and is not life-threatening. Malignant melanoma is a cancer that develops from melanocytes (cells found in the deep layers of the epidermis). Melanocytes produce the ultraviolet (UV)-protective pigment melanin, which is responsible for the colour of skin. NMSC most commonly develops from the epidermal cells keratinocytes, which produce the waxy skin-strengthening substance keratin.[31]

Cisplatin binds with DNA to form intrastrand crosslinks and adducts that cause changes in the conformation of the DNA and affect DNA replication. Other mechanisms of cisplatin cytotoxicity include mitochondrial damage, decreased ATPase activity, and altered cellular transport mechanisms.**Etoposide** forms a ternary complex with DNA and the topoisomerase II enzyme (which aids in DNA unwinding), prevents re-ligation of the DNA strands, and by doing so causes DNA strands to break.Cancer cells rely on this enzyme more than healthy cells, since they divide more rapidly. Therefore, this causes errors in DNA synthesis and promotes apoptosis of the cancer cell.

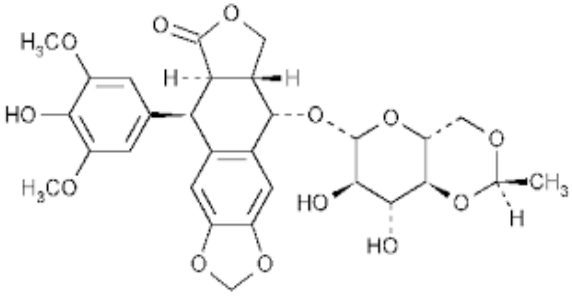
Thymoquinone Induces Mitochondria-Mediated Apoptosis inAcute Lymphoblastic.

Resveratrol activates Sirtui1and PGC-1α and improves the functioning of the mitochondria.[34]

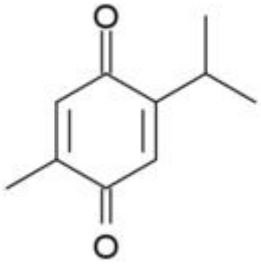
Resveratrol's ability to directly activate sirtuin 1 has been called into question, although newer attempts tried to reconfirm this link,latest research demonstrated that resveratrol binds to TyrRS to potentiate a PARP1/NAD+ driven signaling cascade to activate p53 and AMPK by inhibiting SIRT1.[37]

Marketed preparation

1. Cisplatin 70 mg/m2 (days 1, 8, 15, 29, 36, 43) in combination with escalating doses of paclitaxel.[36]
2. Etoposide daily administrationof 100 mg/m2 for 4 to 5 days.[35]
3. Thymoquinone: 20, 30 and 40 mg/kg body weight for intraperitoneal injection and 200, 300 and 500 mg/kg body weight for oral ingestion.[34]



Podophyllum hexandrumEtoposide



Nigella Sativa Thymoquinone

II. CONCLUSION

Cancer is major health problem in both developed developing countries. Cancer after cardiovascular disease is the second leading cause of death. Cancer is the abnormal growth of cells in our bodies that can lead to death. Plant-derived compounds have been an important source of several clinically useful anti-cancer agents. Plant have been the beacon of therapeutic sources for curing diseases from times immemorial. Medicinal plant with their isolated lead molecules are also used as an alternative medicine for treating cancer. These chemical compounds are formulated with a view to create effective drugs against cancer.Vincristine, Vinblastine, Homoharringtonine, Honokiol , Paclitaxel, Topotecan, Maytansine, Astraguoside , Docetaxel, Elliticine, Lapochel, Oleanolic acid,Cisplatin, Etoposide,Teniposide and Resveratrolthis lead molecules isolated from different medicinal plants are in use to treat cancer and chemotherapeutic side effect. In the present review, an attempt has been made to study the plants that have been used in the treatment of cancer.

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Comparative Standardization Study of Two Marketed Hingvashtak Churna Formulation

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ABSTRACT

In the few decades, there has been exponentionally growth in the field of herbal medicines. Most of the traditional systems of medicine are effective but they lack standardization. So there is a need to develop a standardization technique. Standardization of herbal formulation is essential in order to assess the quality, purity, safety and efficacy of the drug. The Hingvashtak churn is excellent remedy for indigestion, stomach pain, loose motions along with indigestion, loss of appetite and also used as carminative. The present research study deals with the comparative standardization of two marketed Hingvashtak Churna formulation from Baidyanath and Zandu. The standardization of this formulation, the organoleptic characters, physical properties, the various physico-chemical properties such as, ash values, extractive values were carried out.

Keywords: Standardization, Hingvashtak churn, Physico-chemical parameters.

I. INTRODUCTION

Nature always stands as a golden mark to exemplify the outstanding phenomena of symbiosis. Today about 80% of people in developing countries still relay on traditional medicine based largely on the different species of plants for their primary health care. About 500% of plants with medicinal uses are mentioned in ancient literature and 800 plants have been used in indigenous system of medicine. The various indigenous systems such as ayurveda, siddha, unani use several plant species to treat different ailments. Herbal medicines make up an important component of the trend toward alternative medicine[1]-[2].Tyler defines herbal medicines as "crude drugs of vegetable origin utilized for the treatment of disease states, often of a chronic nature, or to attain or maintain a condition of improved health. Current demands for herbal medicines have resulted in an annual market of $1.5 billion and increasingly widespread availability. Churna is one such ayurvedic formulation that is defined as a fine powder of drug or drugs in ayurvedic system of medicine. The churna is free flowing and retains its potency for one year, if preserved in an air tight container. They are similar to powder formulations in Allopathic system of medicine. Due to lack of modern pharmacopoeial standards laid down and followed for processing of hingvashtak churna using traditional methods, the medicine may not have the desired quality and batch to batch consistency. Thus WHO has emphasized the need to ensure quality control of medicinal plant products by using modern techniques and by applying suitable standards and parameters[3].

Advantages of Herbal Medicine

1) They have large amount of use.
2) They have better patient tolerance as well as acceptance.
3) The medicinal plants have renewable source of cheaper medicines.
4) Improvements in the quality, efficacy and safety of herbal medicines with the development of science and technology.
5) Prolong and apparently uneventful use of herbal medicines may offer testimony of their safety and efficacy.
6) They are cheap in cost.
7) They are not harmful.
8) They are more effective than any synthetic drug.

Throughout the world herbal medicines have provided many of the most potent medicines to the vast arsenal of drugs available to modern medical science, both in crude form as well as a pure chemical upon which modern medicines are constructed.[4]

Need of Standardization

The quality control of herbal crude drug & formulation is important in justifying their acceptability in modern system of medicines. Standardization of synthetic drugs offers no problem with very well defined parameters of analysis. It is not uncommon to have as many as five or more different herbal ingredients in one single formulation. The batch to batch variation starts from the collections of the raw materials itself in absence of any reference standard for identification. WHO has emphasized the need to ensure quality control of medicinal plants products by using modern techniques and by applying suitable standards and parameters .Standardized products and services are valuable User 'confidence builders' being perceived as

1) Safe
2) Healthy
3) Secure
4) High quality
5) Flexible

Standardization brings important benefits to business including a solid foundation upon which to develop new technologies and an opportunity to share and enhance existing practices. Standardization also plays a pivotal role in assisting Governments, Administrations, Regulators and the legal profession as legislation, regulation and policy initiatives are all supported by standardization.

SAMPLE

- **Asafoetida –Ferula assfoetida**
- **Scientific classification-**

Kingdom - plantae
(unranked) - angiosperms
(unranked) - eudicots
(unranked) - asterids
Order - apiales
Family - apiaceae
Genus - ferula
Species - F.assafoetida

- **Bionomial name -Ferula assafoetida L.**
- **Synonyms**

Ferula assafoetida L.
Ferula foetida st.-Lag.
Ferula hoosee Lindl.ex Descourt
Narthex assafoetida (L.) Falc

Asafoetida is the dried latex (gum oleoresin) exuded from the rhizome or tap root of several species of Ferula, a perennial herb that grows 1 to 1.5 m (3.3 to 4.9 ft) tall. The species is native to the deserts of Iran and mountains of Afghanistan and is mainly cultivated in nearby India. As its name suggests, asafoetida has a fetid smell (see etymology below), but in cooked dishes, it delivers a smooth flavor reminiscent of leeks. It is also known as asant, food of the gods, jowani badian, stinking gum, Devil's dung, hing, hengu, ingu, kayam, and ting.

Chemical constituent-Typical asafoetida contains about 40–64% resin, 25% endogenous gum, 10–17% volatile oil, and 1.5–10% ash. The resin portion is known to contain asaresinotannols 'A' and 'B', ferulic acid, umbelliferone and four unidentified compounds.

Use -excellent remedy for indigestion, stomach pain, loose motions along with indigestion,los of appetite and also used as carminative.

Scientific work done - Evaluation of Standardization parameters of Hingvashtak Churna.

PLAN OF WORK[5]

Comparative standardization of Hingvashtak Churna formulated by Zandu & Baidyanath pharma .The method used for the comparative standardization was planned to be carried out as follows:

1 Study of organoleptic characters

Development of Standardization Parameters for Hingvashtak Churna

1. Colour
2. Odour
3. Taste

2 Determination of physico-chemical parameters

1) Total ash
2) Acid insoluble ash
3) Water soluble ash
4) Water soluble extractive
5) Alcohol soluble extractive

3 Qualitative Estimation of Selected Phyto-Constituents

4 Evaluation of Churna

A) Powder fineness 1) Bulk density
2) Tap density
3) Angle of repose
4) Compressibility
5) Hausner's ratio

5) Determination of pH

II. METHODS AND MATERIAL

Developments of standardization parameters for Hingvashtak Churna

1) Study of Organoleptic Characters:

The polyherbal formulation is studied for organoleptic characters like colour, odour and taste using the sensory organs of our body.

2) Physico-Chemical Analysis:

Determination of loss and drying

5 g of the sample (without preliminary drying) was weighed and placed in a tarred evaporating dish. It was dried at 105˚ C until the constsnt reading was obtained, and at 10 minutes interval.

Determination of Total ash:

About 2 to 3 g of sample was accurately weighed in a tarred silica dish at a temperature not exceeding 450˚C until it was free from carbon. Then it was cooled and weighed. The percentage of total ash was calculated with reference to the air dried drug.

Determination of Acid insoluble ash:

The total ash obtained was boiled for 5 minutes with 25 ml of dilute hydrochloric acid; the insoluble matter obtained was collected on an ash less filter paper, washed with hot water and ignited to constant weight. The percentage of acid insoluble ash was calculated with reference to the air dried drug.

Water-soluble Ash:

The ash obtained in the determination of total ash was boiled for 5 minutes with 25 ml of water. The insoluble matter was collected on an ash less paper and washed with hot water. The insoluble ash was transferred into a tarred silica crucible and ignited for 15 minutes at a temperature not exceeding 450 C. The weight of the insoluble matter was subtracted from the weight of the total ash. The difference in weight was considered as the water- soluble ash was calculated with reference to the air dried drug.

Determination of Water-soluble extractive:

5 g of test sample was weighed and macerated with 100 ml of chloroform water in a closed flask for twenty-four hours, shaking frequently during six hours and allowing standing for eighteen hours. it was filtered rapidly, taking precautions against the loss of solvent.25 ml of the filtrate was taken and evaporated to dryness in a tarred flat bottomed shallow dish, to constant weight and weighed the percentage of water soluble extractive was calculated with reference to the air dried sample.

Determination of Alcohol-soluble extractive:

Procedure for water soluble extractive was followed for the determination of alcohol soluble extractive but 90% ethanol was used instead of chloroform water.

3)Qualitative Phytochemical Screening:

Resins: To 2ml of chloroform or ethanol extract 5 to 10ml of acetic anhydrite was added and dissolved by gentle heating. After cooling, 0.5ml of H_2SO_4 was added. Bright purple colour was produced. It indicated the presence of resins.

4) Determination of physical characteristics:

Bulk density

It is the ratio of given mass of powder and its bulk volume. It is determined by transferring an accurately weighed amount of powder sample to the graduated cylinder with the aid of a funnel. The initial volume was noted. The ratio of weight of the volume it occupied was calculated.

Bulk density=w/v0 g/ml
Where,
W = mass of the powder
V0 = untapped volume

Tapped density
It is measured by transferring a known quantity (15g) of powder into a graduated cylinder and tapping it for a specific number of times. The initial volume was noted. The graduated cylinder was Tapped continuously for a period of 10-15 min. The density can be determined as the ratio of mass of the powder to the tapped volume.

Tapped volume= w/vf g/ml
Where,
W = mass of the powder
Vf = tapped volume.
a) Compressibility index

It is the propensity of the powder to be compressed. Based on the apparent bulk density and tapped density the percentage compressibility of the powder can be determined using the following formula.

Compressibility index = [(v0-vf)/v0] x 100,
Or
% compressibility= [(tapped density – bulk density)]/ tapped density] x 100

b) Hausner's ratio

It indicates the flow properties of the powder. The ratio of tap density to the bulk density of the powder is called Hausner ratio.

Hausner 's ratio= Tapped density/bulk density

c) Angle of repose

The internal angle between the surface of the pile of powder and the horizontal surface is known as the angle of repose. The powder is passed through funnel fixed to stand at height of 4 cm. The height and the radius of the pile were measured. Angle of repose of the powder was calculated using the formula

Angle of repose= tan-1(h/r)

Where,
H=height of the pile
r=radius of the pile.

SCALE OF FLOW ABILITY

Table no: 1

S.NO	FLOW PROPERTIES	ANGLE OF REPOSE	COMPRESSIBILITY INDEX (%)	HAUSNER's RATIO
1	Excellent	25-30	<10	1.00-1.1
2	Good	31-35	11-15	1.12-1.18
3	Fair	36-40	16-20	1.19-1.25
4	Possible	41-45	21-25	1.26-1.34
5	Poor	45-46	26-31	1.35-1.4
6	Very poor	55-56	32-37	1.46-1.59
7	Very Very poor	>66	>38	>1.6

5 Determination of pH range: [7]

The powder sample of Hingvashtak Churna was weighed to about 5g and immersed in 100 ml of water in a beaker. The beaker was closed with aluminum foil and left behind for 24 hour s in room temperature. Later the supernatant solution was decanted into another beaker and the pH of the formulation was determined using a calibrated pH meter.

III. RESULT AND DISCUSSION

1) Determination of organoleptic Characters:
For the determination of organoleptic characters the colour test, odour test and taste were carried out and results as follows. As shown in table no:1

Table no : 2

Sr. no	Test	Baidyanath sample	Zandu sample
1	Colour	Greenish yellow	Greenish yellow
2	Odour	Characteristics	Characteristics
3	Taste	Pungant	Pungant

2) Physicochemical Characters:

For the determination of physicochemical characters the ash value, loss on drying, water extractive values, acid insoluble ash, and alcohol extractive values were carried out and results as follows. As shown in Table no: 3

Table no:3

Sr. no.	Test	Baidyanath sample	Zandu sample
1	Ash value%	28%	30%
2	Loss on drying %	0.59%	0.57%
3	Water Extractive values(%w/w)	36%	34.4%
4	Acid insoluble ash%	58.92%	13.33%
5	Alcohol Extractive Value(%w/w)	20%	18%

3) Qualitative analysis:

For the determination of qualitative analysis the test for resins, alkaloids, glycosides, tannins, and saponins were carried out and results as follows. As shown in Table no : 4

Table no:4

Sr. no.	Chemical constituent	Ethanolic extract
1	Resin	++
2	Alkaloid	-
3	Glycosides	+
4	Tannins	-
5	Saponins	-

The results of phytochemical tests were given in the above table. "++" this indicates the presence of more amounts of compounds.

4) Physical Characteristics of Powder [8]

For the determination of physical characteristics the bulk density tap, tap density, car's index, hausner's ratio and angle of repose were carried out and results as follows. As shown in Table no:5

Table no:5

Sr. no.	Test	Baidyanath sample	Zandu sample
1	Bulk density	0.384	0.375
2	Tap density	0.60	0.555
3	Car's index	35.89	32.5
4	Hausner's ratio	1.56	1.48
5	Angle of repose	52.35	43.58

5) Determination of pH of sample

pH of both samples is carried out to determination of pH and results as follows. As shown in Table no:6

Table no: 6

Sr. no.	Test	Baidyanath sample	Zandu sample
1	pH	5-6	5-5.6

IV. CONCLUSION

From the present investigation various standardization parameters such as physicochemical standards like total ash, acid insoluble ash, water and alcohol soluble extractive values, loss on drying, phyto-chemical analysis, flow properties, it can be concluded that the formulation of Hingvashtak churna contain all good characters of an ideal churn and it was found to be harmless ,more effective and economic. The comparison between the two marketed samples has been done on the basis of the above mention parameters which show satisfactory results. The two marketed samples have been evaluated as above mentioned parameters which show satisfactory results, but the efficacy of the products can only be judged by doing the pharmacology of which is suggested as future scope of R & D. The study shows that the contents of formulation presents within the permissible limits as per WHO.

V. ACKNOWLEDGEMENT

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A Review on Traditional Drugs

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ABSTRACT

Natural products have played an important role throughout the world in treating and preventing human diseases. Natural product medicines have come from various source materials including terrestrial plants, terrestrial microorganisms, marine organisms, and terrestrial vertebrates and invertebrates and its importance in modern medicine. The value of natural products in this regard can be accessed from: (i) the rate of introduction of new chemical entities of wide structural diversity, including serving as templates for semi synthetic and total synthetic modification, (ii) the number of diseases treated or prevented by these substances, and (iii) their frequency of use in the treatment of disease. On this basis drug like chitrak, kalijiri, Shilagit, Shankhpuspi, Palash, Kantakari are reviewed

Keywords: Chitrak, Kalijiri, Shilagit, Shankhpuspi, Palash, Kantakari, Plumbago Zeylanica, Candida Albicans, Digestive, Haemorrhoids, Vernonia Anthalmintica

I. INTRODUCTION

1) **Chitrak** [1-2]

Synonyme

Hindi- Cheeta
Telgu-Chitramulamu
English-Leadwort
Bengali- Chita
Sanskrit- Anala, dahana, Pithi, Vashisajanaka, agni,Jyoti.

Geographical Source

Found throughout India.

Chemical Constituents-

Chitranone, Plumbagin, 3-chloro plumbagin, Droserone, Elliptinone, zeylalone and zeylinone, Maritone, Plumbagicide, Dihydrasterone, B-sitosterol.

Macroscopy

Roots 30 cm or more in length 6 mm or more in diameter,as also as short stout pieces ,including root stocks reddish to deep brown, internal structure striated ,odour disagrrable, taste acrid.

Microscopy

T.S. of root shows outré most tissue of cork consisting of 5-7 rows of cubical to rectangular dark brown cells, secondary cortex consist 2-3 rows of thin walled rectangular, light brown cells, most of the cortex cells contains starch grains. Secondary cortex followed by a wide zone of cortex, composed of large polygonal totangentially elongated parenchymatous cell varing in size and shape, containing starch grain and some cells with yellow contains fiber in groups of 2-6. Phloem, phloem fibers in groups of 2-5 or more, stone cells absent.

Pharmacological Properties

1) Antifungal activity-
Alcoholic extracts of Plumbago zeylanica showed strong antifungal against the pathogenic yeast, Candida albicans and dermatophytes, Epidermophyton floccosum.
2) Antiviral Activity
The antiviral activities of the 80% methanolic extracts of Plumbago zeylanica against
Coxsackie Virus B3 (CVB3), influenza A virus and herpes simplex virus.
3) Antiplasmodial Activity
Plumbagin shows antimalarial effects on Plasmodium falciparum enzyme. The activity has been 50% inhibited by the naphthoquinone plumbagin at an inhibitory concentration of 5 mM.
4) Anti-oxidant
5) Anti-cancer
6) Anti-allergy
7) Anti-cholesterol
8) Liver protectives

Uses-
Used as Carminative, Digestive, Haemorrhoids, Anti-inflamatory,Anti-colic,Leadwort,Anti-aging purpose.

Side effect- Not safe in pregnancy, may cause or worsen heavy periods. High dose cause burning sensation, Gastritis, Neuropath

Marketed formulations
Chitrak Haritaki : In chronic respiratory Condition.
Chitrakadi Vati : Used in indication.
Kalyanagulam : used in livre and skin condition.

2) KALIJIRI [3-6]

SYNONAME-

Vernonia Anthalmintica

BIOLOGICAL SOURCE-
It consists of seeds of Nigella sativa Linn.

FAMILY-
Ranunculaceae
REGIONAL NANE-
1) Sanskrit- Sthfilajiraka
2)English- Black cumin
3)Hindi-Somraj

Geographical Source
Nigella sativa is an annual Flowering plant, native to south west Asia.

CHEMICAL CONSTITUENTS
1) 6,9 eicosadien
2) Butyl 11 hydroxy octa decanoate
3) Hexyl 3hydroxy nonanoate
4) Stigmasterol
5) Fatty acid
6) Steroids
7) Carbohydrates

MORHOLOGY

1) Size- 4.5-6mm long
2)color- Dark brown
3)odour-characteristics
4) Taste-Intensely bitter
5) Surface- 10 ridge covers with trichomes
6) Shape- oblong shape pointed from one side & hairy tapered from other end.

Microscopic characters- Seeds are flattened ,oblong, angular, funnel shaped ,size 0.2cm long and 0.1 cm wide ,black in color ,slight aromatic odour and bitter in taste.

USES
1) Analgesic & antipyretic activity
2)Ant filarial activity
3)Anthlmintic activity
4) Antimicrobial & antibacterial
5)Antihyperglycemic activity

PHARMACOLOGY

1)Formulation of topical cream or ointment for enhancing general health & inhibiting chronic skin disorders such as psoriasis , dryness, inflammation, irritation ,rashes.
2)Extract of c.anthelminticum used in diuretic activity
3)Extract of seed used in antimicrobial ,antibacterial & antifungal activity.

MARKETED PRODUCT
Madhusnuhi Rasayan

3) KANTAKARI[7-9]

SYNONAME-
Kantarika, Sprushi

BIOLOGICAL SOURCE-
Whole plant of solanum xanthocarpum.

FAMILY-
Solanaceae

REGIONAL NAME-
English-Yellow berried night shade
Hindi-Katai
Snnskrit-Anakranta

CHEMICAL CONSTITUENTS-
1) Alkaloid solenin-potasium chloride, potassium nitrate, Iron, Diosgenin
2) Rout & Fruits-solanin,solanidine, fatty acid
3) Fruits-Diosgenine
4)some monoprotoplasmic cell containing like alkaloids,tannin,sugar,starch,fat,oil,protein,mucilage,cutin,calcium oxalate

MORPHOLOGY
1) It is very prickly perennial herb somewhat with woody base
2) Stem branched must much & younger one clothed with dense, straight, glabrous& shining, often 1-3cm long
3) Leaves are ovate &elliptic, sub cut, stellately hairy on both sides
4) Seeds are glabrous

USES
1) Piles-post drink proceeds with kantakari sunthi dhanyak is given which act as carminative &laxative.
One who want eliminate of piles should take butter milk kept overnight in a vessel pasted inside kantakhariphala
2) Cough
3) Fever
4) Epilepsy
5) Suppression & retention of urine

PHAMACOLOGY
1) Pharmacological studies on this herb shown that aqueous & alcoholic extract of the plant posses hypertensive effect which is partly inhibited by atropine.
2) The more persistent secondary fall in blood pressure & bronco constriction are inhibited by antihistaminic drug
3) Stem flowers & fruits are bitter & carminative. It is employed in cough asthma & pain in chest being used in the form of a decoction.

MARKETED PRODUCT -
1) Tulasi kantakari cough
2) Asthma cough syrup
3) Vaidya kantakari capsule
4) Khadiradi gutika

4) PALASH [10-12]

SYNONYMS - Dhak, bastard teak

REGIONAL NAME – **Panjab**: keshu, **guj**- kesudo, kerala : plasu, **Marathi** : kakracha

BIOLOGICAL SOURCE: It consist of dried flower of Butea monosperma (Lam).

FAMILY: Fabaceae

MORPHOLOGY- These flowers stat appearing in February and stay on nearly up to the end of april. The size is nearly 2to 4 cm in diameter. These tend to be densely crowded on leafless branches. The calyx i.e. the lower whorl of the flower tends to be darkish gray like the supporting branch itself. The upper parts are brick red. The flowers form a gorgeous canopy on the upper portion of the tree, giving the appearance of a flame from a distance.

C**HEMICAL CONSTITUENTS**: Triterpin, several flavonoids, butein, butin, isobutrin, coreopsin, isocoreopsin,sulphurein, monospermoside and isomonospermoside, chalcones, aurones, isobutyine, palasitrin, , Myricyl alcohol, steric, palmitic, arachidik and lignoceric acid, glucose and fructose, histidine, aspartic acid,alanine and phenylalanine.

PHARMACOLOGY

Antihyperglycemic activity: significantly reduce blood glucose improve HDL cholesterol. Antihelmintic activity : dose 3 gm per kg G.I nematode time dependant anthelmintic effect.

USE : Astringent , laxative, anthelmintic, tonic, aphrodisiac, diuretic, antinflametry, in treatment of liver disorder and anti estrogenic. Externally it used in for reliving Eczema, iaching and other skin disorder.

MARKETED FORMULATION – Mahanarayan taila, 2) palasa kshara 3) Lukol oil – Himalaya

5) NAGARMOTHA

SYNONYMS-Nagrmoth , Nagermotha

REGINAL NAMES- latin name- cyperous scariosus, eng- Umbrella sedge, Sanskrit- Nagaramustaka bhadramusta. Hin- Nagermotha

BIOLOGICAL SOURCE- It is obtained from root of cyperous scariosus.

FAMILY cyperaceae

MORPHOLOGY

it is perennial shrub that attains height of half to 2 feet it has a thin stem that is of dark green in colour . Leaves are long having 1/6 to 1/3 inch broad and sharp the flowers are present in the racemes presentation. Flowers are 2 to 8 inch in length. The nodes and on the stem are thick that bears ½ inch diameter, oval shape rhizomes. it is aromatic and is white in colour from inside and brown from outside . The plant flowers grow in summer and fruits in winter.

CHEMICAL CONSTITUENTS: Rhizomes of it contains aromatic oil that is 0.5 to 0.6 % there is also present stable oil, beside that it contains alkaloids, minral and vitamins. The ash contains calcium, phosphorus, sodum and some carbonates. 1) α – pinene 2) Camphene 3) β-pinene 4) Cyperene 5) Copaene 6) Gurjunene.

USE : In fever, Jaundice, Diabetics, Diarrhea, used in skin disease, used as Diuretic, used in lung Disease. Carminative, Anlgesic, , Antiinflametry.

MARKETED FORMULATION:

1) Diarex-Himalaya
2) Hempushpa oil .

6) Shankhpushpi [13-14]

Synonyms-
Sanskrit- Sankhapushpi
Hindi- Sankhapuspi
Marathi- Shankhavela

Biological Source

Shankhapushpi consist of the whole aerial parts of Convolvulus pluricaulis Choisy.
Family- Convolvulaceae.

Macroscopic Characters

Roots- 0. 1-5 cm long, 0.1-0.4 cm thick, yellowish brown to light brown in color.
Steam- Slender , light green, cylindrical in shape, about 0.1 cm or less in thickness with clear hair nodes and internodes.
Leaf- Shortly peyiolate , linearlanceolate, acute apex, hairy on both surfaces; 0.5-2cm long and 0.1-0.2 cm broad, light green in color.
Flowers- White or pinkish in color.
Fruit- Oblong globase with caraceous , pale brown pericarp.
Seed- Brown in color.

Microscopic Character

Root-Putter cork composed of 10-15 Layers of tangentially elongated thick-walled cells, cortex composed of 6-10 layers of oval to elongated, paranchymatus cells. Yellowish brown, tanniferous, secretary cells are present in cortex region; phloem is composed of sieve elements, phloem parenchyma and phloem rays, xylem consisting of usual elements; medulary rays are 1-3 cells wide and multicellular in length;starch grains are also present.
Stem-Single layer epidermis , coverd with thick cuticle and contains unicellular hairs. Cortex is devided in two zone, 2-3 upper collenchymatus and 1-2 lower paranchymatus layers; pericycle present in the form of single stand of fibers in endodermis; phloem mostly composed of sieve element and parenchyma; xylem consist of vessel fibers and parenchyma ; medullary rays and trachids are not distinct and centre slightly lignified pith is seen.
Leaf-Single layered epidermis is covered with thick cuticle, unicellular covering trichomes , epidermis is measophyll region, spongy parenchyma 4-5 layered vascular bundles bicollateral composed of 4-5 layers of parenchymatous cells.
Chemical Constituents
The chief constituents of the drug are an alkaloid known as Shankhapushpine. The drug also contains Volatile oil, higher fatty alcohols, kaempferol , its 3D- glucoside, B-setosterol, carbohydrates such as glucose, rhamnose,sucrose and starch and potassium chloride.

Use : The drug is used as brain tonic, anti- hypertensive and as tranquilizer.

Marketed formulations-
Shankhapushpi syrup
Daber shankhapushpi

7) Shatavari [15-16]

Synonym
English- Asparagus
Sanskrit- Narayani
Hindi- Shatavar, Shatamui

Biological Source-
The drug is derived from dried tuberous roots of Asparagus racemosus Wild.

Family
Liliaceae.

Macroscopy

The leaves are like pine-needles, small and uniform. The inflorescence has tiny white flowers, in small spikes. The roots are cylindrical ,fleshy tuberous, straight or slightly curved, tapering towards the base and swollen in the middle ;white to buff color , 5-15 cm in length and 1-2 cm in diameter, irregular fracture, longitudinal furrows and minute transverse wrinkles on upper surface and is bitter in taste.

Chemical constituents-

The active constituents are steroidal saponins , Shatavarins. 1-4, shatavarin 1 is the main active glycoside, the sugar moieties being 3 glucose and 1 rhamnose. The aglycone unit is sarsapogenin.

Uses: The root is alterative, anti spasmodic, aphrodisiac, demulcent, diuretic, galactogogue and refrigerant. It is taken internally in the treatment of infertility, loss of libido, threatened miscarriage, menopausal problems, hyperacidity, stomach ulcer and bronchial infections. Externally it is use to treat stiffness in the joints. The root is used fresh in the treatment of dysentery.

PHARMACOLOGY
Adaptogenic activity

1) Aqueous extract was administered orally to experimental animals of biological, physical and chemical stressors. A model of cisplatin induced alteration in gastrointestinal motility was used to test the ability of extract to exert a normalising effect, irrespective or direction of pathological change. The extract reversed the effects of cisplatin on gastric emptying and also normalized cisplatin-induced intestinal hyper motility.

2) Antiprotozoal activity
An aqueous solution of the crude alcoholic extract of the roots exhibited an inhibitory effect of the growth of Eintamoeba histolytica in vitro.

Marketed formulations-
1) Himalaya shatavari
2) Shatavari kalpa
3)Nirogam shatavari plus
4)Patanjali shatavari churna
5)Nari kalyan churna

8) Shilajit [17]

Synonym –
Hindi- Shilajeet
Urdu-Salajeet
English-Mineral pitch or Minaral wax
Laton-Asphltum punjabianum
Locally-shargai,dorabi,barahshin,baragshun

Biological Source

Shilajit is a blakish-brown exudation of variable consistency obtained from steep rocks of different formations found in the Atai mountains.

Chemical Constituent
Fulvic acids,dibenzo alpha pyrones, humans, humic acid,trace minerals, vit .A, B,C and P phospholipids and polyphenol complex,terpinoids.Also present are microelements(copper,mangnase,chrome,iron,magnesium).

Pharmacological properties-
Enlarge prostate, urinary problem, increase sex drive, diabetes, antioxidants anti-inflamatory, anemia, arthritis, cholesterol.

Anemia-

Iron is required to make red blood cells,shilajit is a good source of trace minerals and contains iron. The folic acids help carry the iron into the body making it bio-available.

Uses-

Pramehaghana-Anti-diabetic
Lekhana- Scropes away
Medya- Enhance the intellect
Rasayana- rejuvenative
Shothara-Anti-inflammatory
Vrishya- infertility

Marketed Formulation-

1) Dabur shilajit
2)Pure shilajit Himalaya
3)Morpheme shilajit
4)Baidhyanath shilajit capsule

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Performance Analysis of CMOS Circuit by Using Sub Clock Power Gating Method

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ABSTRACT

Reducing the power consumed by the device is the emerging trend now-a-days. The aim is to reduce the leakage current of the circuit by using the Sub Clocking technology. It is the process of switching the circuit by means of partially ON to reduce the power consumption. There are two modes of operation are implemented. Half Mode Operation (HMO), Full Mode Operation (FMO). These modes of operation are implemented in the two designing methods One is Design-I,In that pMOS and nMOS are connected at header side of the standard CMOS circuit. In Design-II pMOS and nMOS are connected at the footer side of the standard CMOS circuit. pMOS and nMOS transistor at the header and footer side are refer to be as a Sub Clock control unit. Any one of the transistor is ON for a half mode operation and both the transistor are turn ON for full mode of operation. This will do by using the control signal to the sub clock unit which is placed in either header side or footer side of the CMOS gate. By this process the power consumed by the gate is reduced and also reduce the power leakage during the ideal mode of the gate.

Keywords: Corresponding MOS, Dual Mode Logic (DML), Static Power, Dynamic Power

I. INTRODUCTION

Sub clocking affects design architecture more than clock gating. It increases time delays, as power gated modes have to be safely entered and exited. Architectural trade-offs exist between designing for the amount of leakage power saving in low power modes and the energy dissipation to enter and exit the low power modes. Shutting down the blocks can be accomplished either by software or hardware. Driver software can schedule the power down operations. Hardware timers can be utilized. A dedicated power management controller is another option.

An externally switched power supply is a very basic form of sub clocking to achieve long term leakage power reduction. To shut off the block for small intervals of time, internal sub clocking is more suitable. CMOS switches that provide power to the circuitry are controlled by sub clocking controllers. Outputs of the power gated block discharge slowly.

Hence output voltage levels spend more time in threshold voltage level. Sub clocking uses low-leakage PMOS transistors as header switches to shut off power supplies to parts of a design in standby or sleep mode. NMOS footer switches can also be used as sleep transistors. Inserting the sleep transistors splits the chip's power network into a permanent power network connected to the power supply and a virtual power network that drives the cells and can be turned off.

II. METHODS AND MATERIAL

1. Basic DML Architecture

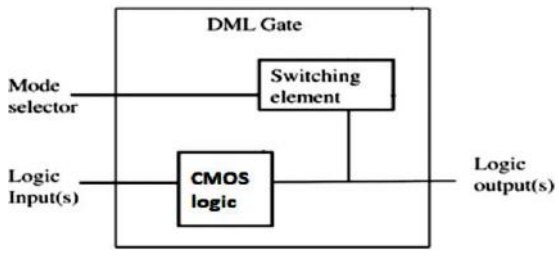

Figure 1: Basic DML Architecture

A novel low-power dual mode logic (DML) family, designed to operate in the sub threshold region. The proposed logic family can be switched between static and dynamic modes of operation with first approach using pMOS and nMOS as shown in the Figure 2. (a) and second approach as shown in Figure 2. (b) according to system requirements.

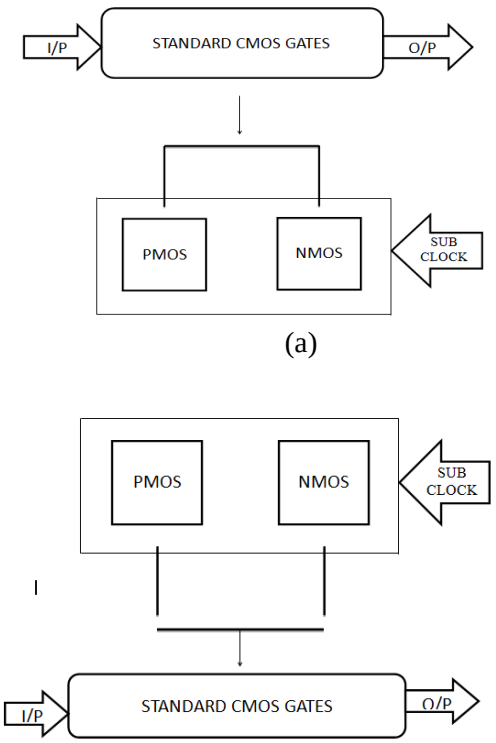

Figure 2: DML Gate Structure

In static mode, the DML gates feature very low-power dissipation with moderate performance, while in dynamic mode they achieve higher performance, albeit with increased power dissipation. Compare performance, power dissipation, and robustness of the proposed DML gates.

The basic DML gate architecture is composed of a standard CMOS gate and an additional transistor M1, whose gate is connected to a global clock signal. At first glance, this architecture is very similar to the noise tolerant precharge (NTP) structure. However, in contrast to the NTP, which was developed as a high-speed, high-noise-tolerance dynamic logic, the DML aims to allow operation in two functional modes, static mode and dynamic mode. To operate the gate in the dynamic mode, the Clk is assigned an asymmetric clock, allowing two distinct phases precharge and evaluation.

2. Design of DML AND, OR & EXOR gates

The basic logic gates AND, OR & EXOR are implemented using Dual Mode Logic using CADENCE EDA tool. The schematic is simulated for Design I and II in static & dynamic modes and power is analyzed. In the DML Design I Static AND topology, the switching element is a PMOS and nMOS transistor as shown in the figure. 3 connected parallel to the Pull-up network. The input to the switching factor is a constant high voltage to make it OFF.

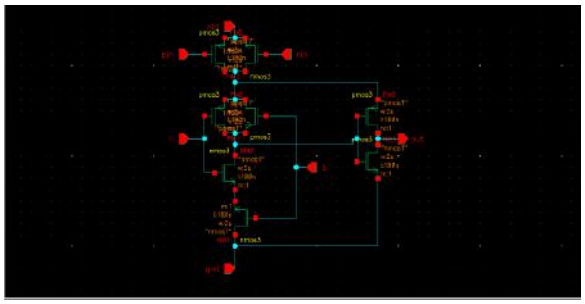

Figure 3: Schematic of Design-I Static AND

The only difference when designing DML Design-I Dynamic AND topology, is that the input to the switching element is a clock signal having pre-charge and evaluate phase for dynamic mode of operation. Conventional OR logic gate design is done using CADENCE EDA tool and its power and performance are found. Also Dual Mode Logic AND gate Design-I and Design-II topologies designed and their power consumption and performance were analyzed for static and dynamic mode of operations. In the DML Design-I Static OR topology, the switching element is a PMOS transistor connected parallel to the Pull-up network which is a series connection of 2 PMOS transistors. The input to the switching factor is a constant high voltage to make it OFF.

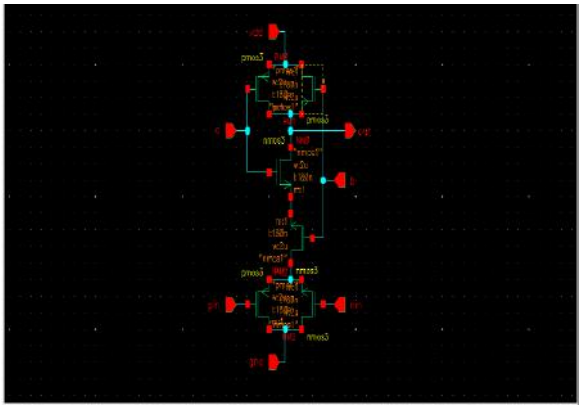

Figure 4: Schematic of Design-II Dynamic AND

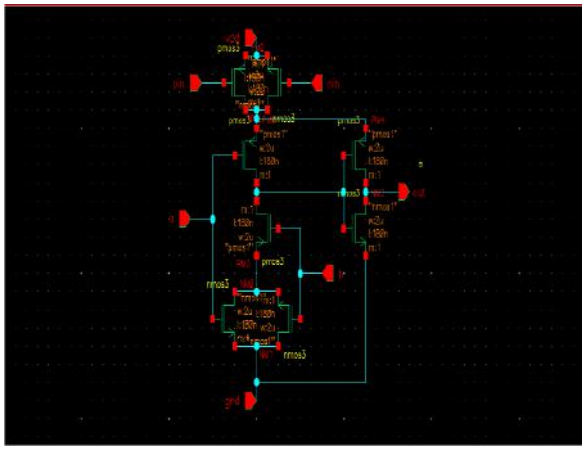

Figure5: Schematic of design I static OR

The input to the switching element is a stable low voltage to make it OFF. The only difference when designing DML Design-II Dynamic OR topology is that the input to the switching element is a clock signal having pre-charge and estimate phase for dynamic mode. Conventional inverter gate design is done using CADENCE EDA tool and its power and performance are found. Also Dual Mode Logic EXOR gate Design-I and Design-II topologies designed and their power consumption and performance were analyzed for static and dynamic mode of operations. In the DML Design-I Static EXOR topology, the switching factor is a PMOS and NMOS transistor as shown in the figure. 4 connected parallel to the Pull-up network. The input to the switching element is a constant high voltage to make it OFF.

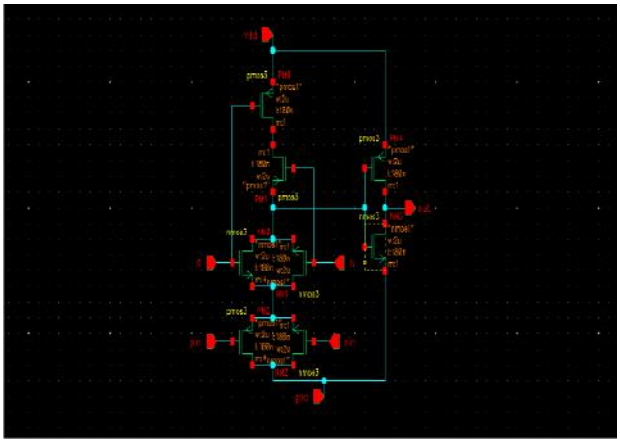

Figure 6: Schematic of Design-II dynamic OR

The only difference when designing DML Design-I Dynamic EXOR topology is that the input to the switching factor is a clock signal having pre-charge and estimate phase for dynamic mode.

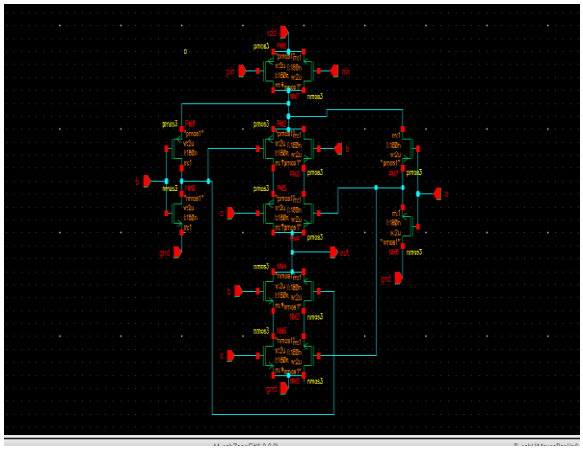

Figure 7: Schematic of Design-I Static EXOR

In the DML Design-II Static EXOR topology, the switching factor is an NMOS transistor connected parallel to the Pull-down network. The input to the switching factor is a constant low voltage to make it OFF. The only variation when designing DML Design-II Dynamic EXOR topology is that the input to the switching element is a clock signal having pre-charge and evaluate phase for dynamic mode. The total power consumption in micro watts and mile watts for AND, OR & EXOR logic gates Design-I and II is tabulated below.

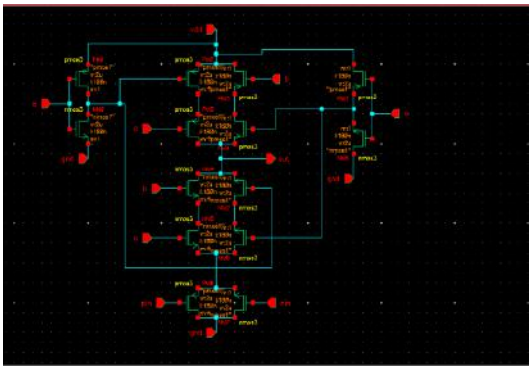

Figure 8: Schematic of Design-II Dynamic EXOR

Table 1: Comparison of AND, OR & EXOR gates

Gates	Design-I				Design-II			
	Both transistor OFF	pMOS ON	nMOS ON	Both transistor ON	Both transistor OFF	pMOS ON	nMOS ON	Both transistor ON
AND	0.299 µw	111.2 µw	20.04 µw	111.32 µw	0.379 µw	14.18 µw	143.7 µw	145.7 µw
OR	0.0203 µw	76.72 µw	18.65 µw	76.72 µw	0.388 µw	13.76 µw	97.12 µw	96.99 µw
EXOR	0.97 5mv	1.33 mv	0.953m v	1.332 mv	0.176 µw	12.29 µw	130.8 µw	130.8 µw

III. CONCLUSION

Power consumed by the gate by using the DML logic will be in the range of a milli watts and higher range of micro watts. Since the logic uses a pMOS and nMOS transistor at the output of the CMOS gate. The switching of the pMOS and nMOS gate is done using the High frequency pulse or directly connected to the operating voltage VDD. The Sub Clocking technique that reduces a power, consumed by the device during the Active mode and also in Ideal mode using the Design-I and Design-II technique. It uses a pair of pMOS and nMOS transistor in header side or in a footer side of the gate. Design-I approach use to reduce the power consumption by means of voltage dividing process and design-II approach used to reduce the leakage current during the high speed switching. Power consumed by the device is reduced upto 10% for a single gate(4 transistors) when implementing the design-I technique and also reduce the power up to 10^-1(1 watts) by implementing the design-II technique. Thus it can be implemented in any kind of logical circuit that can work in full power mode and also in half power mode. Compare to the DML logic the sub clocking method of design reduce the power consumed by a gates up to 10%.

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Aggrandized Aspect Based Mosaicing Technique for Scientifically Stigmatized Airborne Synthetic Aperture Radar

D. Bhavya Lakshmi, Prof. N. Sathianandam

ABSTRACT

In the digital image processing, enhancement and removing the noise in the airborne synthetic aperture radar (SAR) image is a critical issue. We have proposed a Kaze algorithm to enhance radar image interpretation and the computational time are reduced by using the Adaptive Random Sample theory which limits the search space and work well for feature detection of synthetic aperture radar image(SAR).The performance of the proposed approach has been evaluated and compared to the existing technique, The statistics obtained from each randomly selected feature is used to update this distribution, by reducing the total required number of random trials. The re-estimation for those selected features are done within a smaller search space with a more accurate algorithm like the RANSAC fitting, thus the proposed technique show that this two-stage algorithm reduces the total computation time by limiting the search space. The entire algorithm is simple and effective. Thus the image interpretation is enhanced by invariant feature Point detector in the areas of computer vision, real time image matching and object recognition.
Keywords: Mosaicing Technique, Synthetic Aperture Radar, RANSAC, KAZE, SAR, SHIFT algorithm

I. INTRODUCTION

Unlike Passive optical sensors the active microwave sensor that transmits in microwave and detects the wave that is reflected back by the objects using Synthetic Aperture Radar. For providing the high- resolution imagery this systems take the advantage of the long-range propagation characteristics of radar signals and the complex information processing capability of modern digital electronics. Specifically Microwave pulses are transmitted by synthetic aperture antenna towards the earth surface in SAR imaging. SAR images are formed using the principal of radar and the microwave energy of the backscattered signal reflected back to the antenna. Time delay of the backscattered signals is measured.

SAR transmits a microwave beam towards the ground at right angles to the direction of flight revealing a swath which is offset from nadir. For measuring the range and range resolution from the antenna to the target this imaging system relies on or across track dimension perpendicular to the flight direction. The elapsed time between the transmission of a pulse and receiving the echo determines the range or line-of-sight, distance. Width of the receiving pulse is used to govern the range resolution of the target. Narrower the pulses, finer the resolution. This imaging system relies on another important dimension that is the azimuth or the along-track dimension parallel to the flight direction and perpendicular to range. The azimuth beam width which is inversely related to antenna size is used to govern the resolution in this direction. A smaller antenna will generate a larger beam width and its images will have poor azimuth resolution. For getting a fine azimuth resolution a physically large antenna is needed to focus the transmitted and received energy into a sharp beam.

Doppler processing is another approach which explains how the SAR imaging achieves fine azimuth resolution. Doppler frequency of the echoes from the ground determines a target's position along the flight path. If the target is in front of aircraft the offset will be positive and if it is behind the aircraft the offset will be negative. Synthetic aperture radar has the ability to penetrate clouds and darkness. Data are ideal for land surface mapping owing to their high spatial resolution. The

problem of acquiring large-scale airborne SAR imaging scene in military and civilian fields, such as battlefield investigation, flood supervision and so on, need to be resolved by image mosaic. Image mosaic has several advantages like resolving the problem in multi-image matching and giving high quality results using multi-band blending. In broad remote areas like rain forest and boreal forest regions the Mosaics produced from SAR images serve as valuable base maps. These data sets are extremely valuable for scientific research. In situ observations are usually sparse and optical remote sensing technologies are often disabled due to cloud coverage. Because of the inherent compensation for the large range walk it has been presented that the SAR image formation process can be beneficially extended to the aforementioned mosaicing operations.

The strip map SAR image acquisition process, La is the length between the position of the aircraft and Ls is the length of the strip of SAR image. In general strip map SAR imaging, there will be overlap regions between two strips. And due atmosphere variations, the sensors also fail sometime and there will some geometric variations between two consecutive strips which has common area. However, to most SAR imaging algorithms, the geometric distortions, spectrum alias, and border discontinuities in the neighboring results remain as inevitable problems for high-quality mosaics Generally, the SAR image mosaicing will be performed based on location which uses latitude, longitude and movement parameters of the plane given by INS to calculate the longitude and latitude of every pixel of image.

In case of absence of the sensor information and navigation information, the SAR image cannot be mosaiced. In that situation, the gray based and feature based methods are commonly used. The gray distribution of the SAR image is not stable as that of the optical images. The feature based methods such Hough corner point can be used for SAR image mosaicing. But SURF doesn't acknowledge the geometrically distorted SAR image. In this project, a methodology to produce the continuous full image automatically is presented based on the KAZE feature with modified SHIFT algorithm that has been improved to handle the difficulties successfully. In this project, enhance feature based SAR image Mosaicing technique is explained. The performance and robustness of the proposed method are verified by the experiments. Synthetic Aperture Radar Image Features Interpretation The brightness or darkness of a SAR image pixel is dependent on corresponding 'patch' on the earth's portion of the transmitted energy that is returned back to the radar.

In contrast to most optical remote sensing and surveillance systems, where aerial photographs and satellite images must be captured during the day and generally at a time when the sun is in a favorable position, active system such as radar has the advantage of providing its own source of energy for target illumination. The radar signal interacts with ground surfaces through reflection, scattering, refraction or being absorbed. Pixels in the image represent the back-scattered radiation from an area in the imaged scene. Brighter areas are produce by stronger radar response and darker areas are from weaker radar responses. The amount of the occurrence of backscattering depends greatly on factors such as wavelength of the radar used; orientation or polarization, incidence angle of the radar wave and nature of the surroundings. The length of the wavelength determines the resolution and penetration depth.

A surface is considered smooth or flat if the height variations are smaller than the radar wavelength. For smooth surfaces, little of the radar signal will be reflected back to the radar system. This causes the area in the image to appear darker or invisible. In contrast, a surface appears rough to a shorter wavelength and a significant portion of the energy will be backscattered to the radar such that the rough surface will appear brighter in tone on an image. Longer wavelength can penetrate deeper into the canopy of trees and create multiple backscattering between the soils, leaves, branches and trunks. The large backscattering will cause the vegetation to give a brighter signature in image. Shorter wavelength will just interact with the top of the canopy causing detailed features such as small hills that are cover by the canopy to be hidden. The incidence angle refers to the angle between the incident radar beam and the direction perpendicular to the ground surface. Incidence angle can alter the appearance of the image and reduce the image distortion. Larger angles cause weaker signals and larger radar shadow but image is less susceptible to layover.

When features such as wall of a building or hedges lie in the direction of the flight-path, the radar beam can have two or double bounces occurring once on the wall surface and another off from the ground. This is known as corner reflection and most of the energy is reflected directly back to antenna resulting in a very bright appearance of the object in the image

II. METHODS AND MATERIAL

2 ARCHITECTURE FRAMEWORK

Images formed due to nonlinearities in the aircraft path and geometric changes in the images acquired, are mosaiced. The block diagram of enhanced feature based mosaicing technique consists of image enhancement, feature extraction, feature matching, warping and blending as shown in figure 1. The key problem in compututerizing the process lies in developing a better algorithm to accurately determine the features between images of neighbouring regions. Because of the distortion of the lens and other unknown natural factors, the overlapping areas of two images cannot be matched completely. In the case when there is a large overlap between the images, a new algorithm has proposed for image enhancement by directly minimizing the search space in intensities between pairs of images. The main problem to overcome in this part is to find the overlapping region between two neighbouring images. It frequently uses computer graphics knowledge to confirm overlap area.

In the vicinity of the point two dominant and different edge directions which are present in a point said to be a corner position. A corner can also be determined as the intersection of two edges. A sharp change in image brightness is referred as edges of image. They are predominantly described as interest point detection, corner detection; these methodologies used within computer vision systems to obtain certain kinds of features from a given image. To locate matching regions in different images, the initial operator concept of points of interest in an image is used. The Moravec operator is used for corner detector because it implies interest points as points where in all directions, there are large intensity variations are found.

The Kaze method is effective for images including Gaussian noise. As the statically result shows that the number of Harris corner detected for obtaining features from the original image is less to the same with the number of points detected by de-noised image using Kaze method

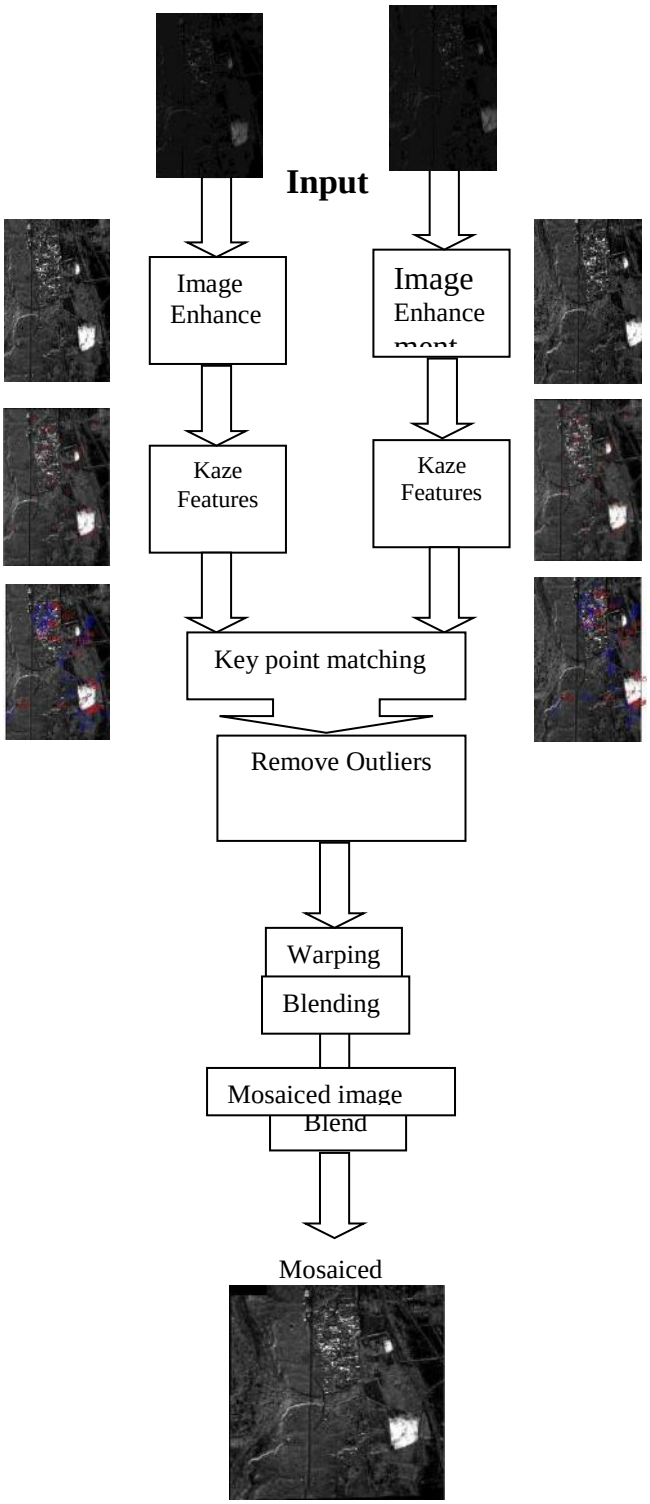

Figure 1. Different Phase Using Mosaicing Technique

III. RESULT AND DISCUSSION

3. Kaze Feature with Modified Shift

Our proposed algorithm considered the images formed due to nonlinearities of the platform and geometric changes in the images acquired. The Enhanced Feature based Mosaicing technique consists of image enhancement technique, Feature Extraction technique, matching, warping and blending, which describe the novel method for feature detection and description in nonlinear scale spaces to the given input image, then, to detect features of interest that exhibit maxima of the scale-normalized determinant of the Hessian response through the nonlinear scale space. Finally, computing the main orientation of the points and obtain a scale and rotation invariant descriptor considering first order image derivatives. Now, the procedure will describe each of the main steps in our formulation.

3.1 Enhancing the image-

1. Let the pixels of the image value A (i,j) ranges from 0 to 255.
2. Assume the threshold values, high limit and low limit. In this experiment, threshold values are 125, low limit is 22 and high limit as 223.
3. Calculate the mean adjustment value.

Mean _adjustments=threshold-mean(mean (A));

4. Calculate the value of pixels

A (i,j) = A(i,j)+ mean_adjustments*(1-A(i,j));

5. Calculate the minimum value and maximum values corresponding to high limit and low limit values.

a. Sort the pixel values of the image A(i,j).

b. The minimum value taken from the ordered indexed value of the low limit.

c. The maximum value is taken from the ordered indexed value of the high limit.

6. The enhanced pixel values of the image is given as A(i,j)=(A(i,j)-minimum value) / (maximum value – minimum value)).

3.2 Feature detection by KAZE- Nonlinear scale space is computed first, and then image is convolving with a Gaussian kernel of standard deviation σ to reduce noise and possible image artifacts. From that base image we compute the image gradient histogram and obtain the contrast parameter k by giving the contrast parameter and the set of evolution times, it is straightforward to build the nonlinear scale space in an frequentative way using the Additive Operator Splitting schemes depicts a comparison between the Gaussian scale space and the nonlinearity by using the g3 conductivity function. As it can be observed, Gaussian blurring smoothes for equal all the shape in the image, whereas in the nonlinear scale space strong image edges remain unaffected.

Where ($L_{xx}\ L_{yy}$) the second are order horizontal and vertical derivatives respectively, and L_{xy} is the second order cross derivative. Then w search for maxima in scale and spatial location. The search for extremes is performed in all the filtered images except i=0 and i=N. Each extrema is searched over a rectangular window of size $\sigma_i \times \sigma_i$ on the current$i$, upper $i+1$ and lower $i-1$ filtered images. For speeding-up the search for extrema, have to check the responses over a window of size 3×3 pixels, in order to discard quickly non-maxima responses. Finally, the position of the key point is estimated with sub-pixel accuracy.

$$L_{Hassian} = \sigma^2\ (L_{xx}\ L_{yy} - \ L_{xy}^2)$$

The set of first order and second order derivatives are approximated by means of 3 × 3 Scharr filters of different derivative step sizes σ_i. Second order derivatives are approximated by using consecutive Scharr filters in the desired coordinates of the derivatives. From these filters approximate rotation invariance significantly better than other popular filters. Although there is need to compute multiscale derivatives for every pixel, we save computational efforts by using this method.

3.4 Feature Matching- We use the M-SURF descriptor arrogate to our nonlinear scale space framework. For a detected feature at scale σ_i , first order derivatives $L_x\ and\ L_y$ of size σi are computed over a 24σi × 24σi rectangular grid. This grid is divided into 4×4 sub regions of size $9\sigma_i$ ×9 σ_i with an overlap of 2σi. The derivative responses in each sub region are weighted with a Gaussian (σ1 = 2.5) σ_i centered on the subregion center and summed into a descriptor vector .Then, each sub region vector is weighted using a Gaussian (σ2 = $1.5\sigma_i$) defined over a mask of 4×4 and centred on the interest key point. When considering the dominant orientation of the key point, each of the samples in the

grid is rotated depending to the dominant orientation. In addition, the derivatives are also computed depending to the dominant orientation. Finally, the descriptor vector of length 64 is normalized into a unit vector to achieve invariance to contrast, so that the same number of scales O = 4, and sublevels S = 3 for the SIFT and KAZE cases. Computing a specification and dominant orientation or few of them in the case of SIFT

3.3 RANSAC fitting - The RANSAC is an algorithm, in which is applied to delete the error matching point pairs. After correcting the matching points, the matched points between the images are merged together to form a mosaiced image. The basic algorithm is summarized as follows:

1. Choose randomly the minimum number of points required to find the model parameters.
2. To solve for the parameters of the model.
3. To find how many points from the sets of all points fit with a predefined tolerance ε.
4. If the fraction of the number of inliers over the total number points in the set exceeds a predefined threshold τ, re-estimate the model parameters using all the recognize inliers and terminate.
5. Otherwise, repeat steps 1 through 4 (maximum of N number of times).

After this RANSAC algorithm has done its processing Due to the nature of the projection models used by the method, at the minimum of four correspondences are needed between the images. Also, when there is a large numbers of outlier features present, the probability that the evaluation process will fail is relatively high. A simple technique is used to deal with the situation: the image under registration is eliminate and a new image is considered if (Matches after RANSAC technique/ Matches before RANSAC technique) $<\tau$.

3.5 Feature warping and blending -The interpretation projection model established during the foregoing stages can now be used to transform the new image into the sub-mosaic image. To achieve the final projection model between the new image and the mosaic, the projection models are integrated with an alternative. The evolution in a backward manner is realized. In this way neither holes nor overlaps can arise in the resulting mosaic image. The registered image data from the new image are intent using the synchronization of the target pixel and the inverse of the estimated projection model. The image interpolation takes place in the new image on the regular grid. Bilinear interpolation is out performed by higher-order methods in terms of exactness and visual appearance of the transformed image; it offers probably the good trade-off between accuracy and computational complexity.

Registration of new image with the current mosaic is performed. If new areas were conquered, the pixels belonging to these areas are allocated values directly from the warped new image. Due to various reasons, such as non-linearity in aircraft path, radar sensors, there may be possibility of occurrence of intensity differences in the area of overlap. This may cause visible disruption in the resulting mosaic image. Therefore, the area of overlap is taken differently from the new areas.

In order to seamlessly merge the new image into the mosaic, the blending stage is attached to the method. The blending is a process of finding the updated pixel values in the area of overlap by applying a blending method that outputs a weight between 0 and 1 for each pixel in the new images. The updated pixel values are now generated as follows:

$$I0\ (0) = b\ (i)\ I\ (i) + (1 - b\ (i))\ I0\ (i0))$$

Where I and I 0 stand for the pixel values of the new image and mosaic, respectively. A blending function that reduces near the boundary of an image will efficient block visible discontinuities from occurring .Gaussian-style blending function b(x) is used. The blending is not only used to remove the visual discontinuities, but can be identified as an best way of making the method more robust against the accumulation of small registration errors, small errors can be removed by revisiting the erroneous area.

IV. CONCLUSION

In this paper, KAZE features, a novel method for multiscale two dimensional (2D) feature detection and description in nonlinear scale spaces is described. The new method has been developed to enhance the image by KAZE with modified SHIFT. The designed new method is faster and more accurate. The reconstructed image is more sensitized; the entire algorithm is simple

but effective in the areas of and real time image matching and object recognition. For future research, the computational time for feature detection can be decreased. And also the research can be focused on more geometric distortion

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Data Optimization and Transmission in Restaurant Using Virtual Reality

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ABSTRACT

The ideas behind virtual reality are based upon theories about a long held human wish to escape the boundaries of the real world by embracing cyberspace. When we can interact with this virtual world in a more naturalistic manner which will generate new forms of human machine interaction (HMI). The aim is to move beyond standard forms of interaction such as the keyboard and mouse which most people work with on a daily basis. This is seen as an unnatural way of working which forces people to adapt to the demands of the technology rather than the other way around. But a virtual environment does the opposite. It allows someone to fully immerse themselves in a highly visual world which they explore by means of their senses. This natural form of interaction within this world often results in new forms of communication and understanding.

Keywords: HMI, Virtual Reality, UL, VE

I. INTRODUCTION

VIRTUAL reality (VR) technology is very much being used as an assessment and training of upper limb (UL) motor function in patients with post-stroke hemiparesis. Interest in rehabilitation technology is related to the potential for VR to provide more intensive training environments than are usually available during post-stroke rehabilitation to promote better motor recovery. Advantages of using VR technology include the ability to create training opportunities incorporating salient motor tasks that need to be reacquired post-stroke and to manipulate task difficulty and feedback for effective, individualized motor learning paradigms. Feedback provided during VR training may be used more effectively to improve the quality of UL movement. There were large differences in kinematics of movements made in 2-D motion-capture VEs compared to PEs and differences were more marked in stroke patients compared to healthy subjects. In this article, we propose the design and use of VR in restaurant for automatic digital menu transmission through VR display.

Virtual Reality technology is used to wide transmission of data without occurring of noise. In this system, the menu is provided automatically in indoor without any manual work. It reduced the complexity among the server and customer. The proposed system can be used in restaurant whenever the supply serving to customer. The proposed system is consists of table top transmitter section and customer table receiver system. Whenever the customer reach the table, then PIR sensor sense people identification. Then the user can get menu at the same using virtual reality and also it reduced complexity occurring among to customer and server. It is used for hotel management to save the time for waiter and customer.

Once the correspondences between two neighbouring views are derived, synthesized views at arbitrary viewpoints between those views can be generated. We use an interpolation algorithm which is based on the related concepts of \View Interpolation" and \View Morphing" to generate the synthesized views. This interpolation algorithm involves the computation of the position and the color of the pixels using the correspondences between two images, described by the following equations.

$$P_i = w_1 P + w_2 P\ 0; \quad (1)$$

$$I_i(P_i) = w_1 I\ (P\ ) + w_2 I'(P\ '); \quad (2)$$

where

$$w_1 + w_2 = 1$$

P and P' are the position of the corresponding points in the view 1 and the view 2, respectively. I (P) and I'(P') are the color of the corresponding points in view 1 and view 2 as well. P_i is the interpolated position and $I_i(P_i)$ is the interpolated color and w_1 and w_2 ($w_1 + w_2 = 1$) are weighting factors.

II. METHODS AND MATERIAL

Existing System

- In the golden days, the suppliers only serve the menu to the customer.
- But every often we asking the menu from the supplier are quit complex.

Drawbacks

- They need other help.
- There is no automatic system.
- Power consumption is high.

Proposed System:

- Here we introduce a new technology in restaurant for automatic digital menu transmission through mobile phone.
- Virtual reality technology is used to wide transmission of data without occurring of noise.

Advantages

- The system automatically provide the menu in indoor without any manual work.
- It reduces the complexity among to server and customer.

Figure 1: Image shown to table (Menu)

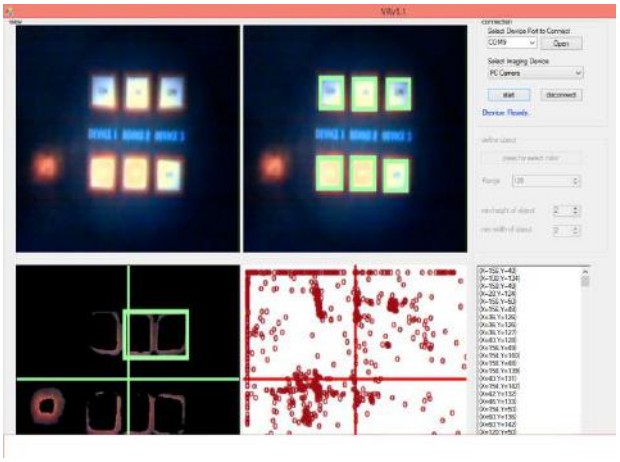

Figure 2: Process controlled on PC

Figure 3: Virtual Reality Device

III. RESULT AND DISCUSSION

As indicated above, the great benefit of using VR in research is its flexibility. Real worlds can be and artificial environments created from nothing. Moreover, the use of a VE can be repeated over and over again, so that an individual can be trained in an identical but repeated situation; of course difficulty can be titrated to provide a progressive learning experience. Each individually matched to an active participant but observing the screen and thus watching exactly the same spatial displacements as made by the active participant, but without controlling the interface. Doing such a thing in reality is possible but it is difficult.

VR is clearly a unique medium, and paradoxical insofar as it is essentially passive (since participants are typically seated and view a screen or head immersion screens in a helmet) but it is active in that it engages the participant in self-initiated displacements so that they make active decisions about where to go and what to see and do, just as when they are walking about or driving car autonomously. Activity versus passivity (in both reality and in VR) has attracted a great deal of research attention. The general assumption was always that active

exploration would always produce better spatial learning, and some found evidence for that. However the results were always mixed and controversial. What appeared to have escaped their notice is that use of VEs – particularly desktop VEs -always involves some kind of abnormal participant activity such as moving a mouse or joystick or pressing keyboard keys.

APPLICATIONS

- It is used for hotel management to save the time for waiter and customer.
- It can be used in medical studies to enable students to know the human body structure.
- It can be used in scientific research laboratories so that scientist can easily research on a specific topic.

IV. FUTURE ENHANCEMENT

There are many future applications of VEs are dependent upon our better understanding of the way in which the brain processes information from VEs compared to reality. Also, VR may have been held back in the past by the fact that no universal software has been available. In the 1980s and 90's, easy-to-use packages such as Supers cape, easily programmable with draw-down menus, were generally available at a low cost and with support from the company. Many universities adopted Supers cape for its VR research. However, Supers cape withdrew from the academic market, lured by Japanese and American applications in architecture and modelling.

V. CONCLUSION

VET has brought a range of benefits, and has great potential for future development. Although there are issues to be considered when using VEs, it can generally be concluded that information acquisition from VE simulations is reliable and authentic, equivalent to that gained from experience within real environments. Assuming that VE technology remains affordable, there are likely to be many important future applications, in situations where training in reality is dangerous, where real spatial environmental cues cannot be easily manipulated and varied, and where the augmentation of real experience is beneficial.

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Contrast Enhancement of Medical Images

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ABSTRACT

Contrast enhancement is very useful in medical image analysis that helps the physicians for disease diagnosis. The quality of medical images affects the analysis if the contrast of the images is poor. This paper presents method to enhance the contrast with improved CNR (contrast to noise ratio).
Keywords: Digital Image, Contrast, Medical Image, Enhancement.

I. INTRODUCTION

Image Processing is among rapidly growing technologies today, with its applications in various aspects of a business. Image processing is a method to convert an image into digital form and perform some operations on it, in order to get an enhanced image or to extract some useful information from it [1-2]. Image enhancement is one of the most interesting and visually appealing areas of image processing. The basic idea behind image processing techniques is to make details more obvious or to simply highlight certain features of interest in an image. A large number of image enhancement techniques exist for reducing image noise, highlighting edges, or displaying digital images. It is difficult to judge the effectiveness of these techniques due to various reasons such as the outcome depends on the exact application. An enhancement technique performing well in enhancing biomedical images may not be identically efficient in enhancing satellite images [1-3].

Contrast enhancement deals with improving the contrast in an image in order to make various features more easily perceived. Many contrast enhancement algorithms have been developed over the years, driven by different considerations. This paper presents a survey of contrast enhancement techniques for medical images to give a comparative overview along with the visual results of methods used for contrast enhancement of images [4-6]. Image enhancement includes intensity and contrast manipulation, noise reduction, edges sharpening and filtering, etc. Contrast Enhancement is focused on the problem of improving the contrast in an image to make various features more easily perceived. Contrast of an image is determined by its dynamic range, which is defined as the difference between lowest and highest intensity level [4-8].

II. METHODS AND MATERIAL

Literature Survey:

Wu et al. (2015) proposed a reversible data hiding method with contrast enhancement for medical images by excluding the corresponding histogram bins from being expanded for data hiding, the contrast of region of interest (ROI) in medical images can be selectively enhanced. The original image can be exactly recovered from the corresponding enhanced image by hiding the side information within it. The experimental results on a set of medical images show that the visibility of ROI can be improved. The method can achieve more contrast enhancement effects and better visual quality for medical images. Kim et al. (2013) suggested Medical Image Enhancement Algorithm Using Edge-Based Denoising and Adaptive Histogram Stretching to increase qualities of processing results. Wavelet transforms have shown promising results for localization in both time and frequency, and hence have been used for image processing applications including noise removal. The proposed adaptive nonlinear histogram stretching method is applied to increase the contrast of resultant image. Experimental results show that the

proposed algorithm can enhance a low contrast medical image while preserving edges effectively without blurring the details.

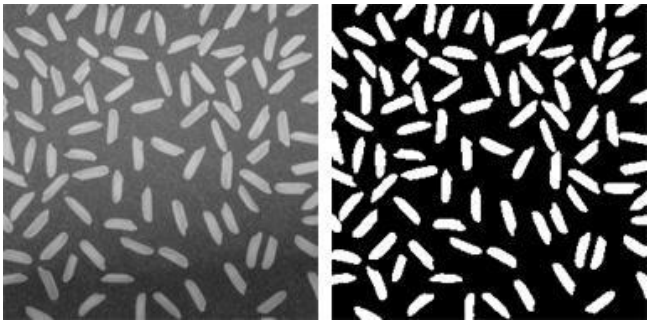
Chouhan et al. (2012) implemented Contrast Enhancement of Dark Images using Stochastic Resonance in Wavelet Domain In this paper, a dynamic stochastic resonance (DSR)-based technique in discrete wavelet transform (DWT) domain is presented for the enhancement of very dark grayscale and colored images. Jian Fan [10] established connections between dyadic wavelet enhancement algorithms and traditional un-sharp masking. This includes the systematic study of gain and threshold parameters for nonlinear enhancement. Flores [11] implemented Medical image noise reduction using partial differentiation method. An anisotropic scheme is used to iteratively reduce noise as well as to define image regions and enhance region contrast. The process is performed in three stages and the final values of the regions are automatically extracted from the image histogram, thus providing a fast method to obtain the most significant information in the image and a good approximation to region boundaries. This technique can be applied, not only to multiple region image segmentation, but also to certain processes of computer aided diagnosis which include several types of feature extraction. Majumder et al. [12-13] studied contrast sensitivity of the human eye shows that our contrast discrimination sensitivity follows the weber law for suprathreshold levels. The results generated by our method is superior to existing techniques showing none of the common artifacts of contrast enhancements like halos, hue shift, and intensity burn-outs.

Kamra (2015) implemented Contrast Enhancement of Masses in Mammograms Using Multiscale Morphology which is widely used technique for breast cancer screening. The proposed method is compared with other state of the art techniques. The experimental results show that the proposed method is better both qualitatively and quantitatively than the other standard contrast enhancement techniques. Godwin et al. (2014) presented a survey on Contrast Enhancement Techniques for Medical X-Ray Images to Highlight the Abnormalities. A detailed literature survey on the various techniques used in spatial, frequency and spectral domains for contrast enhancement is presented. Hanan (2011) showed improvement of Diagnostic Viewing of Medical Images using Enhancement Algorithms. The raw data obtained straight from devices of medical acquisition may afford a comparatively poor image quality representation and may destroy by several types of noises. Image Enhancement (IE) and denoising algorithms for executing the requirements of digital medical image enhancement is introduced.

Junhwan [17] suggested that medical imaging often involves the injection of contrast agents and the subsequent analysis of tissue enhancement patterns. Many important types of tissue have characteristic enhancement patterns; for example, in magnetic resonance (MR) mammography, malignancies exhibit a characteristic “wash out” temporal pattern, while in MR angiography, arteries, veins and parenchyma each have their own distinctive temporal signature. Ritika et al. (2013) opined that Image enhancement is one of the most interesting and visually appealing areas of image processing. It involves operations such as enhancing contrast, reducing noise for improving the quality of the image. This paper presents an analysis of the mathematical morphological approach with comparison to various other state-of-art techniques for addressing the problems of low contrast in images. Histogram equalization (HE) is one of the common methods used for improving contrast in digital images. This method is simple and effective for global contrast enhancement of images but it suffers from some drawbacks.

Contrast Enhancement:

Image enhancement is the process of adjusting digital images so that the results are more suitable for display or further image analysis. An example of image enhancement is shown in Fig. 1.



(a) original image (b) enhanced image

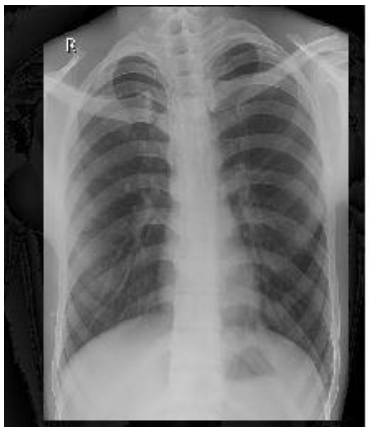
Figure 1. An example of image enhancement.

III. RESULT AND DISCUSSION

Contrast enhancement is achieved using following steps:

- Step 1: Load Images
- Step 2: Resize Images
- Step 3: Enhance Grayscale Images
- Step 4: Enhance Color Images
- Step 5: Assess the performance

A medical image x-ray was enhanced by using contrast enhancement and result is shown in Fig. 2.



(a) Original Image

(b) Enhanced Image

Figure 2. Result ofcontrast enhancement for an x-ray image (a) original (b) enhanced image.

CNR was evaluated for 10 images which can be seen in Table 1. The postive values indicate the improvement in contrast of the images.

Table 1 : CNR for the medical images.

Image	x-ray1	x-ray2	x-ray3	x-ray4	x-ray5	x-ray6	x-ray7	x-ray8	x-ray9	x-ray10
CNR	1.167	0.982	1.002	1.234	0.579	1.059	0.978	0.998	0.588	0.919

IV. CONCLUSION

The contrast of medical images could be improved by using standard intensity based transforms. It has been observed that the CNR was improved.

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Peroxidase Isoenzyme Profiles as Indicators of Sensitivity in SO_2-fumigated Crop Plants

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ABSTRACT

A study was made on the isoenzyme patterns of the anti-oxidative enzyme peroxidase in three crop species viz., *Solanum esculentum* (tomato), *Vigna radiata* (mung bean) and *Zea mays* (maize) exposed to low levels of SO_2. Exposure to the phytotoxicant gas resulted in alteration in isozyme profiles. The intensity and number of Peroxidase (POD) bands increased in *S. esculentum* and *V. radiata*. Changes in isoperoxide zymograms are indicative of enhanced peroxidation processs in response to pollutant-stress. This method also underlines the value of Polyacrylamide Gel Electrophoresis (PAGE) in sensitivity screening of degrees of SO_2- tolerance, prior to the manifestation of visible injury symptoms.

Keywords: Mung bean, tomato, maize, electrophoresis, peroxidases, isozyme profiles, SO_2 -tolerance

I. INTRODUCTION

SO_2 is a major phytotoxicant and is known to induce a variety of detrimental physiological and biochemical changes inside plants, long before the appearance of visible-injury symptoms (1-4). One of the most notable effects of SO_2, along with other pollutants like NO_x and O_3, is the excessive generation of free radicals, which in turn induces acute oxidative stress. The ROS (Reactive Oxygen Species) like H_2O_2, $OH^{\cdot}$ and $^{\cdot}O_2^-$ cause serious damage to the cell constituents (see 5). Plants possess various enzymatic as well as non-enzymatic detoxification mechanisms to counter SO_2 –induced biochemical alterations. Among the enzymatic protectors, superoxide dismutases (SOD) and peroxidases (POD) are the most notable ones functioning against oxidative stress (see 6-8). Ascorbic acid also constitutes the first line of defense against SO_2 induced stress (9). In our earlier communication, activity of peroxidases as an indicator of SO_2 –tolerance has been reported (8). Higher peroxidase activities in all the three plant species investigated may be interpreted as an indication of the participation of these enzymes as effective scavengers of toxic ROS (7-11). Studies on a variety of higher and lower plants suggest that peroxidases may serve as a good indicator of the distribution of gaseous pollutants in the vicinity of large metropolitan cities with a higher level of SO_2, HF and O_3 (7,10-19).

Peroxidases are known to exist in multiple molecular forms (20).The multiple gene loci and their dependent isoforms may well provide means for adaptation of metabolic patterns to the changing needs of different tissues and organs in the course of normal development,in response to environmental alterations(see 21-23).In the present study , various isozymes of peroxidases were investigated . The electrophoretic pattern of peroxidase isoenzymes in SO_2 –fumigated plants provides additional useful information to detect biochemical alterations caused by this phytotoxicant, thereby helping in screening of SO_2 sensitivity.

II. METHODS AND MATERIAL

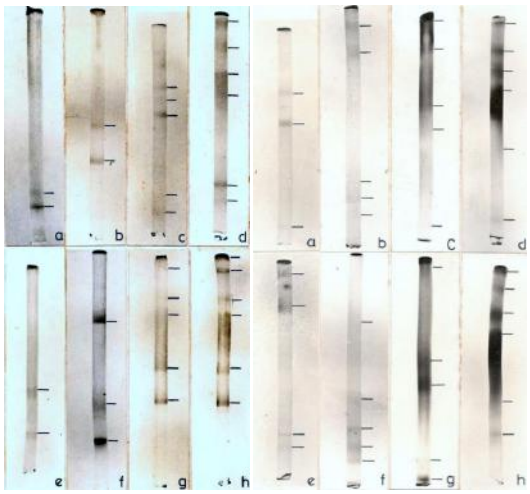
Three economically important cultivated plant species viz., *Vigna radiata* (L.) Wilczek [Mung bean],*Solanum esculentum*(= *Lycopersicon esculentum* Mill.) [Tomato], and *Zea mays* L. [Maize] were grown from seeds in the nursery. Fifteen-day-old seedlings of these plants were subjected to different SO_2 treatments through an artificial fumigation system. Sulfur dioxide was generated from an aqueous solution of $Na_2S_2O_5$ and

circulated over the plants kept in specially designed closed-top fumigation chambers (1 x 1 x1m= $1m^3$) at temperatures ranging between 25-29^{0}C ± 1^{0}C and at a RH of 60 ± 5%. Two 200W metal halide lamps were used for illumination with a light/dark cycle of 12/12 h.

A. Treatment Protocols of SO_2

Artificial fumigations were carried out according to the following protocols: **T-1** = 0.05 ppm (134.0µg m^{-3} SO_2) [x 4h], **T-2** = 0.1 ppm (268.0 µg m^{-3} SO_2) [x 2h] and **T-3** = 0.2 ppm(536.0 µg m^{-3} SO_2) [x 1h] for 60 days, thus keeping the SO_2 dose constant. *V. radiata* was fumigated for only 45 days. Controls (**C**) were maintained simultaneously by exposing the plants to air alone.

B. Extraction and Determination of Peroxidase Activity



1 2

Figures 1-2. Peroxidase Isozyme Profiles in SO_2-fumigated *S.esculentum*

Peroxidases (POD: EC 1.11. 1. 7) were extracted and their activity was determined by the method outlined by Gasper et al.(22). The entire methodology is detailed in our earlier communication (7).

C. Separation of POD Isozymes

Isoforms of peroxidases were separated using polyacrylamide gel electrophoresis (PAGE) technique according to the procedure outlined by Davis (24). Tris-glycine buffer (pH 8.3) was used as a running buffer. After electrophoresis the isozymes were visualized by the method suggested by Mitra et al.(25). The gels were first immersed in 2.4x 10^{-4}M benzidine containing 7x10^{-3}M (v/v) acetic acid solution for 15 minutes in dark. Thereafter, the gels were transferred to 3x10^{-2}M H_2O_2 solution maintained in dark for another 5 min. Intense blue isozyme bands appeared which later turned brown. Gels were immediately washed and stored in 7% acetic acid at 25^{0}C. The gels were later photographed.

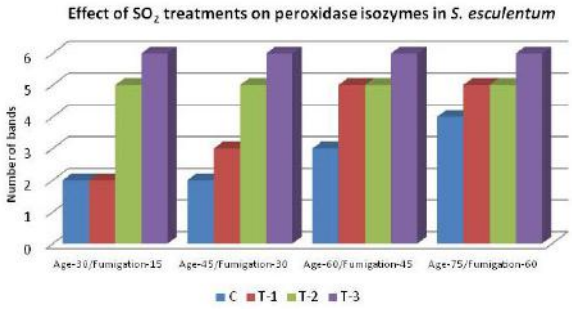
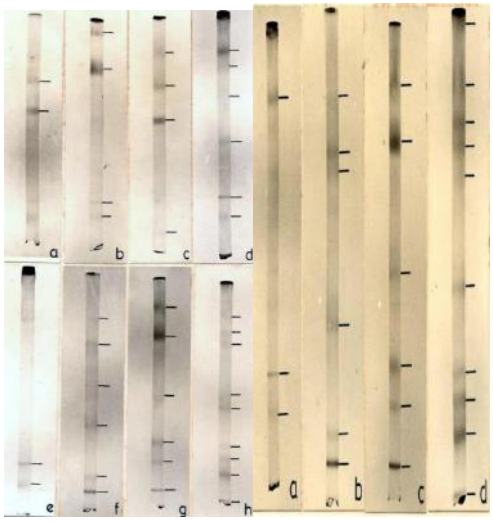


Table 1. Effect of SO_2 treatments on peroxidase isozymes



3 4

Figures 3-4. Peroxidase Isozyme Profiles in SO_2-fumigated *V.radiata*

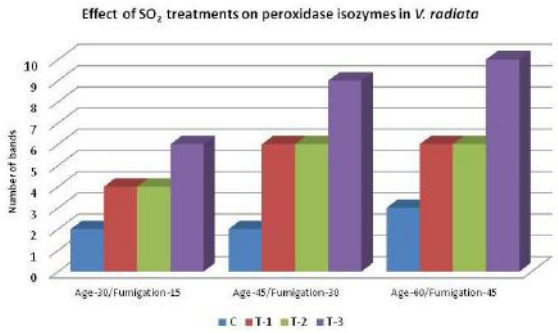
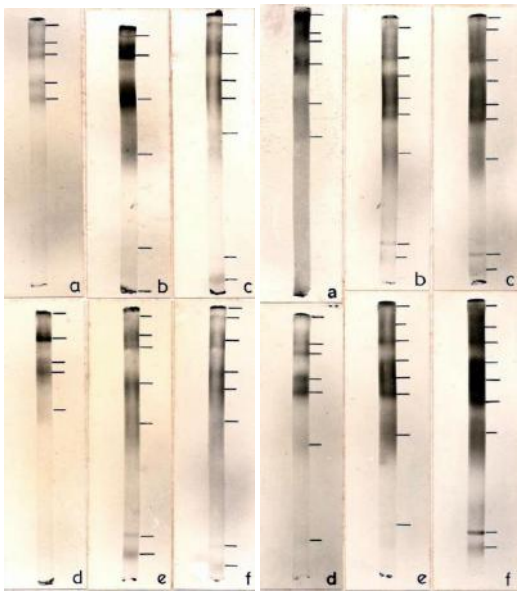


Table 2. Effect of SO_2 treatments on peroxidase isozymes



5 6

Figures 5-6. Peroxidase Isozyme Profiles in SO_2-fumigated *Z.mays*

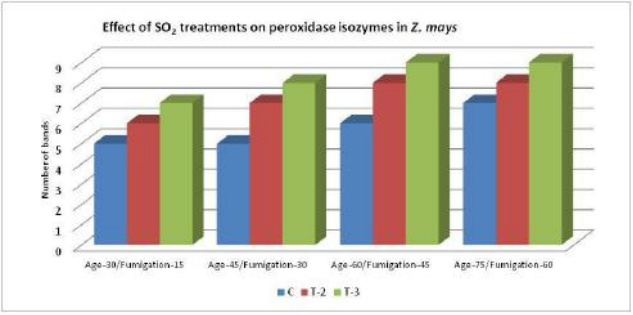


Table 3. Effect of SO_2 treatments on peroxidase isozymes

III. OBSERVATIONS

Number, intensity and width of isozyme bands were taken as a measure of peroxidase activity. Control plants of *S.esculentum* exhibited two isozyme bands till they were 45-day old (Figs 1a, 1e). Thereafter, the number of isobands increased to 3 and 4 in 60 and 75-day old plants respectively(Table 1;Figs 2 a, 2e).All the three SO_2 treatments resulted in change in isozyme profiles of peroxidases. In T-1 the number of isozyme bands increased to three only after 30 days of SO_2 fumigation (Fig 1f),and increased further to 5 bands each after 45 and 60 days of fumigation respectively (Figs 2b, 2f). In treatment T-2, there was a progressive change in isoperoxide zymogram showing 5 bands in all plants following 15, 30, 45and 60 days of SO_2 - fumigation respectively (Table 1; Figs 1c,1g,2c , 2g). The number of isozyme bands increased to 6 progressively increasing periods of SO_2 - fumigation (Figs 1d,1h ,2d, 2h).In addition to increase in number, there was also an increment in width and relative intensity of bands.

In *V.radiata*, two multiple forms of peroxidases were observed in 30 – 45 day control plants (Table 2; Figs 3a, 3e). There was an additional band in 60-day old plants (Fig 4a). All three SO_2 – treatments in T-1 showed an increase in the number of isoperoxidase forms. The number of multiple forms after 15 days of SO_2 – fumigation was 4 (Fig 3b) and this increased to 6 after 30-45 days of SO_2 - treatment respectively (Figs 3f , 4b).A similar pattern of the number of bands(6) was seen after 30 and 45 days of SO_2 – fumigation in T-2 (Figs 3g , 4c).There was, however, a progressive increase in the number of multiple forms of peroxidases in T-3. Peroxidase isoenzyme profile showed 6, 9 and 10 isobands after 15,30 and 45 days of SO_2 - fumigation respectively (Figs 3d,3h, 4d).

Thirty-day old control plants of *Z.mays* had 5 isoperoxide bands(Table 3; Fig 5a), which also remained the same in 45-day old plants (Fig 5d) and increased to 6 and 7 in 60 and 75-day plants respectively (Figs 6a and 6d).Not much significant change in isoperoxide zymogram occurred in plants after treatments T-2 and T-3. Whereas the number of bands increased from an initial 5 to 6, 7 and 8 after 15, 30 and 45 days of fumigation respectively (Figs 5b,5e and 6b).No new isozymic form was induced after 60 days as the number of bands remained at 8 (Fig. 6e).Number of isoforms increased to 7 after 15 days of SO_2 – fumigation in T-3 (Fig. 5c). Eight anionic bands were observed after 30 days (Fig.5f) and the number of bands after 45 and 60 days of SO_2 – fumigation was 9 (Table 3; Figs 6c , 6f).

IV. DISCUSSION

Peroxidases are known to catalyse the H_2O_2-dependent oxidation of a number of substrates, and exist in a number of multiple molecular forms (20, 26). SO_2-induced changes in POD may also be reflected as alterations in the activities of specific isozymes. The distribution and characteristics of these isoforms, which are not under genetic control, may be indicative of the needs of the developing tissue under SO_2 –stress. Since genetic variability increases with age, so does the pattern of scavenger enzymes like SOD and POD.

In the present investigations, those plants having few isozymic forms developed entirely different band patterns which could be well designated as induced isozymes. In *S. esculentum*, the control plants of all ages (viz., 40, 45, 60 and 75 days) exhibited only 2,3 and 4 isozyme bands respectively as compared to the SO_2-fumigated plants, which showed additional isoforms for the same respective ages. This alteration in isozyme profile can be ascribed to the *de novo* synthesis of POD as anionic bands 5 and 6, which never appeared in the control plants during their entire life span. In the relatively SO_2-tolerant species *V. radiata* and *Z. mays*, SO_2 perhaps does not act as an inducer of new isozymes as similar Rf values were located in comparatively older control plants. It is therefore, apparent that SO_2-stress simply advanced the appearance of those isozymes which were yet to appear in the control plants. Resistance to SO_2 is thus a function of the number of isoenzymes of POD *ab initio*. A similar trend is also observed for SOD (see 6). More isozymic forms would mean greater resistance, as is clearly documented in *Z.mays*. Number of POD isozymes is 5-6 and 7 respectively in control plants of progressively increasing ages. This number remained fairly constant throughout the life span. Consequently maize is able to resist SO_2-stress more successfully. Biochemical studies on peroxidases corroborate this viewpoint (7).Similar pattern of SO_2-induced POD isozyme profile has been reported in *Vigna sinensis* and *Capsicum* (27), in pollen of *Argemone mexicana* (16), and also in sunflower cotyledons exposed to UV-B radiations (20), as well as in low level O_3- exposed bean leaves (28).

V. CONCLUSION

Electrophoretic patterns of POD isozymograms are a useful diagnostic tool for detecting certain biochemical alterations occurring in a plant in response to air pollutants, thereby assisting in their usage as reliable biochemical markers of stress tolerance.

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An Experimental Investigation on Lime Waste Water by Partial Replacement of Natural Water in Cement Concrete MIX

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ABSTRACT

The rapid growth in development of construction industry is leading to an increase in utilization of lime waste water due to which there has been a much scarcity in availability for construction. This overuse should be balanced by introducing certain abundantly available other natural materials which can be replaced to the waste water. The waste water seems to have same certain properties and can be used as a constituent of normal water. This can reduce the water and various ecological imbalances. The fast growth in industrialization has resulted in tones and tones of by product or waste material, which can be fly ash, crushed stone dust, silica fume, and granulated blast furnace slag, steel slag etc. By using this waste water strength will enhance the properties of concrete in fresh and hydrated states. The granite waste water is usually dumped from the sump and attracts major environmental concern. In the present work a series of tests were carried out to make comparative studies of various mechanical properties of concrete mixes prepared by using waste water .If some of the materials are found suitable in concrete making, cost of construction can be cut down .so in present study, an attempt has been made to assess the suitability waste water in concrete mixing. Cubes and beams were cast and tested for compressive strength and flexural strength. Waste water used for this project after 7 days and 28 days. The waste water is replaced in percentages of 0%, 25%, 50%, 75%, and 100%.

Keywords: Aggregate, Lime Waste Water, Compressive Strength, Split Tensile Strength

I. INTRODUCTION

Lime is a remarkable and versatile material. It has a long tradition of use in construction, agriculture, water and waste treatment. More recently, lime has been used in numerous manufacturing and processing industries, most notably papermaking, sugar processing, steel production and the manufacture of calcium silicate bricks. This document is an introduction to lime, how it is produced, and what raw materials are required. It lays emphasis on particular lime utilization in the construction industry and the contribution it can make towards low-cost building materials. Limewater is the common name for a diluted solution of calcium hydroxide. Calcium hydroxide, $Ca(OH)_2$, is sparsely soluble in water (1.5 g/L at 25 °C). Pure limewater is clear and colour less, with a slight earthy smell and an alkaline bitter taste of calcium hydroxide. The term lime refers to the alkaline mineral, and is unrelated to the acidic fruit. Limewater is prepared by stirring calcium hydroxide in pure water, and filtering off the excess undissolved $Ca(OH)_2$. When excess calcium hydroxide is added to limewater, a suspension of calcium hydroxide particles results, giving it a milky aspect, in which case it has the common name of milk of lime. Milk of lime or a saturated solution of lime (limewater) has a ph of 12.3. It is basic in nature.

II. METHODS AND MATERIAL

2. PROBLEM STATEMENT

Now–a-days, the use of normal water for concrete production has increased rapidly due to increase in number of construction industries. The increase in rate of production of concrete leads to increase in demand

for raw materials which in turn leads to price hike of raw materials. Also this demand may be due to scarcity in availability of raw materials mostly the natural water. This problem of importing normal water from other places at a higher price has brought the idea of using the locally available natural material in the place of this normal water. Lime waste-water is abundantly available at the lime shores. By this way much of the economy of construction could be saved. So, by using lime waste water from the lime waste factory as normal water replacement in preparation of concrete will save our earth for a sustainable environment. It also helps to save much of our normal water from being deployed for construction.

3. AIM AND OBJECTIVE

The objectives of this study are:

1. To determine the performance of using lime waste water as a water in concrete.
2. To determine the most economic material that can be suitably replaced for construction.
3. To fulfil safe environment by using waste materials.
4. To investigate the basic properties such as Flexural Strength, Compressive strength of lime waste water replaced concrete in comparison with Normal water sand used concrete.

4. SCOPE OF THE STUDY

The scope of the study will be focused on the performance of concrete using lime waste water as a partial replacement with 20mm nominal maximum aggregate size. In this study the lime waste water is collected from Markapuram, markapuram Mandal, Prakasham district, Andhra Pradesh, India. The sample was taken on the lime waste factory.

5. MIX DESIGN

Mix design can be defined as the process of selecting suitable ingredients of concrete and determining their relative propositions with the object of producing concrete of certain minimum strength and durability as economically as possible. The mix design is based on as IS: 10262-2009.

Table - 1: Shows Mix Design for M30 grade

Water	Cement	Fine aggregate	Coarse aggregate
177.44	412.65	665	1085
0.43	1	1.61	2.62

6. TEST ON MATERIALS

6.1 Cement

OPC 53 Grade of Cement Maha cement was used in this study. The following physical test should be conduct in the laboratory as per IS codes.

Table – 2: Physical Test results of cement

Sl. no.	Physical Tests	Obtained results	Requirements as per IS CODES
1	Fineness	3%	Not >10% as per IS 4031 part 1
2	Standard Consistency	32%	IS 4031 part 4
3	Initial Setting time	42min	Not less than 30 minutes as per IS 4031 part 5
4	Final setting time	265 min	Not more than 600 minutes as per IS 4031 part 5
5	Soundness	2 mm	Not>10mm as per IS 4031 part 3
6	Specific gravity	3.10	IS 2720 part 3

6.2 Aggregates

The aggregate used in this study was clean river sand and crushed stone aggregate collected from near Kurnool.

Table – 3: Physical Test of aggregates

Sl. No	Physical Tests	Obtained results	Requirements as per IS 383
1	Impact Test	19.74%	Not more than 45%
2	Los Angeles Abrasion Test	9.89%	Not more than 50%
3	Specific gravity		
	a) Coarse Aggregate	2.5	2.6-2.9
	b) Fine Aggregate	2.5	2.6-2.8
4	Water absorption		Not>2%as per IS:2386-Part 3
	a) Coarse Aggregate	0.6%	
	b) Fine Aggregate	0.3%	

7. TESTS ON CONCRETE

7.1 Slump Test

Table – 4: Shows the slump values of lime waste water used concrete

SL NO	Percentage addition of lime waste water to concrete	Slump Values in mm.
1	0%	103
2	25%	98
3	50%	95
4	75%	93
5	100%	90

7.2 Compaction Factor Test

Table – 4: Shows the Compaction factor values of lime waste water used concrete

SL NO	Percentage addition of lime waste water to concrete	Slump Values in mm.
1	0%	0.98
2	25%	0.96
3	50%	0.93
4	75%	0.90
5	100%	0.88

III. RESULTS AND DISUSSIONS

All specimens will be moist cured for one day and after moist curing the specimens will be water cured for required days. Traditional curing the cubes molded with the cement concrete is subjected to curing in the water Tank and then checks the strengths at the age of 7 days and 28 days.

Table – 4: Shows the Compression and Flexural strengths of lime waste water used concrete cubes and beams

% lime waste added to concrete	Compressive strength (MPa) Age in days		Flexural Strength (MPa) Age in days	
	7	28	7	28
0%	34.67	43.02	4.1	4.4
25%	35.63	43.79	4.2	4.5
50%	40.43	44.61	4.4	4.7
75%	42.18	46.76	4.7	4.9
100%	43.53	48.95	4.9	5

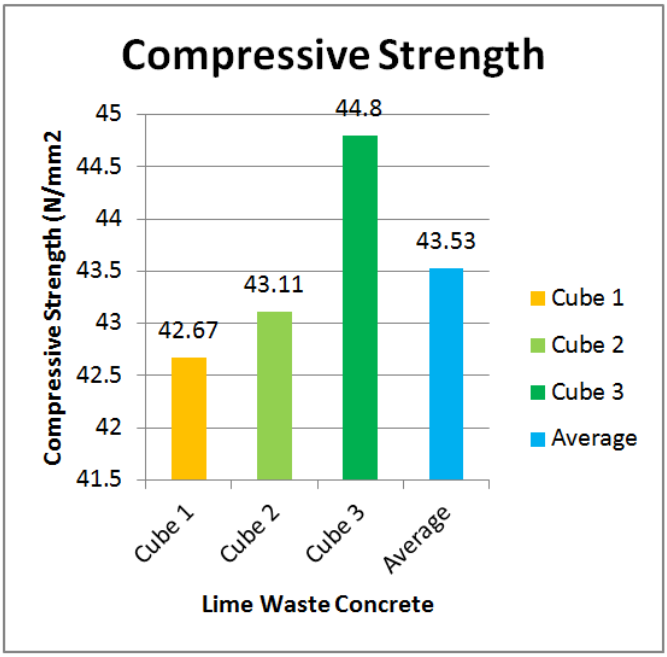

Chart-1

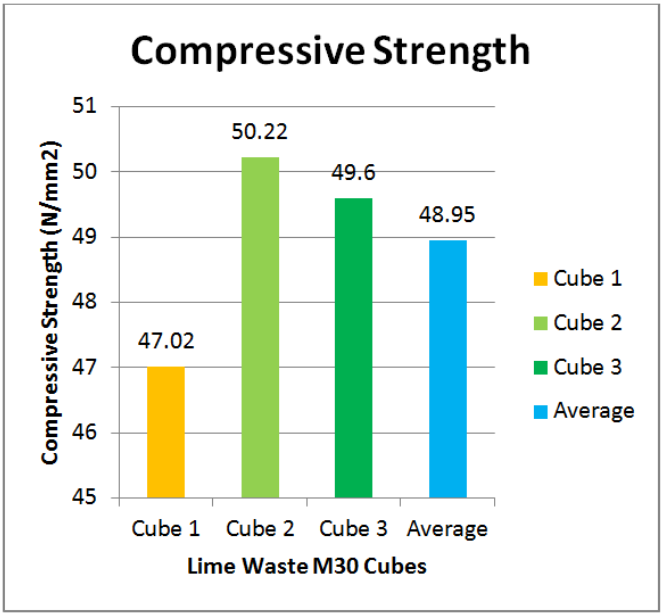

Chart-2

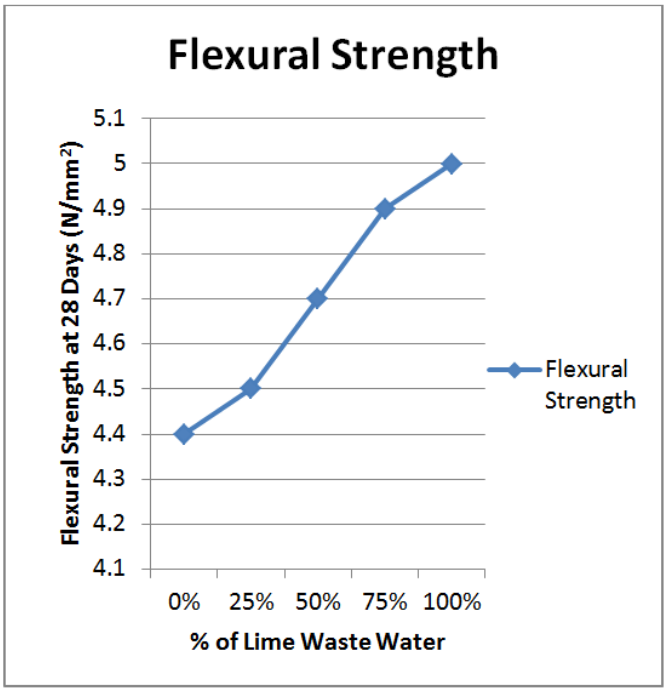

Chart-3

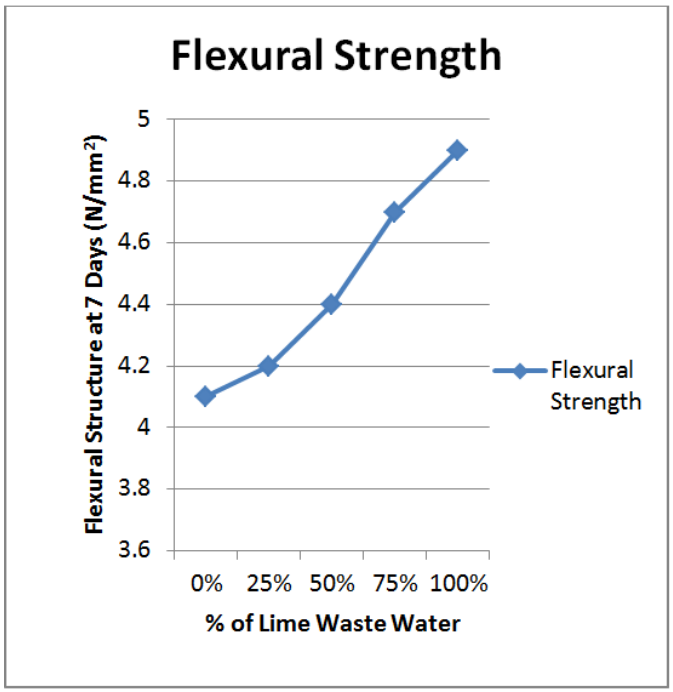

Chart-4

Figure 1. Compressive strength and flexural strength as afunction of %lime waste-water

IV. CONCLUSION

1) The compressive strength, flexural strength and split tensile strength of lime waste concrete is increases more than the normal concrete at any percentage.
2) The 7 days cube compressive strength of lime waste water mixes increased up to 25.56% of 100% addition of lime waste water.
3) The 28 days cube compressive strength of lime waste water mixes increased up to 13.78% of 100% addition of lime waste water.
4) The 7 days flexural strength increased up to 19.51% of 100% addition of lime waste water.
5) The 28 days flexural strength increased up to 13.64% of 100% addition of lime waste water.
6) The 7 days split tensile strength increased up to 41.15% of 100% addition of lime waste water.
7) The 28 days split tensile strength increased up to 39.06% of 100% addition of lime waste water.
8) The degree of workability was optimum at 100% addition of lime waste water.
9) If we use this waste in concrete cost of the project can be reduced to some extent.
10) By using the waste as filler in concrete or replacement in cement will reduce environmental pollution.

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Nature-Friendly Green Earth and Environment Protection

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ABSTRACT

Present paper describes about green earth. For future thinking about green earth is that reducing pollution and waste, saving energy, avoid misusing of energy, saving water, using renewable energy, conservation of future energy, recycling ideas etc. After all if we move green it will give our globe clean.

Keywords: Clean, green earth, pollution, renewable energy, waste.

I. INTRODUCTION

Environment-friendly, eco-friendly, nature-friendly, and green are marketing terms referring to goods and services, laws, guidelines and policies that inflict reduced, minimal, or no harm upon ecosystems or the environment[1]. Companies use these ambiguous terms to promote goods and services, sometimes with additional, more specific certifications, such as ecolabels. Their overuse can be referred to as greenwashing [2],[3],[4]. The International Organisation for Standardisation has developed ISO 14020 and ISO 14024 to establish principles and procedures for environmental labels and declarations that certifiers and eco-labelers should follow. In particular, these standards relate to the avoidance of financial conflicts of interest, the use of sound scientific methods and accepted test procedures, and openness and transparency in the setting of standards [5].

II. METHODS AND MATERIAL

Some ideas about green earth:

1. Less pollution is the best solution

Eco-friendly cars run on electricity or a combination of electricity and hydrogen-based fuel. Both represent low cost methods of transportation while also reducing the amount of driver's carbon footprint on the earth. In addition, environmentally friendly cars are constantly being enhanced and redesigned with even more emphasis on reducing pollution and waste also.

2. Litter the wastes to make a big difference

We have a responsibility to do our bit towards saving the environment and recycling is one of the easiest and most effective ways of doing this. Recycling can have a tremendous benefits that can help in saving the environment, it reduces waste, saves energy, conserves resources and can also reduce pollution to preserve the environmental condition that will tackle climate change.

3. Save energy today to survive tomorrow

Going green at home can also mean being conscientious about not wasting tap water, and turning off lights when they are not necessary. All of these little things can really add up in one's pursuit to save the world; if enough people begin going green, the planet will surely stand a far better chance. Living a green lifestyle or going green that can begin in small, easy to manage ways.

4. Energy misused can't be excused

Green energy is energy that can be extracted, generated and consumed without any significant negative impact on the environment. Green power is a subset of renewable energy and represents those renewable energy

resources and technologies that provide the highest environmental benefit. Green power is electricity produced from solar, wind, geothermal, biogas, low-impact small hydroelectric sources etc.

5. Saving water can save the world

Around 73% of all the green energy is estimated to come from the power of water, also known as hydropower. Flowing water has mechanical energy, and when water is forced through penstock for turning a generator it helps in producing electricity. Tidal energy and wave energy are other forms of green power produced through water. Research is still underway to harness energy from the motion of the ocean.

6. Direct way of using renewable energy

A direct way of using renewable energy is to install renewable energy generating equipment like solar panels or small wind turbines. These systems can be cost effective, particularly in rural areas where the only alternative is extending long electric distribution lines to serve the house or another small load. Solar water heaters can provide 50-80% of the hot water needs for typical homes.

7. Turn-off lights to keep the future bright

Saving energy means decreasing the amount of energy used while achieving a similar outcome of end use. Using less energy has lots of benefit i. e. we can save money and help the environment. Generating energy requires precious resources, for instance coal, oil or gas. Therefore using less energy helps us to preserve these resources and make them last longer in the future.

8. Practice conservation for future energy

Green energy is generated from alternative energy sources that get powered by various natural events and cannot get depleted with use. The three main sources of Green Energy are water, wind and solar energy that can limit the dependence on fossil fuels dramatically. Falling water has been in use to power dams so as to produce electricity. Even though dams generate clean energy, they leave a negative impact on the eco-systems surrounding the area.

9. Life depends on energy, so conserve it.

Green energy models are completely in demand and supply systems based upon renewable energy unlike energy produced from fossil fuels and nuclear energy. Green energy models consist of both supply and demand. Green energy systems consist of both the technologies that carry out the conservation of energy from one form to another and storage technologies that save energy from hour to hour.

10. Recycle today for a better tomorrow

Recycling is a huge, obvious part of helping to save the world through green living. Reducing one's reliance on oil-based energy sources is another popular method employed in trying to save the world. Purchasing only all organic, chemical free products is another way that many people begin going green, and is considered a very effective method at trying to save the world and all of its resources. Green living is infiltrating to all parts of daily life, and the planet is sure to be better for it.

11. Move forward to a fossil free future

Wind power is harnessed using wind mills where the movements are transformed into electricity. The energy produced by wind mills is both renewable and clean. Solar energy is generated by using solar panels that transform the sun's light into electricity that can be used to power homes, industries, vehicles and can be used for other purposes.

12. Move green to make our globe clean

All of us would love to live in a green planet. The only requirement is to generate the awareness about the urgency of free plantations for increasing plant cover on earth. It is also required to make the people aware of the fact that every inch of the available land should be used for plantation. So the loss of forest cover by deforestation can be recovered considerably. Useful and practical ideas must be provided to people, so that they may be able to plant trees in and around their localities.

III. RESULT AND DISCUSSION

For this purpose we think about the help of Green Chemistry.

The Green Chemistry program should lead to sustainability by designing and using the methods in which natural raw materials will be economically processed, rational usage of energy sources, elimination of hazardous gaseous, liquid and solid wastes and by introduction of safety products for man. The popularization of Green Chemistry in schools, among the workers at plants of chemical industry and distributors of chemical products is also very important. The broad usage of Green Chemistry achievements will enable us to balance eco-development profitable for society, economy and the environment.

The major uses of Green Chemistry are -

- Energy
- Global Change
- Resource Depletion
- Food Supply
- Toxics in the Environment

Energy

The vast majority of the energy generated in the world today is from non-renewable sources that damage the environment. e.g., Carbon dioxide, Depletion of Ozone layer, Effects of mining, drilling etc., Toxics.

Green Chemistry will be essential in developing the alternatives for energy generation (photovoltaics, hydrogen, fuel cells, bio-based fuels, etc.) as well as it continues the path toward energy efficiency with catalysis and product design at the forefront.

Global Change

Concerns for climate change, oceanic temperature, stratospheric chemistry and global distillation can be addressed through the development and implementation of Green Chemistry technologies.

Resource Depletion

Due to the over utilization of non-renewable resources, natural resources are being depleted at an unsustainable rate. For this fossil fuels are a central issue. Renewable resources can be made increasingly viable technologically and economically through Green Chemistry. e.g., Biomass, Nanoscience and technology, Solar, Carbon dioxide, Chitin, Waste utilization.

Food Supply

While current food levels are sufficient, distribution is inadequate. Agricultural methods are unsustainable. For this future food production intensity is needed. Green Chemistry can address many food supply issues.

Green Chemistry is developing:

Pesticides which only affect target organisms and degrade to innocuous by-products. Fertilizers and fertilizer adjuvants that are designed to minimize usage while maximizing effectiveness. Methods of using agricultural wastes for beneficial and profitable uses.

Toxics in Environment

Substances that are toxic to humans, the biosphere and all that sustains it, are currently still being released at a cost of life, health and sustainability. One of Green Chemistry's greatest strengths is the ability to design for reduced hazard.

Green Chemistry is not a solution to all environmental problems but the most fundamental approach to preventing pollution.

Furthermore, the success of green chemistry depends on the training and education of a new generation of chemists. Student at all levels have to be introduced to the philosophy and practice of Green Chemistry as well as Green earth.

IV. CONCLUSION

To make our earth green and clean we need necessary actions and steps. All is possible if our awareness goes through root level of the society. The only requirement is to generate the awareness about the urgency of free plantations for increasing plant cover on earth. It is also required to make the people aware of that every inch of the available land should be used for plantation. So the loss of forest cover by deforestation can be recovered considerably. Useful and practical ideas must be provided to people, so that they may be able to plant trees in and around their localities. After all if we move green it will give our globe clean and automatically our environment will be protected.

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Brain Controlled Robot for Indian Armed Force

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ABSTRACT

Currently border security that incorporates social, cultural, activity and structure aspects of interactions among border security forces, smugglers and therefore the population and represent integrated technology architectures created of mounted and mobile detector and police work networks. These tools give important capabilities that influence border security operations, planning, analysis and coaching. Sensors are being deployed to enhance border security generating monumental collections of knowledge and databases. Sadly, these sensors will reply to a range of stimuli, typically reacting to important events and typically triggered by random events that are thought of false alarms. The intent of this project is to supplement human intelligence in a very detector network framework which will assist in filtering and period of time higher cognitive process from the massive volume of knowledge generated. In our project, the projected system that has secured to the motherland by victimization ideas of Wireless Integrated Network Sensors, GPS pursuit and object and metal detection and tracking of vehicles with within the country. By Object identification system we will be ready to get the images of that exact space wherever the strangers has returned in addition, because the details of objects or folks that are gift there. And later the metal police work sensors and bomb noticed signals can detect the existence of explosives and weapons(metals) with them. Presently the Indian government is coming up with to-implement a similar technology for pursuit the vehicles with within the country that carry illegitimate commodities (like government issued sugar , rice to be distributed among lots however send to alternative states without legal permission). The vehicles that carry explosive materials for industrial functions are often half-tracked.

Keywords: Brain Controlled Robot, GPS, GSM, EMD, ICA, EOG, LSS

I. INTRODUCTION

Now a day's border security that incorporates social, cultural, behavioral and structure aspects of interactions among border security forces, smugglers and therefore the population and represent integrated technology architectures created from fastened and mobile device and police work networks. These tools give important capabilities that influence border security operations, planning, analysis and coaching. Sensors are being deployed to boost border security generating huge collections of information and databases. Sadly, these sensors will answer a spread of stimuli, typically reacting to meaning events and typically triggered by random events that are thought of false alarms. The intent of this project is to supplement human intelligence in an exceedingly device network framework which will assist in filtering and period deciding from the massive volume of information generated. In our project, projected system that has secured to the motherland by victimization ideas of Wireless Integrated Network Sensors, GPS chase and object and metal detection and tracking of vehicles with within the country. By Object identification system we will be able to get the images of that individual space wherever the strangers has returned in addition because the details of objects or those that are gift there. And later the metal detector sensors and bomb finding signals can detect the existence of explosives and weapons (metals) within them. Presently the Indian government is racing to implement this technology for chasing the vehicles with within the country that carry

illegal commodities (like government issued sugar , rice to be distributed among plenty however send to different states without legal permission). The vehicles that carry explosive materials for industrial functions will be caterpillar-tracked. An embedded system may be a special-purpose automatic data processing system designed to perform one or a number of dedicated functions, often with period computing constraints. The typically embedded as a part of an entire device together with hardware and mechanical parts. In distinction, a all-purpose PC, like a private PC, will do many various tasks relying on programming. Embedded systems became important nowadays as they management several of the common devices we tend to use. Since the embedded system is devoted to specific tasks, style engineers will optimize it, reducing the dimensions and value of the merchandise, or increasing the reliability and performance. Some embedded systems are factory-made, profiting from economies of scale. Physically, embedded systems vary from transportable devices like digital watches and MP3 players, to giant stationary installations like traffic lights, manufactory controllers, or the systems dominant atomic energy plants. Quality varies from low, with one microcontroller chip, to terribly high with multiple units, peripherals and networks mounted within an outsized chassis or enclosure.

II. METHODS AND MATERIAL

A. Existing System

In the existing system, Bomb detection automobile is enforced victimization wired communication and it's not used any GSM technology to transmit the message to a different person's. Ancient explosive detection systems square measures bulkier in size, expensive, and continuously need manual attention. as a result of its public visibility entrant will simply bypass the system victimization another route. Detector network consists of many kinds of autonomous sensors to coordinately monitor a specific activity. The system consists of a processor, a detector and wireless transceiver instrumentality. The system collects the detector knowledge, perform native process and transmit the desired info to the safety officers. It is not reliable to the activity. B. projected System A new watching and management capability for watching the borders of the country. Victimization this idea we are able to simply establish an alien or some terrorist getting into the border. It's terribly cheaper in comparison to different security systems like measuring system below use. It produces a less quantity of delay. Thus it is fairly quicker. On a world scale, WINS can allow watching of land, water, and air resources for environmental watching. On a national scale, transportation systems, and borders are monitored for potency, safety, and security. we are able to use the IR detector associate degrees PIR detection of the human within a border , transmittal the situation victimization GSM technology. Any biometric identification system consists of 4 primary modules; knowledge acquisition, pre-processing, feature extraction and classifier module. The enforced algorithms for these modules square measure delineated during this section.

Knowledge Acquisition

The neurosky mind wave device is employed for police investigation the EOG signals from the brain. The receiver consists of associate degree ear-clip and a detector arm as shown in Fig. 2(a). This receiver is truly used for recording EEG signals; but, it may be want to live EOG signals because the arm detector is resting on the forehead on top of the left eye (Fp1 position). The reference conductor is on the ear clip (A1 position). The detector of Neurosky receiver is formed of dry conductor that doesn't need any skin preparation or semiconducting pastes and is well moveable and simple to wear. So, it takes but ten seconds to wear the receiver and begin recording signals. Also, the receiver is wireless that makes it appropriate for sensible implementation of biometric identification systems.

B. Pre-Processing Stage

The pre-processing stage concerned EOG isolation from EEG signals and eye blinks extracted from the isolated EOG signal. the foremost vital techniques for EOG isolation from EEG square measure freelance part Analysis (ICA) and Empirical Mode Decomposition (EMD) . EMD was applied to isolation task. The raw EEG signal was rotten into Intrinsic Mode Functions (IMFs) victimization EMD. The neuro signals square measure extracted from the anode of the mind wave device and square measure amplified and sent to the electronic device.

C. **Feature Extraction Stage**

The goal of feature extraction is to seek out a metamorphosis that converts the first signal into a comparatively low dimensional feature house that's able to preserve the discriminative info of every subject. Four teams of options (G1, G2, G3, and G4) were extracted supported time delineation of the attention blinking undulation. The signals square measure extracted by the MATLAB code and square measure than sent to the wireless module.

III. RESULT AND DISCUSSION

A. Implementation

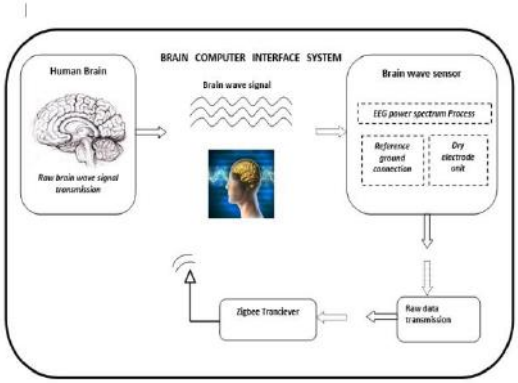

Figure 1. Brain wave sensor-Transmitter

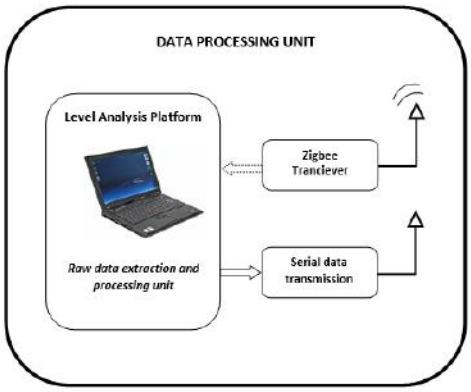

Figure 2. Brain wave sensor- Receiver

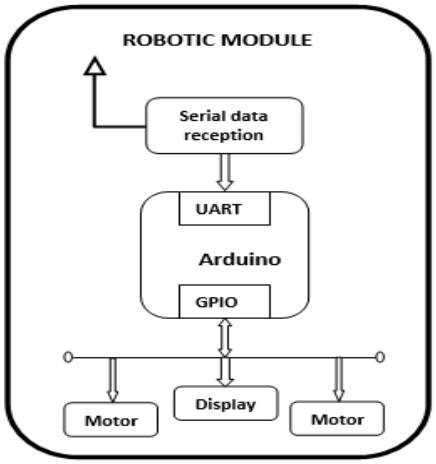

Figure 3. Robotic Module

Functional Description

Now a days border security that incorporates social, cultural, activity and structure aspects of interactions among border security forces, smugglers and also the population and represent integrated technology architectures created from fastened and mobile sensing element and police work networks. These tools offer vital capabilities that influence border security operations, planning, analysis and coaching. Sensors are being deployed to enhance border security generating huge collections of information and databases. Sadly, these sensors will answer a spread of stimuli, generally reacting to important events and generally triggered by random events that are thought of false alarms. The intent of this project is to supplement human intelligence in a very sensing element network framework which will assist in filtering and time period higher cognitive process from the massive volume of information generated. To control the automaton, graphical record and Eye-Blinking signals are required. Here this report describes graphical record and Eye-Blinking signals through a BCI interface. During this system we've got a bent to use, easy unipolar conductors to record graphical record signal from the forehead to construct a Brain-Computer Interface (BCI) primarily controls electrical automaton through Bluetooth for defense purpose. we've got got 2 signals like meditation and a spotlight. additionally, we have a tendency to conjointly extract the eye-blinking signals from BCI. Therefore, attention and eye-blinking signals are collected because the management signals through a Bluetooth interface and

so the electrically interface in automatically. The experimental results confirmed that this technique can supply a convenient manner to regulate the defense automaton. Depends upon brain wave signal from our brain, the automaton can operate. The emotional level of the signal is frequently observed and transmitted to the PC via electronic devices. Through frequency the signal is transmitted to the electronic device. The emotional level of the signal is modified by our activities. we've got to repair the direction of the automaton depends on the emotional level. NeuroSky Mind wave device forwards brain wave signals to the software system application. This data can then want to train a system. It will learn to acknowledge and therefore map totally different brain patterns in action and also the system can endlessly analyze the incoming brainwaves and map them into the acceptable actions. The signals from the brain are sent to the portable computer via an electronic device and are processed by the simulation software system and also the signals are then transferred to the automaton wirelessly via a Zigbee module. The signals are than received by the Zigbee receiver. The Arduino controller than processes the signal and also the individual action is meted out. the information received from the sensors(PIR, IR, BOMB detector) are taken severally by the Arduino and sent to the portable computer once more via the Zigbee module.

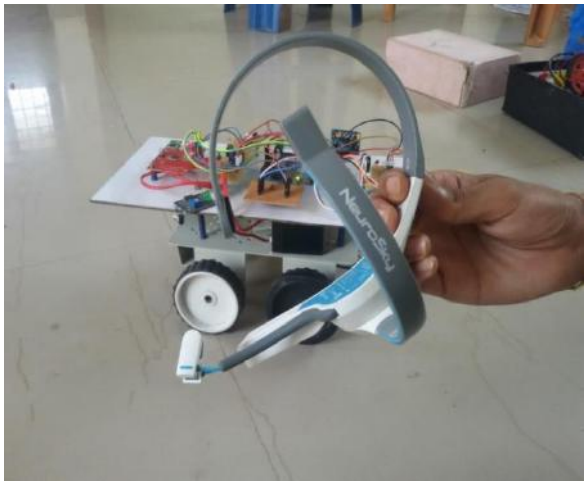

Figure 4. Brain wave device module

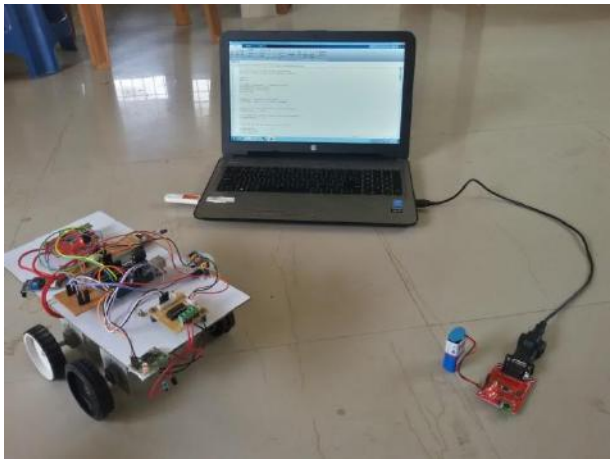

Figure 5. Complete assembled robot module

IV. RESULT AND DISCUSSION

The principle of operation is sort of easy. 2 dry sensors, square measure won't to find and filter the encephalogram signals. The device tip detects electrical signals from the forehead of the brain. At identical time, the device picks up close noise generated by human muscle, computers, light-weight bulbs, electrical sockets and alternative electrical devices. The second device, ear clip, may be a ground and reference, that permits suppose Gear chip to strain the electrical noise. The device measures the raw signal, power spectrum (alpha, beta, delta, gamma, theta), attention level, mediation level and blink detection. The raw encephalogram knowledge received at a rate of 512 Hertz. Alternative measured values square measure created each second. Therefore, raw encephalogram knowledge may be a main supply of data on encephalogram signals victimization Mind Wave MW001. Within the golem section we are able to browse the worth of raw encephalogram signal with the most frequency of 512 Hertz. Oftenest is ready on 512 Hertz, and that our management time delays in sampling. The worth of the signal and time square measure written to the array knowledge. The info that square measure keep in an array are compared to the edge points given by the user. During this project, the MATLAB section waits for 3 consecutive blinks so as to send the golem activation signal. Then supported the eye level worth golem Move Forward Command are send to the golem module through Zigbee transmission. Once 3 consecutive blinks, the program can scan for a left blink and right blink to show the golem right and left severally. The sensors gift within the golem i.e. PIR, IR and bomb detector

unendingly delivers the info to the Arduino. the info is then transmitted to the laptop computer via the Zigbee module. All the sensors work unendingly and transmits the info with none delay.

V. CONCLUSION

The brain-controlled mobile robots have a good deal of attention as a result of they'll facilitate bringing quality back to individuals with devastating fascicle disorders and therefore improve their quality of life. A comprehensive of the brain controlled mobile automaton, uses a brain wave device which may collect electroencephalogram based mostly brain signals of various frequencies and amplitude and it'll convert these signals into packets and transmit through Wireless medium into the amount splitter section to examine the eye level. Level splitter section (LSS) analyses the amount and provides the automaton movement for the one who is sitting within the wheel chair. the most important distinction between brain-controlled mobile robots and alternative brain-controlled devices is that these mobile robots need higher safety as a result of they're want to transport disabled individuals. The brain-controlled mobile robots are often applied in apply, together with finding ways in which to enhance the performance (especially robustness) of BCI systems, to enhance the driving performance given the constraints of the BCI system.

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Implementation of Domestic Type Solar and Wind Hybrid System for Rural Electrification

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ABSTRACT

The power demand in our country is increased so that there is a consistent power cut in our region. This is because of high power consumption by factories and also due to less availability of non-renewable energy resources. So it is a known fact that the application of hybrid energy system based rural remote area electrification will offer a quick, economic and reliable answer to the rural household's need for power especially, for those of light duty appliances. This Solar-wind energy system can considerably result in reducing 20-50% of our power requirement in our home. A renewable hybrid energy system consists of two or more energy sources, a power conditioning equipment, a controller and an optional energy storage system. These hybrid energy systems are becoming popular in remote area power generation applications due to advancements in renewable energy technologies and substantial rise in prices of petroleum products. In this research will combine photovoltaic and wind to make hybrid system. The wind energy systems may not be technically viable at all sites because of low wind speeds and being more unpredictable than solar energy. The combined utilization of these renewable energy sources are therefore becoming increasingly attractive and are being widely used as alternative of oil-produced energy.

Keywords: Hybrid Energy System, Renewable Energy, Power, PV and Wind

I. INTRODUCTION

1.1 Resource of Energy

The standard of living of the people of any country is considered to be proportional to the energy consumption by the people of that country. In one sense, the disparity one feels from country to country arises from the extent of accessible energy for the citizens of each country. Unfortunately, the world energy demands are mainly met by the fossil fuels today. The geographical non equi-distribution of this source and also the ability to acquire and also control the production and supply of this energy source have given rise to many issues and also the disparity in the standard of living.

The world energy consumption pattern is also increasing as shown in the Fig.1. The energy consumption has been increasing and it will triple in a period of 50 years by 2025. Data on fossil fuel consumption by fuel type. The fossil fuel use as energy source has many limitations. There are a number of pollutants that have been identified as coming out of the use of fossil fuels and they are serious health hazards.

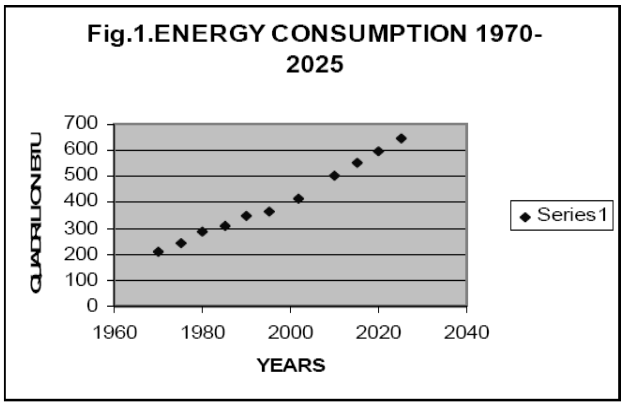


Figure 1. Energy consumption variation

1.2 Hybrid Energy System

Hybrid renewable energy systems (HRES) are becoming popular for remote area power generation applications due to advances in renewable energy technologies and subsequent rise in prices of petroleum products.
A hybrid energy system usually consists of two or more renewable energy sources used together to provide increased system efficiency as well as greater balance in energy supply.

Hybrid Wind-Solar System for the rural exchanges can make an ideal alternative in areas where wind velocity of 5-6 m/s is available. Solar-wind power generations are clear and non-polluting. Also they complement each other.
During the period of bright sunlight the solar energy is utilized for charging the batteries, creating enough energy reserve to be drawn during night, while the wind turbine produce most of the energy during monsoon when solar power generation is minimum.

Thus the hybrid combination uses the best of both means and can provide quality, stable power supply for sustainable development in rural areas.

These systems are specifically designed to draw 48 volts DC power output from the solar cells/ wind turbines and combine them to charge the storage batteries. The system does require availability of diesel generator, though for much reduced number of hour's operation.

II. METHODS AND MATERIAL

Block Diagram of Hybrid System

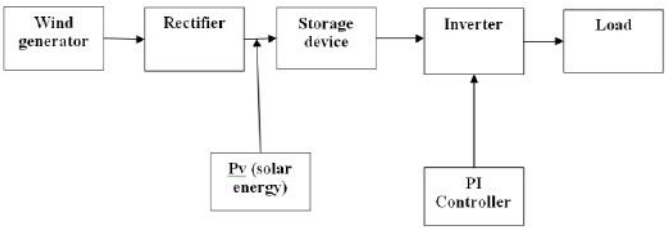


Figure 1. Block Diagram of Hybrid System

Working of Hybrid System

Hybrid systems are the ones that use more than one energy resources. Integration of systems (wind and solar) has more influence in terms of electric power production. Such systems are called as "hybrid systems".

Hybrid solar-wind applications are implemented in the field, where all-year energy is to be consumed without any chance for an interrupt. It is possible to have any combination of energy resources to supply the energy demand in the hybrid systems, such as solar and wind. This paper is similar with solar power panel and wind turbine power. Differently, it is only an add-on in the system. Photovoltaic solar panels and small wind turbines depend on climate and weather conditions. Therefore, neither solar nor wind power is sufficient alone. A number of renewable energy expert claims to have a satisfactory hybrid energy resource if both wind and solar power are integrated within a unique body.

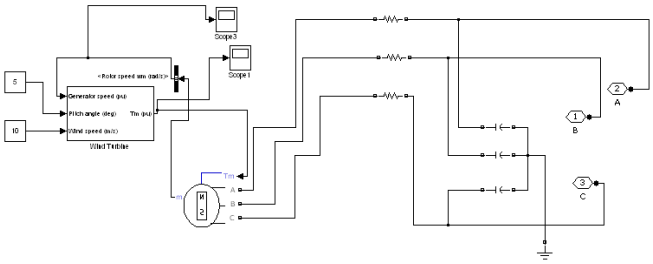
In the summer time, when sun beams are strong enough, wind velocity is relatively small. In the winter time, when sunny days are relatively shorter, wind velocity is high on the contrast. Efficiency of these renewable systems show also differences through the year. In other words, it is needed to support these two systems with each other to sustain the continuity of the energy production in the system.

In the realized system, a portion of the required energy for an ordinary home has been obtained from electricity that is obtained from the wind and solar power. Depending on the environmental conditions, required energy for the system can be supplied either separately from the wind or solar systems or using these two resources at the same time. Control unit decides which source to use for charging the battery with respect to condition of the incoming energy.

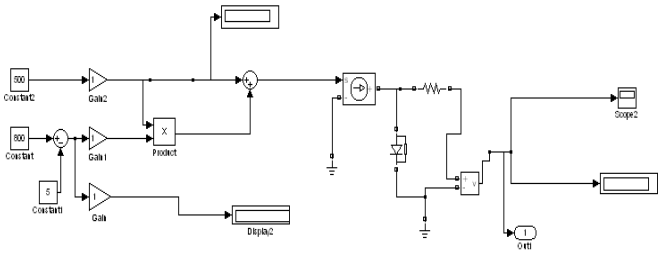
Wind turbine first converts the kinetic energy to mechanical energy and then converts it to the electricity. The wind turbine in the system consists of tower, alternator, speed converters (gear box), and propeller. The kinetic energy of the wind is converted to the mechanical energy in the rotor. . The hybrid system is designed based on the 78W load. We are approximating the 78W as 100W load, for which we had divided the 100W source as the combination of 50W solar and 50W wind as source to meet the load demand of 100W.

III. RESULT AND DISCUSSION

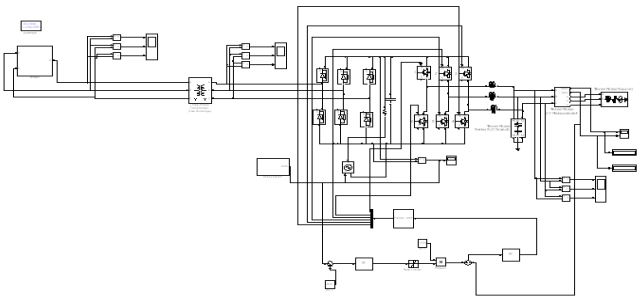
3.1 Wind Power System



3.2 PV Array

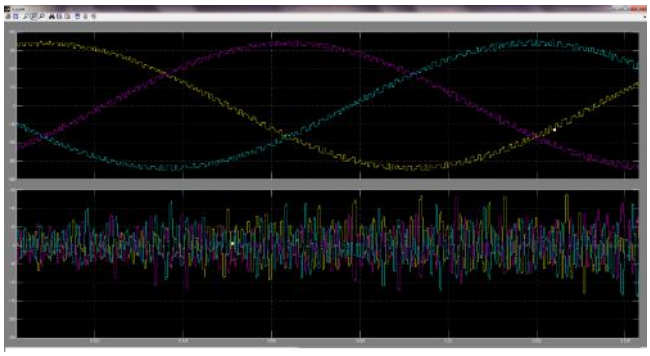


3.3 Hybrid of Solar and Wind

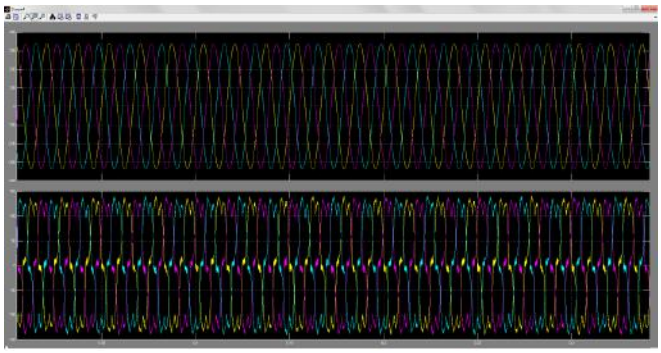


IV. SIMULATED OUTPUT

Without solar



With solar



V. CONCLUSION

In this study, "A Domestic Type Solar-Wind Hybrid System Design and Application" was implemented. A portion of the energy requirement for a home has been supplied with the electricity generated from the wind and solar power.

In the present scenario standalone solar photovoltaic and wind systems have been promoted around the globe on a comparatively larger scale. These independent systems cannot provide continuous source of energy, as they are seasonal. The solar and wind energies are complement in nature. By integrating and optimizing the solar photovoltaic and wind systems, the reliability of the systems can be improved and the unit cost of power can be minimized.

A PV wind hybrid systems is designed for rural electrification for the required load at specified Deficiency of Power Supply Probability (DPSP). A new methodology has been developed to determine the size of the PV wind hybrid system using site parameters, types of wind systems, types of solar photovoltaic system, number of days of autonomy of battery and life period of the system.

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Integrating User Preference with Theft Identification and Profile Changer in LBSNs

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ABSTRACT

The Location Based Social Networks (LBSNs) enable inferring User Spatial Temporal Activity preference so as to provide personalized context aware Place of Interest (POI) recommendation. However the existing systems lack in utilizing LBSN by integrating multiple locations based services to leverage the battery consumption and memory usage. Therefore POI recommendation is integrated with efficient mobile theft identification system and context aware profile changer. Algorithms such as STAP (Spatial Temporal Activity Preference), Top-K and Context Aware Profiler are used.

Keywords: STAP, LBSN, GPS, POI, PFR, IMEI

I. INTRODUCTION

With the arrival of GPS- equipped smart phones, Location Based Social Networks(LBSN) has gained increasing popularity in recent years. In LBSNs ,users not only interact with their friends by sending messages, sharing photos, but also with physical Points of Interest(POIs) showing their presence in real-time,leaving their comments, etc.. These large-scale user generated digital footprints bring an unprecedented opportunity to understand the spatial and temporal features of user activity. In LBSNs, user activity is mainly represented by check-in which indicates that a user visited POI at a certain time. Along with POI categories that are often associated with user activities, we can semantically characterize the activities of a user in a place. By mining these activity records, we are able to understand user spatial temporal activity preference which can then enable various location based applications like POI recommendation.

II. METHODS AND MATERIAL

2. User Spatiotemporal Activity Preference

2.1 User Place of Interest Recommendation

Modeling user spatial temporal activity preference incorporates a novel user Spatial Temporal Activity Preference (STAP) model for personalized POI recommendation is able to improve the user experience of location based services. However, modeling user spatial temporal activity preference from user check-ins is not trivial. Since the check-in data is usually sparse and is represented as user-location-time-activity quadruples it is difficult and complicated to directly discover the regularity from such sparse high-dimensional data. Thus to capture the spatial features, instead of segmenting a city into grid cells, Personal Functional Regions are built for each user using their check-ins, which can then be used to infer ones spatial activity preference. To resolve the data sparsity problem in capturing temporal features, similar user's activities are exploited and temporal activity preference model are collaboratively built. Finally a context-aware fusion framework is proposed to combine them together.

2.2 User Preference Modeling Based on PFR

Preference modeling is done through spatial and temporal activities of a particular user in a independent way and then clubbing together. First the Spatial preference of a user is calculated by identifying the frequented region of a user. *Frequented Region:* A region is a geographical area with a center l and a radius d. Region r is a frequented region of user u if and only if user u has performed more than s_{freq} of one's total check-ins,i.e.,a region is said to be a frequented region if user

check in frequently in particular area and is calculated as a ratio between check-ins in that region to total check-ins is greater than the frequency threshold (freq=Au, r/Au>=sfreq). In this, l and d determine the location and size of the region. The threshold s_{freq} determines the lower bound of the frequency u visits r. To describe individual's functional regions, user's activity diversity in one's frequented regions are quantitatively measured. Since User's activities in their frequented regions usually fall in few categories rather than all of the existing categories, $C_l^{d.}$ of C (POI categories).Measurement of how deterministic one's activity is in a frequented region r is done by calculating the difference between the entropy of the user's actual activity distribution and maximum entropy of the activity distribution in r. The maximum entropy of the activity distribution $H_{max}(C_l^d)$ is calculated as:

$$H_{max}(|C_l^d|)=\log_2 |C_l^d$$

Ratio of preference bias: For a user u and one of their frequented regions r, the ratio of preference bias measures the fractional difference between the entropy of user's u's activity distribution in region r, $v_{u,r}$ in r and the maximum entropy of the activity distribution in r, which is calculated as follows,

$$ratio_{PB} = 1 - \frac{H(v_{u,r})}{H_{max}(|C_l^d|)}$$

Higher value of $ratio_{PB}$ implies the stronger activity preference bias of u in r. Since the PFR of a user should be an area where the user has strong activity preference.

Personal Functional Region: A PFR r_u for user u is a user frequented region where u's activities have higher ratio of preference bias i.e., $ratio_{PB}$ is greater than equal to a threshold $s_{ratioPB}$

The user check in is sorted in a descending order and evaluated for PFR for each check in by considering the nearby region around the check in. The Region should be a frequented region as well as the particular user has strong preference bias on that frequented region and that is considered to be a Personal Functional Region for the user. Temporal preference is calculated by collaborative preference for every One hour time epoch in a week. Temporal Activity Preference is calculated based on the temporal patterns of similar users.

PFR Implementation Algorithm:

```
Input: array list<PFRbean>,item list, place type
Function call:
Showdialogbox("pick place type",items)
Function definition:
1.void dialogbox(string type,string items[])
      void onClick(DialogInterface dialog, int which,Boolean ischecked)
          if ischecked
                add selecteditems
     .setPositiveButton("OK",new
DialogInterface.OnClickListener()
        void onclick(DialogInterface dialog, int which)
         if selecteditems!=null
              if (type)
                  PFRbean.settype(selected
                                  items)
                 getNearbyLocation()
              else
                   PFRbean.setloc(selected
                                  items)
                  selectTime(selecteditems)
        .setNegativeButton("Cancel",new
DialogInterface.OnClickListener()
2.void getNearbyLocation
        Uses google maps
        Accept latitude and longitude coordinates and proximity radius
        PFRbean.getType()
3.void selectTime(type)
      Get current date
        Launch date picker dialog
      Showdialogbox("choose"locationlist)
        Get current time
        Launch time picker dialog
        Get activity and if it is new checkin,add it to PFRbeanlist and use it the next time if checkin happens at the same place.
```

3. User Mobile Identification and Profile Building

First the Registration is carried by identifying the user mobile by retrieving the parameters like sim numbers and memory card identity number. If the mobile is a

dual sim mobile both sim numbers are registered in a local database like sqlite. The current GPS coordinates are also recorded. User has to give some additional parameters like additional mobile numbers, mail id so our application will send sms and mail to the particular mobile number and mail id regarding theft or any monitor able activities regarding user phone. After User mobile registration user can sign into the application and can set up a context aware profile.

Profile Building Algorithm:

Input: location name, latitude and longitude coordinates
Checkbox:Bluetooth,wifi,sync
1.Get activity from sqlite db
2.Use hash maps to store profile modes such as("home",0),("office",1),("others",2)
3.Get arguments –username, IMEI,longitude and latitude coordinates and active string
4.According to the location, based on latitude and longitude coordinates ,considerably changes the profile modes.

4. Service Thread implementation

The user mobile identity and context aware profile monitoring process is implemented using Service thread which runs in background. This thread is activated when user installs the application after registration and sign in process gets completed the first time. The Service Thread runs forever even the phone gets restarted by using Boot Complete Receiver. The Service Class continuously monitors GPS location and triggers the profile which has close proximity. It also continuously checks for sim number, Memory card number and IMEI.

5. Integrated Location Based Services (Theft and Profile Management, Personalized POI)

All the Location based services are integrated together as all the services use location service in a continuous way when run independently. Battery efficiency and memory utility can be improved when application using similar services or resources are grouped together to give integrated services. The Service Thread continuously monitors GPS, SIM numbers, memory card number, IMEI for automatic profile change, theft identification and personalized poi recommendation and notifies user by sending sms and email to registered alternate mobile number and email provided.

The spatial and temporal preference model extracted is clubbed together to give a personalized POI recommendation. POI recommended by identifying the nearest PFR from user current location and the temporal pattern is evaluated for user activity preference and respective points of interest will be recommended for the user in a Top Down scenario based on priority. Integrated services help to improve Battery efficiency and memory utility. When application using similar services or resources are grouped together to form integrated services users can be delighted with a single touch from their smart phones to acquire services.

III. RESULT AND DISCUSSION

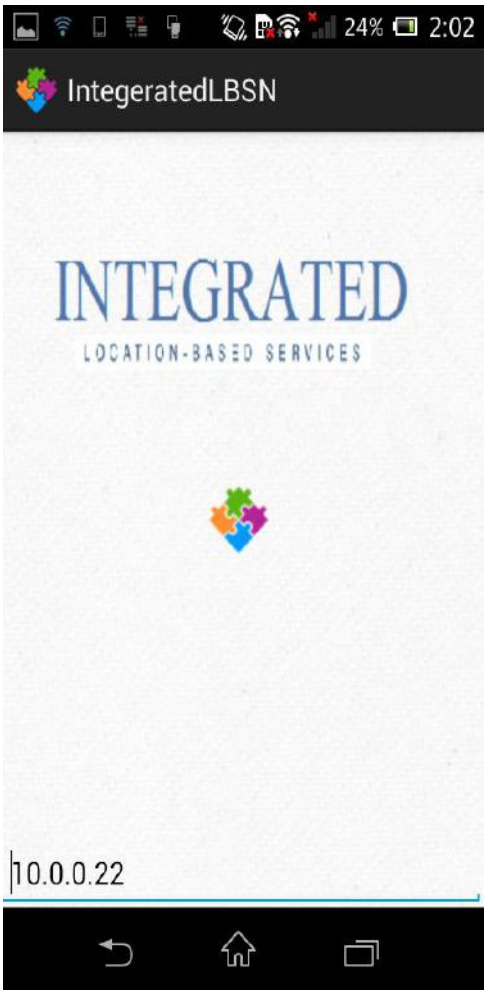

Figure 1. Home page of the application

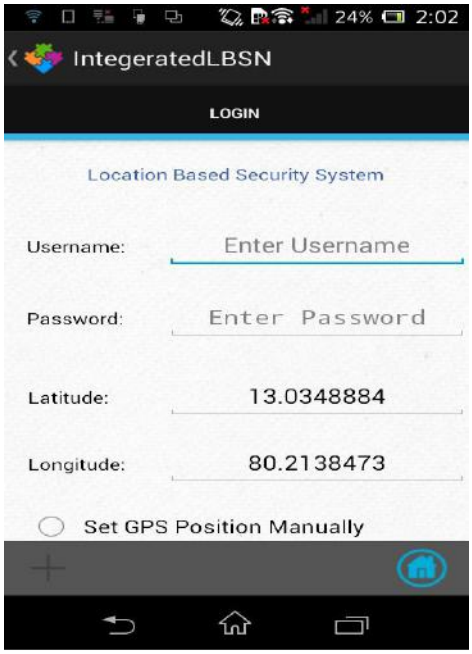

Figure 2. User login page and it automatically finds GPS coordinates and the user can also set GPS position manually.

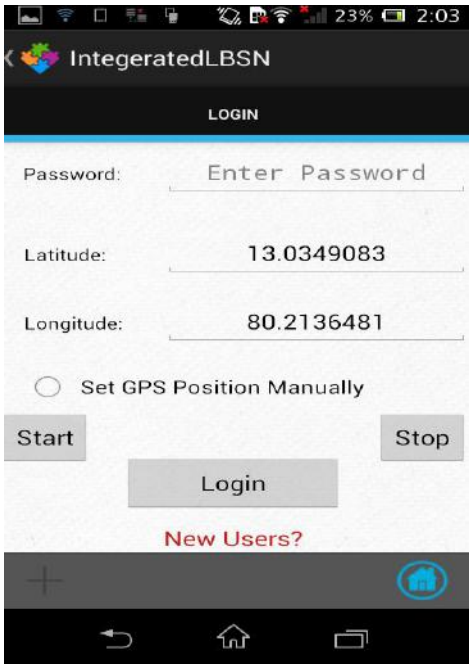

Figure 3. If user is a new user the application redirects to registration page by clicking on new users tab

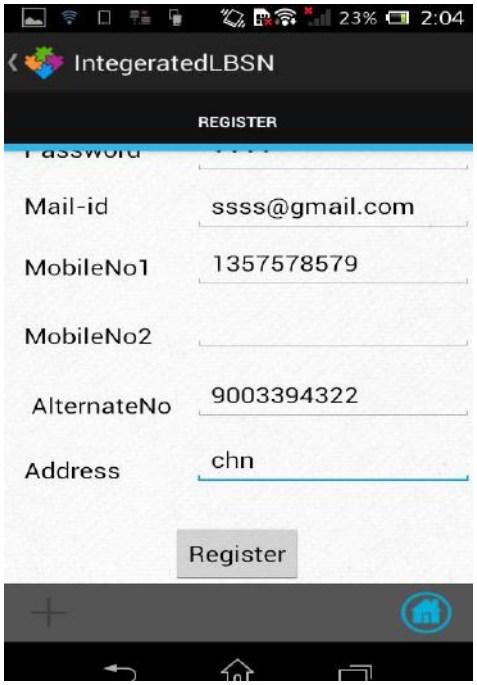

Figure 4. The user has to fill in all necessary details for registration.

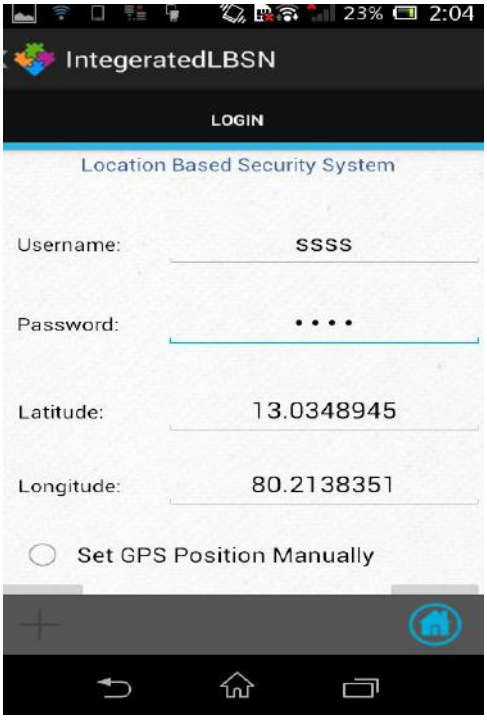

Figure 5. After registration the user can log in with the registered username and password.

Figure 6. The user can set the required profile modes at various locations by selecting active profile fragment.

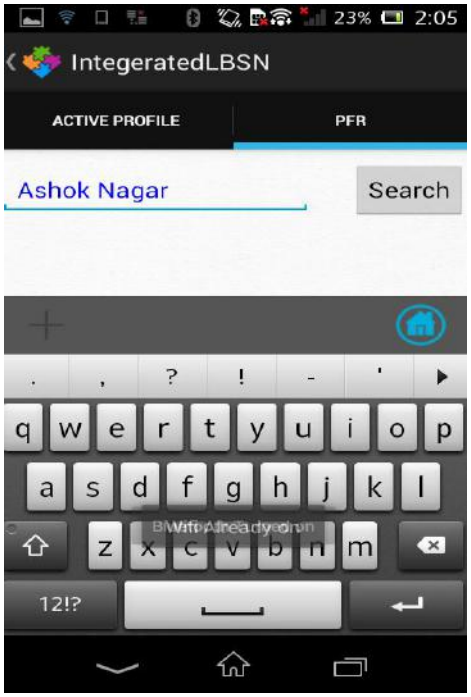

Figure 7. The user can select the Place of Interest in the search bar.

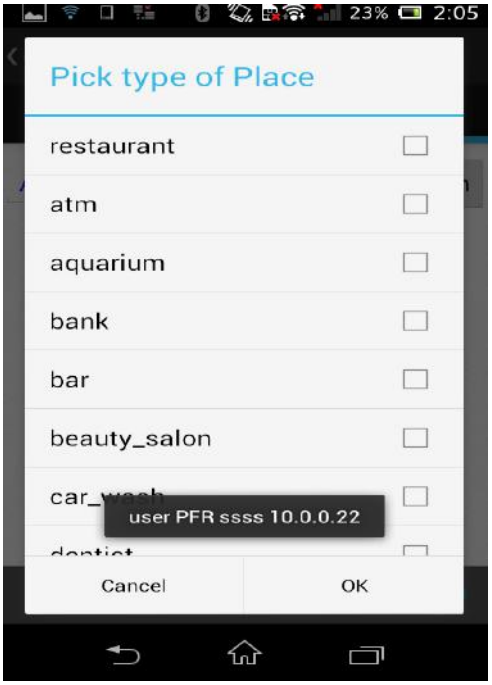

Figure 8. The user can select the desired activity from pick type of place.

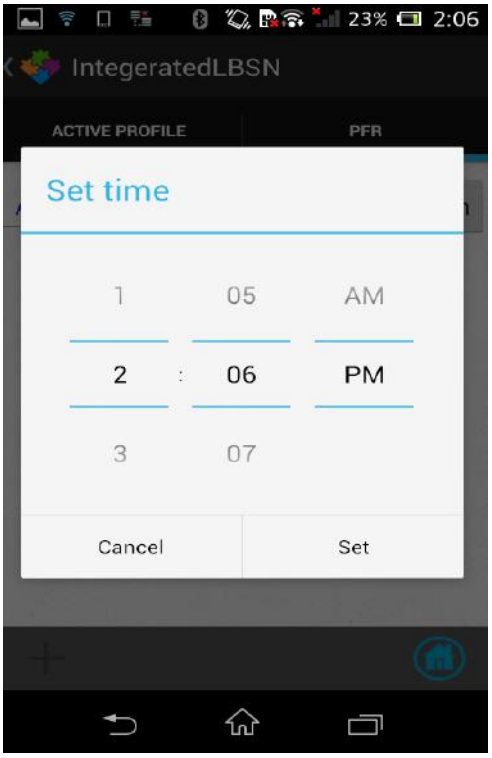

Figure 9. The user can set the time for the specified activity.

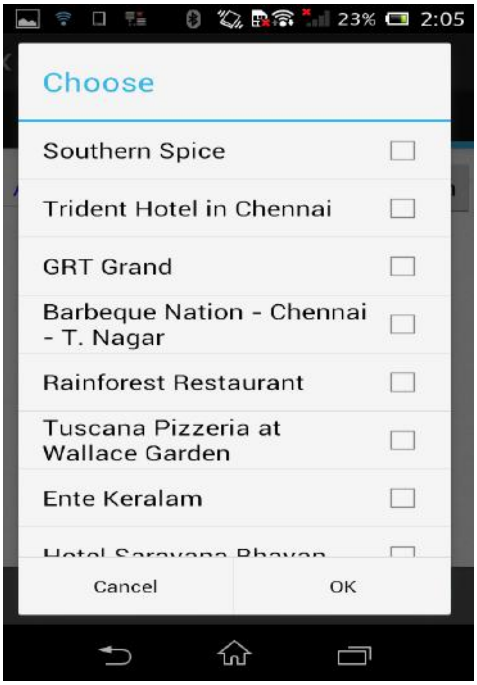

Figure 10. The user can then select the place of interest from a list of categories suggested.

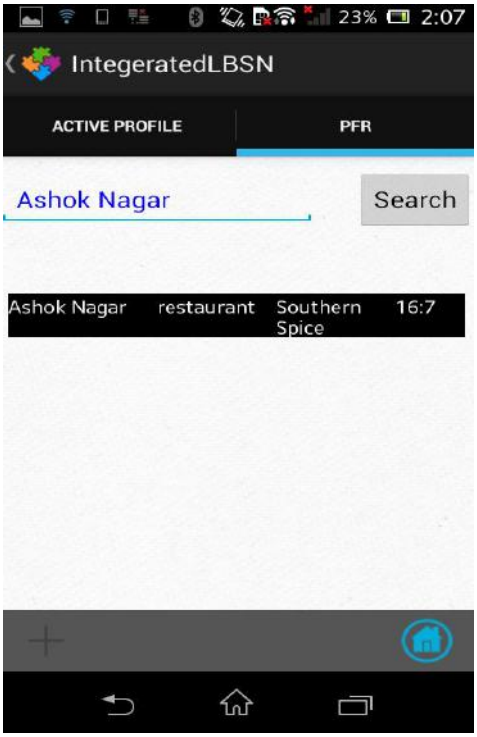

Figure 11. The selected activity and place of interest is stored in sqlite database.

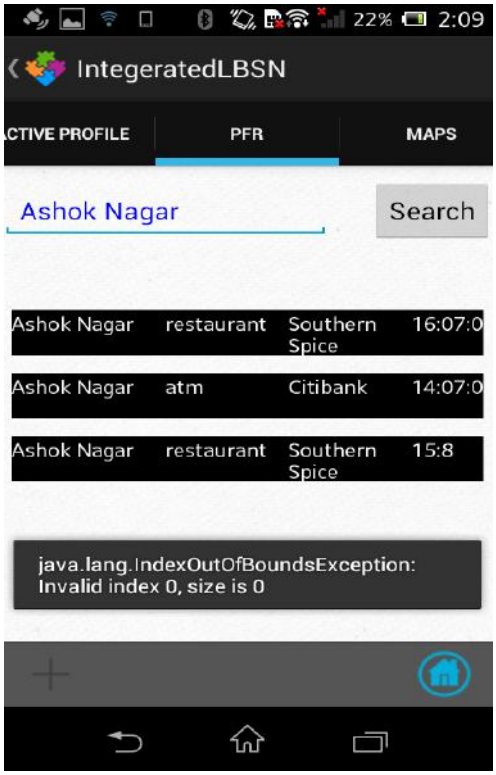

Figure 12. The similar activities stored are exploited to determine Personal Functional regions of a user in a particular region.

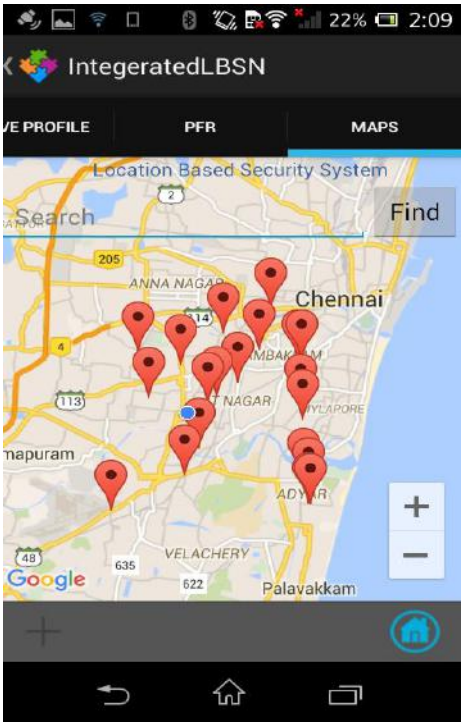

Figure 13. The map fragment gets loaded while PFR fragment usage is in progress and uses google maps to display POI recommendation.

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Investigating Wavelength Dependency of Terrestrial Free Space Optical Communication Link

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ABSTRACT

Free space optical communication involves fiber-less optical based data transmission using visible and infrared bands of the spectrum. This technology has gained huge popularity in the past decades. In recent past a lot of research has been carried out to improve the FSO link performance which is seriously affected due to atmospheric inconsistencies. This paper investigates the performance of free space optical link for different wavelengths. As the laser beam propagates through atmosphere it undergoes attenuation and this attenuation has been calculated for different wavelengths. Moreover the attenuation and scattering due to haze has been studied for different wavelengths. The wavelengths used for this research work are 10 µm, 1.55 µm and 0.85 µm. Finally bit error rate performance of DPSK modulation has been investigated for above mentioned wavelengths and atmospheric turbulence has been modeled using gamma-gamma model. It has been observed that higher wavelengths show less attenuation and moreover the BER performance of DPSK modulation techniques for higher wavelengths is better than that of lower wavelengths.

Keywords: FSO, BER, DPSK, Wavelength, Atmospheric Turbulence

I. INTRODUCTION

Free Space Optical Communication uses atmosphere as communication link between transmitter and receiver separated by certain distance.

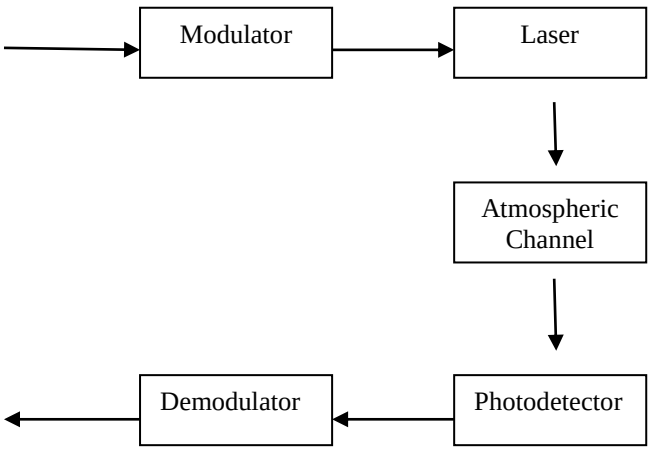

Figure 1. Schematic of FSO

The data which has to be transmitted is modulated on the intensity, phase and frequency of the carrier signal. FSO systems operate in the infrared (IR) range of spectrum. FSO systems use wavelengths around 850 and 1550 nm and the frequencies corresponding to this range of wavelengths is around 200 THz [1]. The main requirement for proper operation of an FSO system is unobstructed line-of-sight between the transmitter and receiver.

FSO has now become a commercially viable technology to radio frequency (RF) and millimetre wave wireless systems and it is being used for the reliable and rapid deployment of data, voice and video within the access networks. Radio Frequency based wireless networks are offering data rates in the range of tens of Mbps (point-to-multipoint) up to several hundred Mbps (point-to-point) [2]. But the main drawback or major limitation is that the spectrum is getting congested day by day because of increasing demands of bandwidth. The most efficient solution to this problem of spectrum congestion is the use of FSO system which provides abundant

bandwidth. By an optical carrier, we can get bandwidth upto 2000 THz and on the other hand in Radio Frequency systems the usable bandwidth is comparatively lower by a factor of 10^5. The advantages of FSO include lesser time to deploy and there is no need of digging of trenches rights. We need not to purchase any frequency spectrum. Moreover the cost of implementing FSO system is also lower than that of RF system [3].

The greatest problem that FSO system has to face comes from the atmospheric channel, which results in signal, absorption, scattering and fluctuation. The optical beam travelling through the atmosphere comes across aerosols (which consist of fog, smoke and other particles) and gases resulting in huge attenuation of signal. The other main factor responsible for the degradation of performance of FSO system is the atmospheric scintillation caused by in homogeneity of atmospheric temperature. Signal fading takes place because of scintillation which in turn further degrades the system performance. High attenuation and extinction of optical signal is caused by small particles which are present in fog and clouds and this attenuation can be in the range of 30 dB/Km and even more than this. So the laser beam travelling through turbulent atmosphere suffers a lot of attenuation.

In this paper we are trying to investigate the FSO system performance in terms of wavelength. The attenuation due to snow and fog will be studied for different wavelengths and then BER performance of DPSK modulation technique will be studied for different wavelengths.

II. METHODS AND MATERIAL

1. Wavelength Analysis

As the optical signal travels through the atmosphere, it encounters many atmospheric conditions which contribute to the attenuation. We have taken into account only the effect of haze and scattering in this work.

A. HAZE

Attenuation present in a system can affect its performance. Atmospheric attenuation and geometric losses constitute all attenuation. We have not considered geometric losses in this work as it has been assumed that there is no spreading of signal. Atmospheric attenuation arises because presence of particles in the air for e.g. haze. As haze particles present in the atmosphere can stay for longer time, so the attenuation values for any particular instant of time depend on the level of visibility at that time. There are two ways in which we can gather information regarding the attenuation of FSO link in order to check the performance of FSO system. Firstly, we can do it by installing FSO system temporary at the site and check its performance. Secondly, by using Kim & Kruse Model to find the attenuation for different values of visibilities. The law is given by the following expression given as follows [4,5] :

$$\gamma(\lambda) = \frac{3.912}{V}\left(\frac{\lambda(nm)}{550}\right)^{-q} \quad (1)$$

$$q = \begin{cases} 1.6 & si \quad V > 50\ kms \\ 1.3 & si \quad 6kms < V < 50kms \\ 0.585V^{1/3} & si \quad V < 6kms \end{cases} \quad (2)$$

where q is a quantity that depends on the physical properties of the scattering particles such as particle concentration, size of particle and their distribution, visibility range etc. The visibility is a parameter that defines the opacity of the atmosphere. We can define this parameter as the distance to an object where the contrast of the image will drop to 2% of what it would be if the object were nearby instead. For the visible and near IR spectral band (up to 2.4 μm), the formula defined in eq. (2) relates the attenuation of light to the visibility range V in kilo meters for a given wavelength λ (nm) whereas γ represents the attenuation expressed in Km^{-1}. The visibility is generally measured at a wavelength of 550 nm because this wavelength corresponds to maximum intensity of solar spectrum and is given by Koschmieder Law as;

$$V = \frac{3.912}{\lambda(550nm)} \quad (3)$$

Where V is visibility range expressed in Kms.

B. Scattering

The presence of Fog affects the FSO link performance. The scattering of the optical beam propagating through the caused by water particles attenuates the signal. We can characterize fog by a number of physical parameters such as particle size distribution, temperature of fog, liquid water content, and humidity. As the size of fog particles is comparable to the transmission wavelength of optical and near infrared waves, it results in attenuation due to Mie scattering, which in turn reduces link availability of FSO system [6,7]. In order to study the attenuation of laser radiation by fog we need to find a relation between some physical parameters. For this we need to find a link between liquid water content, particle concentration and visibility. We can define Visibility can be defined as the greatest distance under given weather conditions to which it is possible to see without instrumental assistance. A relationship is given in [8]:

$$PC=\frac{3.912*q^2}{V_m F(0.5)*\pi*a^2*(q+2)(q+1)} \quad (4)$$

$$LWC=\frac{3.912*4a*(q+3)*\rho_m}{3*V_m F(0.5)*q} \quad (5)$$

PC = particle concentration
LWC = liquid water content
Vm = visibility
Q = characteristic of half-width of the distribution
a = most-likely radius of particles
F(0.5) = effective attenuation factor for wavelength $\lambda = 0.5$ μm
ρ_m = water density

The water content and particle concentration can vary but there is no change in visibility. The attenuation factor given by α_{scat} caused by scattering can be given as:

$$\alpha_{scat} = \frac{17}{V_m}\left(\frac{0.55}{\lambda}\right)^{0.195*V_m} \quad (6)$$

Where λ is wavelength and V_m is the visibility in Kms.

2. BER Performance for different wavelengths

A. Gamma-Gamma Model

The gamma-gamma turbulence model is a model proposed by Andrews *et al.*[9] which models the atmospheric turbulence . A variety of turbulence conditions can be covered by this model. In this model the fluctuation of light radiation propagating through turbulent atmospheric conditions is supposed to consist of small scale and large scale fading effects. The normalized received irradiance which is basically defined as product of two statically independent random processes I_x and I_y and it is given by:

$$I=Ix\times Iy \quad (7)$$

Where I_x and I_y arsie from large scale and small scale eddies respectively and both of them are supposed to obey gamma-gamma distribution. The gamma-gamma model for the probability density function of received irradiance is given by:

$$P(I)=\frac{2(\alpha\beta)^{\frac{(\alpha+\beta)}{2}}}{\Gamma(\alpha)\Gamma(\beta)} I^{\frac{\alpha+\beta}{2}-1} K_{\alpha-\beta}(2\sqrt{\alpha\beta I}), I>0 \quad (8)$$

Where I is the signal intensity, α and β are parameters which correspond to the effective number of small scale and large scale eddies of the scattering process, Γ is the gamma function and $K_{\alpha-\beta}$ is the modified bessel function of the second kind having order α-β. Here, α and β are the effective number of small-scale and large scale eddies of turbulent environment. These parameters are given as:

$$\alpha=\{\exp[0.49\sigma^2/(1+1.11\sigma^{12/5})^{7/6}]-1\}^{-1} \quad (9)$$

$$\beta=\{\exp[0.51\sigma^2/(1+1.11\sigma^{12/5})^{5/6}]-1\}^{-1} \quad (10)$$

where $\sigma^2 = 1.23C_n^2k^{7/6}L^{11/6}$ is the rytov variance representing the variance of log-intensity fluctuation in which C_n^2 is the refractive-index structure parameter, k is the wave number, and L is the distance between transmitter and receiver.

B. DPSK Modulation Technique

In Differential Phase shift keying (DPSK), the change in the phase of the received signal is determined by the demodulator rather than the phase itself. As this technique depends on the difference in phase between the successive phases, hence it is named as DPSK. It is not mandatory for the demodulator to have a copy of the reference signal in order to determine the exact phase of the received signal, so this technique is simpler than ordinary PSK. So this technique finds application in the cases when the estimation of phase is not possible for the carrier demodulation. In FSO systems, the irradiance of an optical carrier is modulated by RF carrier signal. After travelling through the turbulent atmospheric

channel, the photo detector receives the irradiance and photocurrent is generated accordingly which is given by:

$$I(t)=RI(1+\beta m(t)) + n(t) \quad (11)$$

Where $I=I_{max}/2$,I_{max} is the maximum received irradiance, R is the responsively of the photo detector, β is the modulation index, m(t)=A(t)cos($\omega_c t + \theta$), n(t) is the additive noise. As the the subcarrier has been pre-modulated using DPSK and the amplitude is also non-varying and β has been normalized to unity. So the peak amplitude is A(t)=A$\leq$ 1.

We have considered background noise and thermal noise as the noise sources in this work. The background noise is mainly because of the radiations from both sky and sun. Their radiances are given as [10-11]:

$$I_{sky}=N(\lambda)\ \Delta\lambda\pi\Omega^2/4 \quad (12)$$

$$I_{sun}=W(\lambda)\ \Delta\lambda \quad (13)$$

where N(λ) and W(λ) are the spectral radiance of the sky and spectral radiant emittance of the sun respectively, Δλ is the bandwidth of the optical band pass filter at the receiver, and Ω is the receiver field of view angle (FOV) in radian, We can they reduce the impact of background noise greatly by choosing narrow FOV and Δλ for the receiver. We can get the empirical values of N(λ) and W(λ) under different observation conditions in the literature. The background noise is a shot noise with a variance given by :

$$\sigma_{Bg}^2= 2qBR\ (I_{sky}+I_{sun}) \quad (14)$$

where B is the electrical bandwidth of system.

Thermal noise is caused due to thermal fluctuations of electrons in the receiver circuit having equivalent resistance R_L and temperature T_e . The variance is given by:

$$\sigma_{Th}^2= = 4\ kT_eBR_L^{-1} \quad (15)$$

Noise due to the quantum nature of light, the dark current and the relative intensity noise has been assumed negligible. Hence, the total noise variance is given

$$\sigma^2=\sigma_{Bg}^2+\sigma_{Th}^2 \quad (16)$$

The electrical SNR per bit is given by[10] :

$$SNR=A^2\ R^2\ I^2/2\sigma^2 \quad (17)$$

The conditional BER for the DPSK technique is given by [12]:

$$P_{ec}=0.5exp(-0.5\ SNR) \quad (18)$$

In the presence of atmospheric turbulence, the unconditional BER is given by:

$$P_e=\frac{(\alpha\beta)^{\frac{(\alpha+\beta)}{2}}}{\Gamma(\alpha)\Gamma(\beta)}\int_0^\infty x^{\frac{\alpha+\beta}{2}-1}K_{\alpha-\beta}(2\sqrt{\alpha\beta I})\times(0.5\exp(-0.5SNR))\ dx \quad (19)$$

III. RESULT AND DISCUSSION

The system described above has been simulated using matlab.The simulation parameters used are given below as :

Table I. Simulation Parameters

Parameters	**Value**
Wavelengths	10 µm, 1.55 µm and 0.85 µm
Bit Rate(R_b)	155 Mbps
Link Range	1 Km
Responsivity	1
Modulation Index	1
Temperature	300 K
Optical Filter Bandwidth	1e-3 µm
Receiver Field of view	0.6 radian
Refractive Index Structure Parameter, C_n^2	0.75e-14 $m^{-2/3}$
Load Resistance	50 Ω
Boltzman's Constant	1.38e-23 J/K
Electronic Charge	1.602e-19 C

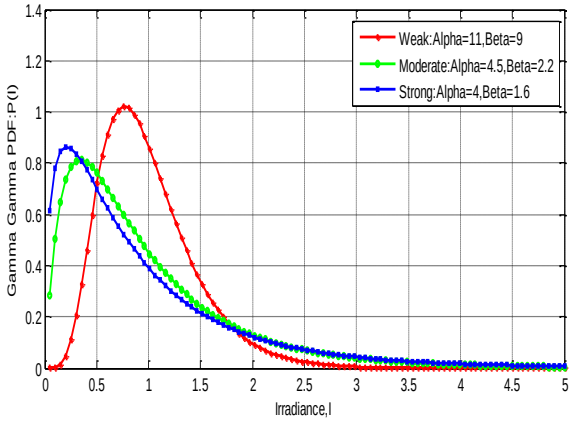

Figure 2. Gamma-Gamma PDF for weak, moderate and strong turbulent regimes

Fig. 2 shows the probability density curve for gamma-gamma model with different values of turbulent strength. The values of alpha and beta indicate whether the

atmospheric turbulence region is weak, moderate or strong. In particular, the gamma-gamma model has a much higher density in the high amplitude region leading to a more severe impact on the system performance.

Fig. 3 shows the attenuation coefficient in dB/Km using Kruise relation for different wavelengths. The wavelengths used are 10 µm,1.55 and 0.85 µm.It is clear from the figure that higher wavelengths correspond to low attenuation.

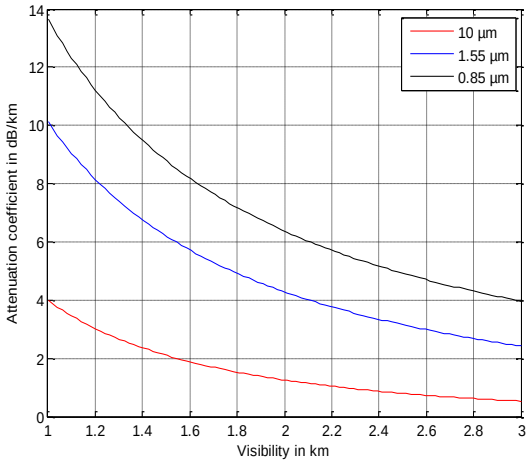

Figure 3. Wavelength Attenuation in dependency of wavelength

Fig. 4 shows the attenuation in terms of attenuation coefficient caused due to scattering of laser beam by water particles and it is clearly evident that scattering caused by water particles is more for smaller wavelengths as compared to higher wavelengths.

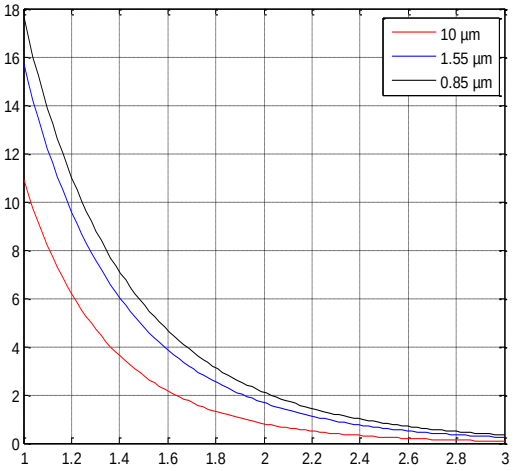

Figure 4. Wavelength Attenuation in dependancy of wavelength

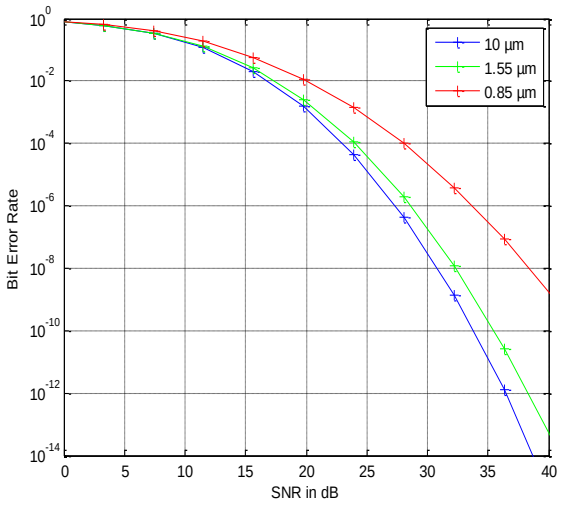

Figure 5. BER versus SNR for different wavelengths

Fig. 5 show BER performance of DPSK modulation technique for different wavelengths and we can see that DPSK modulation performs better for higher wavelengths as compared to lower wavelengths.

IV. CONCLUSIONS

As we can see that we have checked wavelength dependency of free space optical link for different wavelengths. According to Kruise law higher wavelengths undergo less attenuation and this fact is supported by attenuation caused due to scattering in which the attenuation coefficient is more for smaller wavelengths. Further BER performance of DPSK modulation is better for higher wavelengths as compared to smaller wavelengths. So we can say that smaller wavelengths undergo more attenuation.

V. ACKNOWLEDGMENT

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Dual-Band Microstrip Patch Antenna for Wireless Application

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ABSTRACT

The antenna is very essential element of communication as it is used for a transmitting and receiving electromagnetic waves. Today Communication devices such as mobile phones become very thin and smarter, support several applications and higher bandwidth where the microstrip antennas are the better choice compare to conventional antennas. WLAN (Wireless Local Area Network) has been established by the IEEE 802.11a working group,also it works with frequency band(5.10-5.50 and 5.85-6.25 GHz) This paper presents a literature survey of slotted microstrip patch antenna's these are dual-band rectangular MSA ,Single S-slot MSA, Multi band H shaped MSA , U- slot MSA, compact L- slot MSA for Wi-MAX and WLAN applications with variety of substrates and slots. In this paper we also discussed the basics of microstrip antennas with their advantage and disadvantages.

Keywords: Microstrip Antennas Return Loss

I. INTRODUCTION

The study of micro strip patch antennas has made a great progress in the recent years, compared with the conventional antennas. The next generation networks we require higher data rate and size of devices are much smaller. In this evolution two important standards are Wi-MAX and WLAN. For success of these wireless applications we need efficient and small antenna in wireless is more and more important in our life portable antenna technology has grown along with cellular and mobile technologies. Microstrip antennas (SA) have characteristics low cost and also low profile which proves Microstrip antennas (MSA) to be well required for WLAN/Wi-MAX application systems.

For High mobility necessity and multiple frequency are demands for wireless communication devices increase the interest for compact, low-profile.frequency ranges of 5.10–5.50 and 5.85–6.25 GHz in the US. Proposed a dual-band/wideband packaged antenna for IEEE 802.11a WLAN band (5.10–5.55 and 5.725–6.25 GHz) application. However, the design compactness was reduced with the dimension of the antenna (28 *9 *3 mm) and printed circuit board (PCB) size (120* 80* 2 mm). Different techniques for WLAN dual-band designs are reported in [2]–[4]. However, these microstrip antennas are not specifically designed for WLAN 802.11a. Therefore, this design considerations are to satisfy and the required impedance bandwidth necessary for WLAN dual-band applications with maintaining the proper separation frequency gap between them.

II. METHODS AND MATERIAL

A. Geometry of Antenna

It is observed that the slot Antenna impedance is increased when the length of the slot is gradually increased and the position of slots are shifted toward radiating edge.results in enhancement of the slow wave factor, and thus the resonant frequency moves toward the lower value. It is also observed that due to the higher slow wave factor, the resonant frequency of the slotted antenna are moves to lower values are more rapidly with respect to the slotted antenna when the ground slot is added to them.

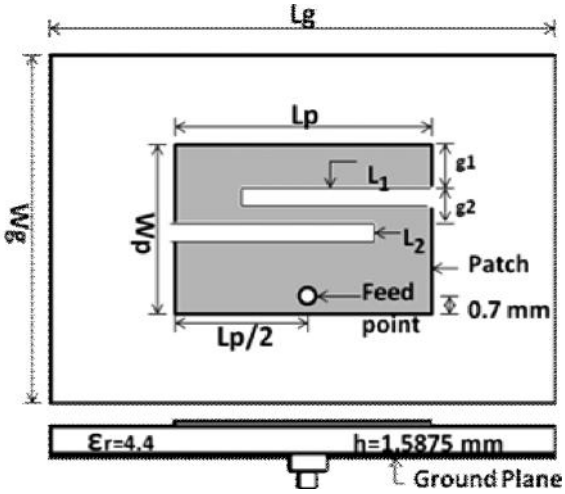

Figure 1. Geometry of the Dual-band Microstrip antenna.

B. Literature Survey

Compact Dual-Band MSA for WLAN Application has been proposed for microwave access and wireless applications. Results in compact antenna with better omnidirectional radiation pattern for proposed operating frequencies. It can be observed that the peak gain can be higher than 3dBi at 5.2 GHz. [1]

A Dual-band antenna with compact radiator for 2.4/5.2/5.8 GHz WLAN applications is developed. In this antenna exhibits wideband characteristics that depend on various parameters such as U-slot dimensions, probe fed patch. This antenna shows 37% impedance bandwidth with more than 90% antenna efficiency and is suitable for 2.3/2.5GHz WiMAX and 2.4/5.2 GHz WLAN application. [2]

A Rectangular MSA to Enhance Bandwidth at 2.4 GHz for WLAN Application has been proposed in this paper. In this bandwidth of antenna has been improved. This antenna was presented for satellite and WLAN application. [3]

A microstrip patch antenna for dual band WLAN application is proposed. In this paper a dual band L-shaped Microstrip patch antenna is printed on a FR-4 substrate for WLAN systems, and achieves frequency range from 5.1GHz to 6.1 GHz with maximum gain of 8.4 and 7.1 dB in lower and higher frequency bands respectively.[4]

A compact rectangular patch antenna has been presented for Wi-MAX and WLAN application. This antenna has compact, simple structure cost effective, and suitable for all frequency bands of Wi-MAX and WLAN applications. [5]

C. Advantages and Disadvantages

Microstrip patch antenna has several advantages over conventional microwave antenna with one of the similarity of frequency ranges from 100 MHz to 100 GHz same in both type. The various advantages and disadvantages are.

Advantages

1. Low weight
2. Low profile
3. Require no cavity Backing
4. Linear & circular polarization
5. Capable of dual and triple frequency operation
6. Feed lines & matching network can be fabricated simultaneously

Disadvantages

1. Low efficiency
2. Low gain
3. Large ohmic losses in feed structure.
4. Low power handling capacity
5. Excitation of surface wave
6. Polarization purity is difficult to achieve.
7. Complex feed structure required high performance arrays

D. Formulae for Rectangular patch dimensions

Sr no.	Parameter	Formulae
1.	Width of patch , W	$W = \frac{c}{2fo\sqrt{(\epsilon_r+1)/2}}$
2.	Length of patch , L	$L = L_{eff} - \Delta L$
2.(i)	Normalized extension length, $\frac{\Delta L}{h}$	$\frac{\Delta L}{h} = 0.412 \frac{(\epsilon_{reff}+0.3)\left[\frac{W}{h}+0.264\right]}{(\epsilon_{reff}-0.258)\left[\frac{W}{h}+0.8\right]}$
2.(ii)	Effective Length (L_{eff})	$L_{eff} = \frac{c}{2fo\sqrt{(\epsilon_r)}}$
2.(iii)	Effective dielectric constant , ϵ_{reff} ($\frac{W}{h} \gg 1$)	$\epsilon_{reff} = \frac{\epsilon_r+1}{2} + \frac{\epsilon_r-1}{2}\left[1+12\frac{h}{W}\right]^{-1/2}$
3.	Length (L_g)and Width (W_g) of Feed-line	$L_g = L + 6h$, $W_g = W + 6h$

E. Design Specification

1. fo = 5.45 GHz
2. ϵr = 4.4(FR4 epoxy),
3. h = 1.6 mm
4. Feed Technique: Coaxial Feed

F. Antenna Design

The proposed antenna comprises two slots L1 and L2 The upper one is single-L1 slot with ground slot also bottom side L2 slot with ground slot. Having better performance of antenna parameter.

III. RESULT AND DISCUSSION

Simulated Results

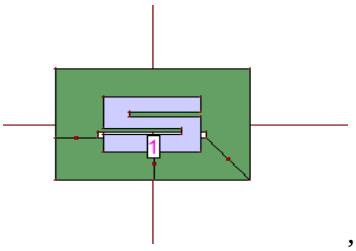

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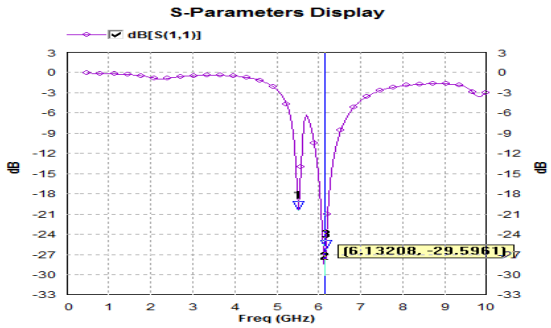
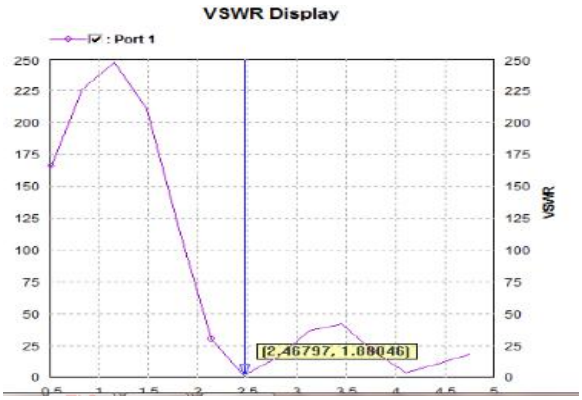
Figure 2. Antenna with ground slot (central) Geometry



Above design frequency 5.47 GHz Return loss is -20.45dB and 6.1 GHz RL is -29.59 dB

Figure 3. S11 for the proposed antenna



For above frequency 5.47 GHz VSWR is 1.39 and 6.1 GHz VSWR is 1.07

Figure 4.VSWR for the proposed antenna

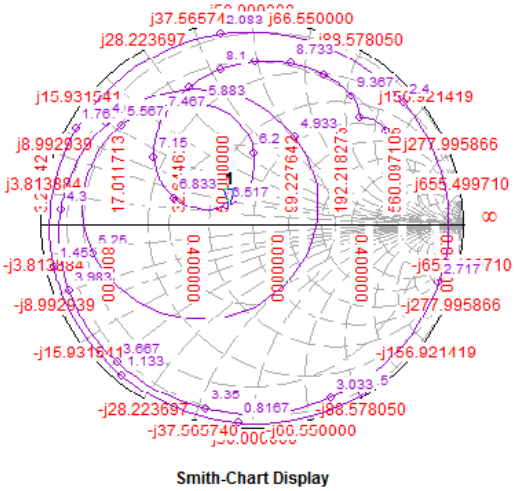


Figure 5. Smith Chart

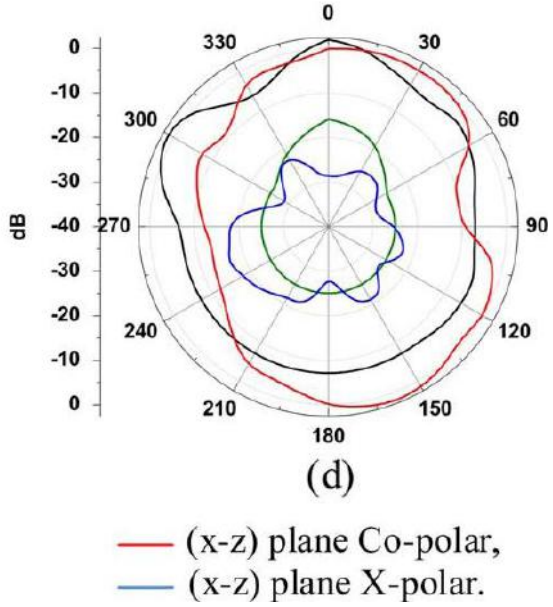


Figure 6. Radiation Pattern

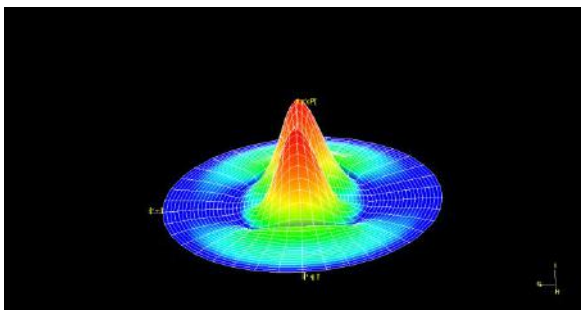


Figure 7. Gain

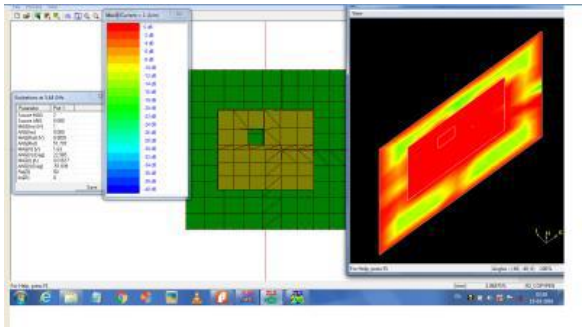


Figure 8. Current Distribution

IV. CONCLUSION

Dual-band MSA is presented this paper. By referring various research papers it is concluded that low power and Low gain handling capacity can be overcome through slotted patch.Also Improve basic parameters of antenna have been studied. A compact dual-band MSA antenna is designed and analyzed to support the IEEE 802.11a wireless LAN band (5.10-5.50 and 5.85-6.25 GHz) Primarily, two 10-dB impedance bands of the dual band are separately generated by two different designs of compact RMSA with same dimensional slotted ground-plane structures. these two designs are combined to form of the geometry of the dual-band antenna. Overall, the design technique used for dual-slotted dual-band antenna using two separate single-slotted MSA is successfully for the application in IEEE 802.11a WLAN band (5.10-5.50 and 5.85-6.25 GHz).

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RRNS Based Error Detection and Correction in CDMA using Chinese Remainder Theorem

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ABSTRACT

In communication systems corruption of data and hacking of data is unavoidable. These are the major problems we are facing in communication system. This paper presents an enhanced multiple error detection and correction scheme based on the Redundant Residue Number System (RRNS). RRNS is often used in parallel processing environments because of its ability to increase the robustness of information passing between the processors. The proposed multiple error correction scheme utilizes the Chinese Remainder Theorem (CRT) together with a novel algorithm that significantly simplifies the error correcting process for integers. This enhanced scheme is compared with the existing method and this enhanced scheme is used in the CDMA application.

Keywords: Redundant Residue Number System (RRNS)**,** Chinese Remainder Theorem (CRT) CDMA

I. INTRODUCTION

A Residue Number System (RNS) for integers describes methods of representing an integer as a set of its remainders or residues. Error control is achieved by addition of extra residues, hence the term RRNS. The RRNS code used in this work uses the Chinese Remainder Theorem (CRT) as a means of recovering the integer from a set of its residues. Error correcting codes based on the CRT are attractive because of their ability to perform carry-free arithmetic and lack of ordered significance among the residues. Some of the concepts related to this error correction technique such as the terms legitimate range and illegitimate range for consistency checking.

II. METHODS AND MATERIAL

A. RRNS (Resudue Redundency Number System)

A residue number system (RNS) represents a large integer using a set of smaller integers, so that computation is performed more efficiently. It relies on the Chinese remainder theorem of modular arithmetic for its operation, a mathematical idea from Sun Tsu Suan-Ching, when redundant residues are added to the information residues then it is called redundant residue number system. The receiver applies the same algorithm to the received data bits and compares its output to the received check bits; if the values do not match, an error has occurred at some point during the transmission. In a system that uses a "non-systematic" code, such as some raptor codes, data bits are transformed into at least as many code bits and the transmitter sends only the code bits.

B. Transmitter Model

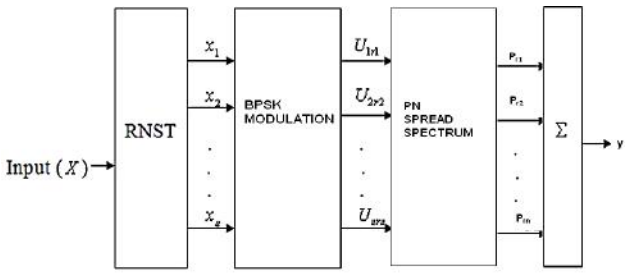

Figure 1. Transmitter Model

Algorithm for transmitter

1) Start the program
2) Get the inputs X, n, t, k

Where X - information

n - length of the prime number module

t - no of correctable errors($r-1$)

k - information range

3) Generate relatively pair wise prime number module (m_i)

4) Generate information range (M_K) and redundant range (M_R)

5) Calculate the residue vector to be transmitted

$$X \equiv x_i (\text{mod } m_i)$$

6) Generate orthogonal sequences,

$$\{U_{10}(t), U_{11}(t), \ldots, U_{1(m_1-1)}(t); U_{20}(t), U_{21}(t), \ldots, U_{2(m_2-1)}(t); \ldots; U_{n0}(t), U_{n1}(t), \ldots, U_{n(m_n-1)}(t)\}$$

7) Map the residues to the orthogonal sequences,

$$U_{1x_1}(t), U_{2x_2}(t), \ldots, U_{nx_n}(t)$$

8) Sum all the orthogonal sequences and multiply with the user specific scrambling code for spreading the signal.

9) Modulate the signal and transmit.

C. Receiver Model

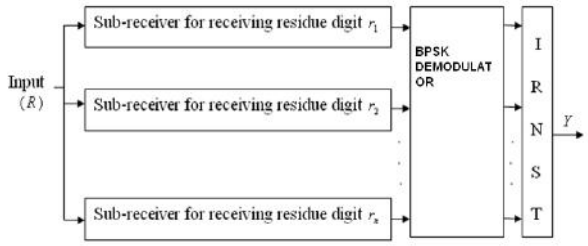

Figure 2. Receiver Model

Algorithm for receiver

1) Demodulate the signal R.

2) Divide the demodulated signal into six fingers $n = 6$.

3) Divide each finger into two paths because we assumed there are two paths in the channel.

4) Multiply the scrambling code to despread the signal in each path.

5) Multiply the conjugate of the corresponding channel impulse response in each path.

6) In the correlator bank, corresponding orthogonal sequences are multiplied with the signal each path.

7) Sum the outputs of the correlator bank of all the paths.

8) Find the maximum of all the values.

9) The index is taken as the output of first finger and this process from step 5 is done for all the fingers.

10) Two residues are assumed to be known residues and all these values are put in a vector y.

11) Compute Y from the received vector y using

$$Y = \sum_{i=1}^{n} y_i M_i a_i \bmod M$$

where,

$$M = \frac{M}{m_i}, a_i = M_i^{-1} \bmod m_i$$

&

$$M = \prod_{i=1}^{n} m_i = M_K . M_R$$

12) If Y is in the legitimate range, stop and output else proceed to step (13).

13a) List all possible, k positions combination

$$a = {}^{n}C_k$$

13b) Compute $Z_a = \prod_{a=a_1}^{a_2} m_a$

14) Compute for all values of $X = Y \bmod Z_a$ for all values of a.

15) Assign all legitimate values of X into another set V_i.

16) Calculate the residue vectors $v_i = V_i \bmod m_i$ and the Hamming distance for all elements of set V_i.

17) Assign the values of V_i to S for which the hamming distance is minimum.

18) Calculate the bit error rate for minimum hamming distance value.

D. Chinese Remainder Theorem

The Chinese remainder theorem is a result about congruences in number theory and its generalizations in abstract algebra.

The Chinese remainder theorem can also be used in Secret sharing, which consists of distributing a set of shares among a group of people who, all together (but no one alone), can recover a certain secret from the given set of shares. Each of the shares is represented in congruence, and the solution of the system of congruence using the Chinese remainder theorem is the secret to be recovered.

E. Channel Result

During transmission, errors propagate into the residue vector *x* at positions u1= 1, u2=3, u3=5. Therefore, let the received vector be *y*= {2, 2, 2, 7, 3, 7}

x = {1, 2, 0, 7, 7, 7}

$y = \{2, 2, 2, 7, 3, 7\}$

Three errors are introduced because $t = r - 1 = 3$

F. Receiver Results

- From y, the computed integer Y using,

$$Y = \sum_{i=1}^{n} y_i M_i a_i \bmod M$$

$$= 88832$$

- The corresponding values of Mi and the multiplicative inverse are
- Mi = {85085,51051,36465,23205, 19635, 15015};
- ai = {2, 1, 4, 2, 8, 13};
- The minimum Hamming distance is 3. Hence the set = { 2, 7}.
- The moduli set for the integer 2 (elements in S) is {2, 3, 5, 7, 11, 13}.
- The moduli set for the integer 7 (elements in S) is {3, 5, 7, 11, 13, 17}.
- S = {11, 13, 17, 19, 23, 29, 31}
  Since the moduli set for integer 7 and are same, the transmitted integer is 7.

G. Comparison Between Existing and Proposed Method

Without doing the mapping function in the transmitter, only the residues x_i are transmitted. In the channel $t = r - 1$ errors are introduced in the transmitted vector. In the receiver side, the vector $y = x + e$ is received; in the receiver algorithm from steps 11 to 17 are performed. The 18th step is verification step

- Compute the relative pair wise prime number set for each value of S and compare it with transmitted m_i.
- The transmitted integer is the value of S for which, the moduli of m_i and the transmitted m_i is same.
- Compare the existing method and the proposed method.

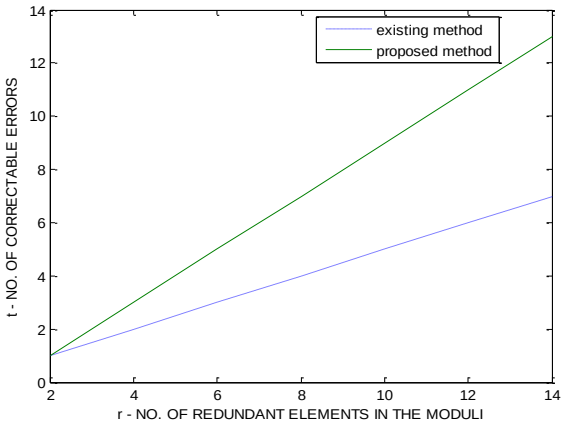

Figure 3. Comparison between Existing and Proposed Method

III. RESULT AND DISCUSSION

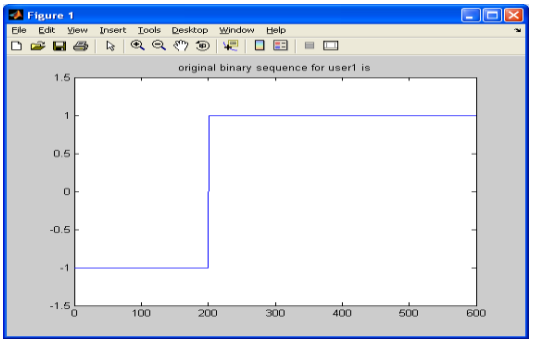

Figure 4. original binary sequence for user1

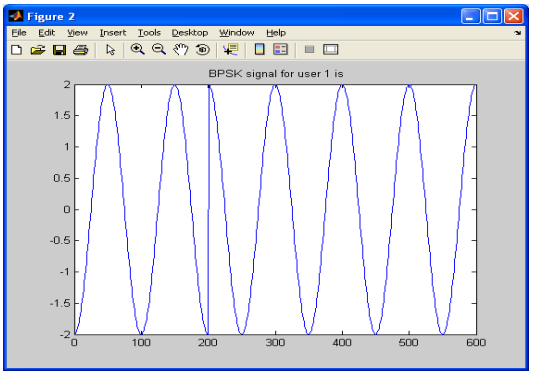

Figure 5. BPSK signal for user 1

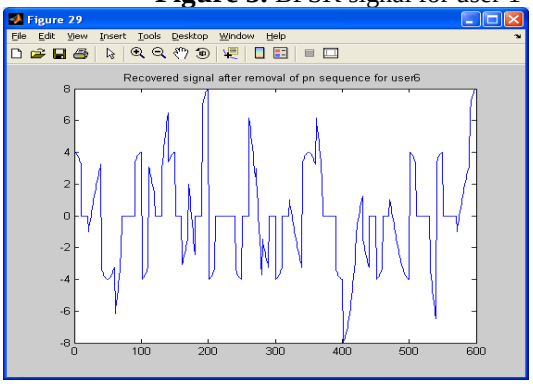

Figure 6. Recovered signal after removal of pn sequence for user6

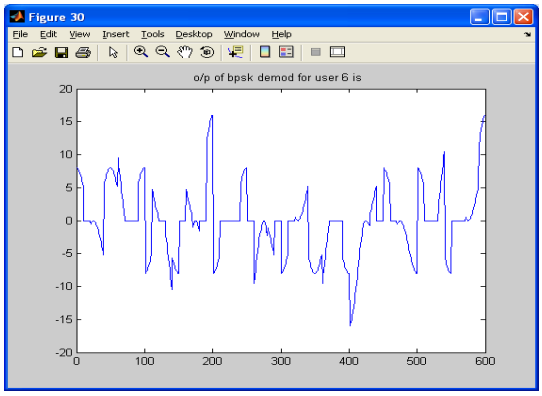

Figure 7. O/P of BPSK demod for user 6

IV. CONCLUSION

In this paper, a modified algorithm is proposed for correcting multiple errors. This is different from existing multiple error correction schemes. This algorithm is quite simple and easy to implement. The proposed algorithm can correct more errors than the other existing schemes at the expense of marginal increase in computation and it is compared with the existing method without implementing in the CDMA application but when it is implemented in the CDMA application the BER is calculated for several SNR values. The future work is to reduce the number of orthogonal codes and computation.

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Effect of Weaning Management on Carcass Characteristics of T&D Pigs

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ABSTRACT

The present study was carried out on 24 growing finishing T &D (Tamworth x Desi) pigs maintained at All India Coordinated Research Project on Pig (Mega Seed Project), College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati-781022, Assam, which were weaned at 28, 35, 42 and 56 days. After the end of growing finishing period (14 to 34 weeks) all the pigs were slaughter to study some of the important quantitative and qualitative carcass traits. Pigs under 28 days weaning group weigh significantly ($P<0.05$) higher carcass weight compared to 35, 42 or 56 days weaning group. Whereas no differences were observed in dressing percentage (%), head weight, weight of alimentary tract with contents including urinary bladder, genitalia, spleen, kidney and pancreas and weight of shank among the carcasses of pigs under different weaning groups. Apart from loin and bacon, no differences were observed in ham, picnic, butt and jowl weight in the carcasses of pigs weaned at different ages in the present study. It was observed that there were only numerical superiority of carcass length and loin eye area, but significantly ($P<0.05$) higher back fat thickness in early weaned pigs compared to lately weaned pigs.

Keywords: weaning, T&D pigs, quantitative and qualitative carcass traits, whole sale cuts, carcass length, backfat thickness, loin eye area

I. INTRODUCTION

Improvement in resource use efficiency is one of the important key components of sustainable pig production system. Different manage mental practices were developed to improve the resource use efficiency in pig production system in the last few decades and practice of early weaning is one such manage mental tool which helps to improve the pig production efficiency. Early weaning provide the opportunity to exploit the higher growth potential of young piglets by providing easily digestible nutrients, as sow milk production becomes limiting to the suckling piglet from 8-10 days of age and the difference between need and supply of nutrients progressively increases as lactation proceeds (Harrell et al. 1993). Compared to the piglets having low body weight, piglet of higher body weight at the end of rearing period (11 to 13 weeks of age) continued to grow fast during growing finishing.

In our previous experiment it was observed that early weaned (28 and 35 days) piglets weigh higher than their late weaned (42 and 56 days) counterpart at the end of rearing period (13th weeks of age) and superiority of growth rate of early weaned piglets continued till the end of slaughter age (34 weeks). Information about the carcass characteristics of T&D pigs is very scanty. Therefore the present work was undertaken to study the some of the important carcass characteristics of T&D pigs and also to evaluate the effect of weaning management on some carcass parameters.

II. METHODS AND MATERIAL

The experiment was carried out on 24 weaned growing finishing pigs born to 20 T&D (Tamworth x Desi) sows maintained at All India Coordinated Research Project on Pig (Mega Seed Project), College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati-781022, Assam. Six castrated grower pigs of average body weight at the end of rearing period (13 weeks of age) were selected from the piglets of 5 sows (at least one grower pig per litter) which were weaned at 28 days (T_1) of age. Similarly 18 other castrated grower pigs (six per weaning group) were selected from the litters 15 sows (5 sows in each weaning group) which were weaned at 35 (T_2), 42 (T_3) and 56 days (T_4) of age. Pigs so selected were reared individually and reared till the end of slaughter age (34 weeks of age). All the experimental animals were fed to the appetite on concentrate rations **(Table-1),** which were prepared as per the standards given by NRC (1998).

At the end of 34 weeks of age, all the 24 pigs were slaughtered, dressed, eviscerated and splitted into two symmetrical halves as per the methods described by Ziegler (1968) to carry out the present investigation. The heads were decapitated at the *atlanto-occipital* joints, fore shanks were removed at the knee joints and hind shanks were disjointed at the hock joints. The weights of hot halved carcasses were recorded to find out the dressing percentage. The visceral organs on removal were washed and cleaned thoroughly and were weighted. Some of the important quantitative carcass characteristics like carcass weight, dressing percentage, weight of various wholesale cuts (Ham, loin, bacon, picnic, butt and jowl) and some qualitative carcass characteristics like carcass length, back-fat thickness and loin eye area were recorded.

Statistical analysis of data was done as per Snedecor and Cochran (1994).

The research was approved by IAEC through the no 770/ac/CPCSEA/F.V.Sc./AAU/IAEC/123.

Table 1. Composition of Different Rations Used In the Experiment

Sl. No.	Rations→		Grower II	Finisher I	Finisher II
	Age in weeks rations were fed→		14-17	18-27	28-34
A.	Ingredients	Cost/kg	Parts (%)	Parts (%)	Parts (%)
	Maize	11.24	66.4	75.6	75.6
	SoybeanMeal	27.97	10	6	5
	Ground Nut Cake	25.37	10	9	6
	Wheat Bran	11.95	3	2	9
	Fish meal	21.95	7	5	2
	Soybean oil	78.02	1	0	0
	Methionine	520.00	0.1	0	0
	Lysine	280.00	0.25	0.1	0.1
	Mineral Mixture	90.00	2	2	2
	Salt	5.47	0.25	0.3	0.3
	Total		100	100	100

Sl. No.	Rations→	Grower II	Finisher I	Finisher II
	Age in weeks rations were fed→	14-17	18-27	28-34
B.	Cost of ration per kg (`)	18.51	15.89	15.03
C	Nutrient Contents (*calculated*)			
	Dry Matter (%)	86.79	86.58	86.58
	Energy (DE) (Kcal/kg)	3310.02	3294.72	3290.72
	Crude Protein (%)	17.54	15.17	13.00
	Crude Fibre (%)	3.86	3.48	3.80
	Lysine (%)	1.02	0.72	0.56
	Methionine (%)	0.43	0.30	0.25
	Methionine + Cystine (%)	0.72	0.55	0.47
	Calcium (%)	0.91	0.85	0.77
	Phosphorus (%)	0.72	0.69	0.68
	Ether Extract (%)	4.57	3.53	3.44

III. RESULT AND DISCUSSION

Quantitative carcass characteristics

The average slaughter weights, hot carcass weights, dressing percentage, head weights, weights of alimentary tract with contents (including urinary bladder, genitalia, spleen, kidney and pancreas), pluck weights and weights of shank of T&D pigs of different weaning groups are presented in **Table 2 .**

Slaughter weight

The mean slaughter weight was highest in early weaned pigs (103.00±2.93 kg in 28 days weaning group-T_1), intermediate in 35 (97.08±2.34 kg in T_2) and 42 days (93.25±2.67 kg inT_3) and lowest in 56 days weaning group (89.67±3.49 kg in T_4). The differences in slaughter weights among the different weaning groups were because of the variations in body weights at the beginning of the growing period (week 14), which persisted till slaughter age (week 34). Similar effects were also reported by Mahan (1993), Wolter *et al.* (2002), Whiteney *et al.* (2006) and Oliveira *et al.*(2011). Slaughter weights of the present study is comparable to the findings of Patel *et al.* (2009) in Large White Yorkshire (75.33±5.21 kg at 7 months) and Murugan *et al.* (2009) in Duroc x Large White Yorkshire x Landrace (106.40 to 119.90 kg at 10 months). Anon (2011) reported the slaughter weight of 70-80 kg for T&D Pigs.

Carcass weight

The average hot carcass weights (kg) in T_1, T_2, T_3 and T_4 were 76.58±2.10, 72.00±1.58, 69.25±2.22 and 65.92±2.70 respectively. As expected, average hot carcass weight in T_1 was significantly ($P<0.05$) higher than T_3 and T_4, whereas no differences were observed between T_1 and T_2 and among T_2, T_3 and T_4 groups. Carcass weight is mainly related to slaughter weight, the variations in slaughter weights might resulted in differences in carcass weight among the different weaning groups.

Dressing percentage

The average dressing percentage (%) in T_1, T_2, T_3 and T_4 were recorded to be 74.37±0.28, 74.19±0.30, 74.23±0.47 and 73.49±0.30 respectively. Anon (2011) reported the dressing percentage of T&D Pigs as 75.05, which is agreement with the present findings. Apart from numerical superiority of early weaned pigs (T_1) over lately weaned pigs (T_4), there were non-significant ($P<0.05$) differences in dressing percentage among the different weaning groups. Numerically higher dressing percentage recorded in pigs of T_1 group, might be because of higher body weights at slaughter over the pigs of T_4 group. Whittemore (1998) mentioned that for each kg increase in slaughter weight between 80 and 120 kg live weight, the dressing percentage increased by 0.1% units. In the present findings, the difference in live weights at slaughter between the pigs of T_1 (103.00 kg)

and T_4 (89.67 kg) groups was 13.33 kg and the difference in dressing percentage (%) between T_1 (74.37) and T_4 (73.49) groups was 0.88 %, which nearly satisfied the statement given by Whittemore (1998).

Head weight

The average head weight (kg) of T&D pigs was highest for the pigs in T_1 (4.33±0.21), followed by T_2 (4.12±0.10), T_3 (4.00±0.05) and T_4 (3.88±0.08). The variations in head weights were due to differences in slaughter weights of animals under different weaning groups, however statistical analysis revealed non-significant ($P<0.05$) differences among them. Weight of head in percent to slaughter weight ranged from 4.20±0.15 (T_1) to 4.35±0.09 (T_4). The findings of the present study were similar with the reports of Sharma (1994) and Mili (1995), whereas Sangma (1992) and Sailo (2005) mentioned higher values for head weight. The variations might be due to the difference in breed, age and weight at slaughter, conformations of animals etc.

Weight of alimentary tract with contents including urinary bladder, genitalia, spleen, kidney and pancreas (ATWC)

The average weights (kg) of alimentary tract with contents including urinary bladder, genitalia, spleen, kidney and pancreas were 11.63±0.32, 11.07±0.17, 10.90±0.26 and 10.67±0.36 and this comprised 11.30 ± 0.18, 11.42 ± 0.18, 11.71 ± 0.24 and 11.92 ± 0.22 per cent of the slaughter weight in T_1, T_2, T_3 and T_4 respectively. Statistical analysis revealed non-significant ($P<0.05$) difference in weights of alimentary tract with contents (including urinary bladder, genitalia, spleen, kidney and pancreas) among the different weaning groups. The data revealed that decrease in slaughter weight resulted in slight decrease in weight of ATWC, but there was slight increase in percent weight of ATWC to slaughter weight. This might be because of the fact that carcass grows relatively faster than the gut and the gut therefore comprises a progressively lesser proportion of the whole animal as it increases in size (Whittemore 1998). Higher ATWC weights could be linked to higher feed intake capacity and better ADG of pigs weaned at early age (T_1 and T_2) than the late weaned ones (T_3 and T_4). Sangma (1992) and Mili (1995) also reported similar records in their experiment in Hampshire and crossbred pigs. For comparison among various weaning groups, no such reports are available.

Pluck weight (Trachea, lungs, heart, liver)

The pluck weights (kg) averaged 2.98±0.05, 2.92±0.08, 2.77±0.05 and 2.73±0.07 kg in T_1, T_2, T_3 and T_4 respectively. In respect to per cent slaughter weight, it constituted 2.90±0.06, 3.01±0.07, 2.97±0.06 and 3.06±0.05 in T_1, T_2, T_3 and T_4 respectively. Data revealed that pluck weights were higher ($P<0.05$) in early weaned pigs (T_1 and T_2) compared to the lately weaned pigs (T_3 and T_4). Higher slaughter weights of early weaned pigs might be related to this significant ($P<0.05$) difference. Sangma (1992) and Mili (1995) also reported higher pluck weights when slaughter weights were higher. Present findings of pluck weight for different slaughter weights under different weanings groups were in agreement with the report of Wiseman *et al.* (2007).

Shank weight

The average shank weights (kg) were found to be 1.92±0.07, 1.90±0.05, 1.85±0.04 and 1.80±0.06 and it constituted 1.86±0.05, 1.96±0.04, 1.99±0.04 and 2.01±0.04 per cent of the slaughter weights in T_1, T_2, T_3 and T_4 respectively. Statistically, non-significant ($P<0.05$) differences were observed in shank weights among the different weaning groups. There was only numerical superiority in shank weights of pigs weaned at early age (T_1 and T_2) compared to lately weaned (T_3 and T_4) pigs, which might again be related to higher slaughter weights of early weaned pigs. Shank weights only constitute 1.86 to 2.01 percent (1.86% in T_1 and 2.01% in T_4) of the slaughter weight and that might be not be enough to make a difference when there was a variation of only 13.33 kg between the highest and lowest slaughter weights (T_1 and T_4) of pigs under study. Sharma (1994) and Sailo (2005) recorded similar shank weights, whereas Sangma (1992) reported little higher shank weight as compared to the slaughter weight in her study. These differences again might be related to differences in breed, age and weight at slaughter, body conformation etc.

Wholesale cuts

The average weights of different wholesale cuts namely Ham, Loin, Bacon, Picnic, Butt and Jowl of different weaning groups are presented in Table 4.14(A) and the respective analysis of variance in Table 4.14(B).

a) Ham **:** The weights of Ham in T_1, T_2, T_3 and T_4 were 25.75±0.38, 25.71±0.43, 25.80±0.48 and 26.61±0.18 per cent of the carcass weights and its average weights (kg) were 19.76± 0.52, 18.50 ± 0.27, 17.70 ± 0.66 and 17.64 ± 0.64 respectively. Statistically, non-significant ($P<0.05$) differences were observed in ham weights among the different weaning groups. The data revealed that increase in body weights resulted gradual increased in ham weights, whereas, ham weights per cent to carcass weights decreased with increase in slaughter weights. Statistical analysis revealed non-significant ($P<0.05$) difference in per cent ham weights among the carcasses of different weaning groups. Per cent ham weight in the present study was similar with the reports of Massar (1989) and Patel *et al.* (2009), whereas higher values were reported by Das and Mishra (1986) and Singh *et al.* (1997). However, Pavlic *et al.* (1980) and Anon (1991) reported lower per cent ham weight than the present findings.

b) Loin: Loin weights comprised of 19.87±0.33, 21.00±0.49, 20.96±0.60 and 22.24±0.52 per cent of slaughter weights in T_1, T_2, T_3 and T_4 respectively and the percent loin weight for T_4 was significantly ($P<0.05$) higher as compared to T_1. The average weights (kg) of loin were recorded as 15.20 ± 0.36, 14.94 ± 0.71, 14.40 ± 0.42 and 14.66 ± 0.73 in T_1, T_2, T_3 and T_4 respectively. It was observed that loin weight in per cent to slaughter weight was highest in carcasses of lately weaned pigs (T_4) and lowest in carcasses of early weaned pigs (T_1) group and intermediate in carcasses of pigs weaned at 35 days (T_2) or 42 days (T_3) of age. Increased fat deposition in higher slaughter weight pigs (T_1) might resulted in lower per cent loin weights as compared to the lower slaughter weight pigs (T_4). Per cent loin weight in the present study were in agreement with the reports of Massar (1989), Anon (1991a) and Sangma (1992), whereas Anon (1991) and Patel *et al.*(2009) reported higher in per cent loin weights than the present findings.

c) Bacon: Weights (kg) of bacon averaged 25.85±0.14, 24.55±0.53, 24.28±0.45 and 22.66±0.43 per cent of slaughter weights in T_1, T_2, T_3 and T_4 and the average weights (kg) were 19.90 ± 0.50, 17.84 ± 1.25, 16.53 ± 0.71 and 15.20 ± 0.60 respectively. Statistical analysis revealed that the weight of bacon was significantly ($P<0.05$) higher in T_1 compared to the other weaning groups. Per cent bacon weights were significantly higher for the carcasses of early weaned (T_1 and T_2) pigs as compared to lately weaned (T_3 and T_4) ones. Carcass weights of early weaned pigs were significantly higher in early weaned pigs, wherein percent weights of the lean cuts like loin and ham were comparatively lower and that might resulted in higher weights of bacon which contain more fat. On the other hand, the carcasses of lately weaned animals, where lean cuts were proportionately higher resulted in proportionate reduction in bacon weight. From the present findings it could be inferred that after attaining certain body weights, fat deposition increases as compared to protein deposition. Per cent bacon weights in the present findings were much higher than the reports of Anon (1991) and Sangma (1992), whereas higher values were reported by Massar (1989).

d) Picnic: The weights of picnic in T_1, T_2, T_3 and T_4 groups were 13.55±0.13, 13.57±0.22, 13.82±0.27 and 13.59±0.30 per cent of the carcass weights and the average picnic weights (kg) were 10.50±0.29, 9.82±0.25, 9.33±0.32 and 9.06 ± 0.39 respectively. Statistically, non-significant ($P<0.05$) differences were observed in picnic weights among the different weaning groups, though the weights of the picnic were increased along with the increase in carcass weights of early weaned pigs (T_1 and T_2). Das and Mishra (1986) and Sangma (1992) reported similar per cent weights of picnic with the present findings.

e) Butt: Butt weights comprised of 11.65±0.29, 11.94±0.29, 11.91±0.34 and 11.68±0.29 per cent of slaughter weights in T_1, T_2, T_3 and T_4 respectively. The average butt weights (kg) in T_1, T_2, T_3 and T_4 were recorded as 9.14±0.42, 8.76±0.31, 7.88±0.47 and 7.78±0.43 respectively. Non-significant ($P<0.05$) differences were observed for percent butt weights among the different weaning groups. However, the weights of butt were increased along with the increase in carcass weights of early weaned pigs (T_1 and T_2). Das

and Mishra (1986) and Sangma (1992) also reported similar per cent weights of butt with the present findings.

f) Jowl: Weights of jowl averaged 3.33±0.10, 3.24±0.15, 3.22±0.144 and 3.21±0.14 per cent of slaughter weights in T_1, T_2, T_3 and T_4 and the average jowl weights (kg) were 2.60±0.13, 2.36±0.15, 2.18±0.14 and 2.16±0.17 kg respectively. Non-significant ($P<0.05$) differences were observed in the weights of jowl among the different weaning groups. However jowl contributed numerically higher per cent weight for the carcasses of early weaned pigs which also indicated the higher growth of fatty tissues in the carcasses of early weaned pigs compared to lately weaned ones. Das and Mishra (1986) and Sangma (1992) reported similar per cent weights of jowl with the present findings.

Qualitative carcass characteristics

The measurements of economically important qualitative carcass traits of T&D pigs namely carcass length, back-fat thickness and loin eye area of different weaning groups are presented in **Table 2.**

Carcass length

The average values of the carcass length (cm) in T_1, T_2, T_3 and T_4 were found to be 73.00±0.97, 72.83±1.62, 72.33±0.76 and 69.33±0.76 respectively. Carcass lengths were not significantly ($P<0.05$) different among the weaning groups under study, however there were numerical superiority for the carcasses of early weaned pigs. Higher growth rates of early weaned pigs might lead to higher carcass weight and skeleton size and might cause increase in carcass length of early weaned pigs. Mili (1995) also reported higher carcass length for the Hampshire pigs slaughtered with higher body weights than the lower weight ones. Singh *et al.* (1997) reported relatively higher records of carcass length for T&D pigs compared to present findings, when carcass weight was 112.19±2.16 kg, which might be because higher age and body weight of animals than the present one. Anon (2011) reported the carcass length (cm) of T&D Pigs as 68.55 for the pigs weighing 70-80 kg at the time of slaughter.

Back fat thickness

Back-fat thicknesses (cm) were 3.63±0.10, 3.58±0.16, 3.26±0.09 and 3.04±0.23 in T_1, T_2, T_3 and T_4 respectively. Back fat thickness in the carcasses of early weaned pigs were significantly ($P<0.05$) higher compared to the lately weaned pigs. Relatively bigger size of alimentary tract might be the cause of higher feed consumption leading to better growth and more fat deposition in the early weaned pigs than the lately weaned pigs. Mili (1995) and Kumar *et al.* (2005) also reported similar trend of increase in back fat thickness along with increase in body weights in Hampshire and Large White Yorkshire pigs respectively. Singh *et al.* (1997) reported relatively lower records of back fat thickness in carcasses of T&D pigs than the present findings, which might be because of different plane of nutrition adopted.

Loin eye area

The loin eye area (cm^2) values averaged 29.46±0.89, 29.19±1.01, 28.92±0.76 and 28.29±0.43 in T_1, T_2, T_3 and T_4 groups respectively. The mean loin eye area didn't differ much among the different weaning groups, however like carcass length and back fat thickness, there were numerical superiority of loin eye area in carcasses of early weaned pigs. This might be attributed to higher slaughter weight and carcass weights of pigs under early weaning groups. The loin eye area recorded in present study compared well with the reports of Ravi *et al.* (2005) and Patel *et al.* (2009) in Large White Yorkshire, Sangma (1992) and Mili (1995) for Hampshire pigs. Singh *et al.* (1997) recorded somewhat lower loin eye area compared to the present findings in T&D pigs when slaughter weight was 112.19±2.16kg.

Effect of weaning management on carcass characteristics

In the present study, significantly higher slaughter weight at 34 weeks of age resulted in significantly ($P<0.05$) higher carcass weight in 28 days weaned pigs compared to 35, 42 or 56 days weaning pigs. Whereas no differences were observed in dressing percentage (%), head weight, weight of alimentary tract with contents including urinary bladder, genitalia, spleen, kidney and pancreas and weight of shank among the carcasses of pigs under different weaning groups.

Morrison *et al.* (2008) did not observe differences in dressing percentage in pigs slaughter at 152 days of age under 22 days or 29 days weaning age. Dritz *et al.* (1996) also observed no difference in dressing percentage of pigs weaned at 9 or 19 days and slaughtered at 109 kg weight. Higher slaughter weights of early weaned pigs (T_1 and T_2) might be the cause of higher pluck weights ($P<0.05$) compared to the lately weaned pigs (T_3 and T_4). Sangma (1992) and Mili (1995) recorded higher pluck weight when slaughter weights were higher.

Apart from loin and bacon, no differences were observed in ham, picnic, butt and jowl weight in the carcasses of pigs weaned at different ages in the present study. Increased fat deposition in higher slaughter weight pigs (T_1) might resulted in lower per cent loin weights and higher per cent bacon weight as compared to the lower slaughter weight pigs (T_4). No such reports are available to make comparison of different wholesale cuts under different weaning age.

In the results of the present study it was observed that there were only numerical superiority of carcass length and loin eye area, but significantly ($P<0.05$) higher back fat thickness in early weaned pigs compared to lately weaned pigs. Higher slaughter weights in early weaned pigs might be the cause of little higher carcass length and back fat thickness in carcasses of early weaned pigs. Wide variability within the group might have resulted in non-significant difference of carcass length and loin eye area among the different weaning groups. Dritz *et al.* (1996) also observed higher back fat thickness in early weaned pigs compared to lately weaned pigs. Anon (2007) also recorded significantly higher level of back fat thickness in pigs weaned at 4 weeks of age when compared to pigs weaned at 6 or 8 weeks of age. Morrison *et al.* (2008) mentioned that piglets weaned at 22 days weigh more at 152 days of age, yield more carcass weight and measured more back fat thickness than 29 days weaning group. Cabrera (2010) observed that piglets weaned at 20 days had more loin depth with more lean percentage than carcasses of 2 or 14 days weaned pigs. Hohenshell *et al.* (2000) on the other hand didn't find any difference in back fat thickness for pigs weaned at 10 d of age compared to 30 d of age. Collins *et al.* (2010) also didn't find major influence on lifetime growth performance or body composition at commercial slaughter weights when weaning age was 13 or 21 days.

Table 2. Mean (± SE) of certain Quantitative and Qualitative carcass traits of T&D pigs under different weaning groups

Traits	Weaning Group			
	28 days (T_1)	35 days (T_2)	42 days (T_3)	56 days (T_4)
A. Quantitative carcass traits				
i. Slaughter weight (kg)	103.00 ± 2.93^{a}	97.08 ± 2.34^{ab}	93.25 ± 2.67^{ac}	89.67 ± 3.49^{bcd}
ii. Hot carcass weight (kg)	76.58 ± 2.10^{a}	72.00 ± 1.58^{ab}	69.25 ± 2.22^{bc}	65.92 ± 2.70^{bd}
iii. Dressing percentage (%)	74.37±0.28	74.19±0.30	74.23±0.47	73.49±0.30
iv. Head weight (kg)	4.33±0.21 (4.20 ± 0.15)	4.12±0.10 (4.24 ± 0.03)	4.00±0.05 (4.30 ± 0.10)	3.88±0.08 (4.35 ± 0.09)
v. Weight of alimentary tract with contents including urinary bladder, genitalia, spleen, kidney and pancreas (kg)	11.63±0.32 (11.30 ± 0.18)	11.07±0.17 (11.42 ± 0.18)	10.90±0.26 (11.71 ± 0.24)	10.67±0.36 (11.92 ± 0.22)
vi. Pluck weight (kg)	2.98 ± 0.05^{a} (2.90 ± 0.06)	2.92 ± 0.08^{ab} (3.01 ± 0.07)	2.77 ± 0.05^{bc} (2.97 ± 0.06)	2.73 ± 0.07^{cd} (3.06 ± 0.05)
vii. Shank weight (kg)	1.92±0.07 (1.86 ± 0.05)	1.90 ±0.05 (1.96 ± 0.04)	1.85±0.04 (1.99 ± 0.04)	1.80±0.06 (2.01 ± 0.04)
	Above figures within parentheses indicate percent to slaughter weight			

Traits	Weaning Group			
	28 days (T_1)	35 days (T_2)	42 days (T_3)	56 days (T_4)
viii. Wholesale cuts				
a) Ham (%)	25.75±0.38 (19.76± 0.52)	25.71±0.43 (18.50 ± 0.27)	25.80±0.48 (17.70 ± 0.66)	26.61±0.18 (17.64 ± 0.64)
b) Loin (%)	$19.87±0.33^{a}$ (15.20 ± 0.36)	$21.00±0.49^{ab}$ (14.94 ± 0.71)	$20.96±0.60^{ac}$ (14.40 ± 0.42)	$22.24±0.52^{bd}$ (14.66 ± 0.73)
c) Bacon (%)	$25.85±0.14^{a}$ (19.90 ± 0.50)	$24.55±0.53^{b}$ (17.84 ± 1.25)	$24.28±0.45^{bc}$ (16.53 ± 0.71)	$22.66±0.43^{d}$ (15.20 ± 0.60)
d) Picnic (%)	13.55±0.13 (10.50 ± 0.29)	13.57 ±0.22 (9.82 ± 0.25)	13.82±0.27 (9.33 ± 0.32)	13.59±0.30 (9.06 ± 0.39)
e) Butt (%)	11.65±0.29 (9.14 ± 0.42)	11.94 ±0.29 (8.76 ± 0.31)	11.91±0.34 (7.88 ± 0.47)	11.68±0.29 (7.78 ± 0.43)
f) Jowl (%)	3.33±0.10 (2.60 ± 0.13)	3.24 ±0.15 (2.36 ± 0.15)	3.22±0.14 (2.18 ± 0.14)	3.21±0.14 (2.16 ± 0.17)
	Above figures (for Sl. No. viii. Wholesale cuts) within parentheses mean (± SE) weight in kilogram (kg).			
B. Qualitative carcass traits				
i. Carcass length (cm)	73.00±0.97	72.83±1.62	72.33±0.76	69.33±0.76
ii. Back fat thickness (cm)	$3.63±0.10^{a}$	$3.58±0.16^{ab}$	$3.26±0.09^{ac}$	$3.04±0.23^{cd}$
iii. Loin eye area (cm^2)	29.46±0.89	29.19±1.01	28.92±0.76	28.29±0.43

IV. CONCLUSION

Based on the available reports, present results of carcass characters under different weaning groups were well justified. However, due to scanty information, more study is required to evaluate the relationship of carcass characteristics with weaning age especially weaning age ranged from 28 to 56 days.

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