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IOT Based Club Foot

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ABSTRACT

In Today's world AI & Machine learning getting updated continuously. Due to rising demand of automated & predicated system user, get attracted towards the Machine learning using IoT. In this work, I work on handicapped related people to get time-to-time update & exact information related that person who used our device. In this I simply used the system that attach in shoes that get activated as hoes wear by handicapped person, after wearing shoes from that time period till remove shoes all them activate are recorded and store in database as well as send massage on mobile phone. Its store in all information on database so we can have used those informed any time to generate the report to examine handicapped person & gives exact solution & medicine to that person so its help doctor & patient to recover from it as early as possible.

Keywords : Moment Sensor, Shoes, Machine learning,IoT.

I. INTRODUCTION

Field of the invention:

The transformational nature of the IoT & Medical science. It is having a positive impact in lots of different areas, protecting the environment, lifting people out of poverty and getting those in remote areas connected and give the solution to medical related problem. It is also opening opportunities to those having handicapped & disable, bringing them new and exciting possibilities. Everyone in life has different levels of ability, and connected technology is having a great equalizing effect. We thought we would look at some of the most innovative and impressive ways the IoT & Machine learning is assisting those with handicapped & disable.

Background of the invention:

There are billions of devices in homes, factories, oil wells, hospitals, cars, and thousands of other places. With the proliferation of devices, you increasingly need solutions to connect them, and collect, store, and analyse device data. IoT & Machine learning provides broad and deep functionality, spanning the edge to the cloud, so you can build IoT solutions for virtually any use case across a wide range of devices. Since IoT integrates with AI services, you can make devices smarter, even without Internet connectivity. Built on the cloud, used by millions of customers in 190 countries, IoT can easily scale as your device fleet grows and your business requirements evolve. IoT & AI also offers the most comprehensive security features so you can create preventative security policies and respond immediately to potential security

issues.

Objective of invention:

1)Developed the Handicapped Shoes.
2) Got all details on Mobile.
3) Generate the report.
4) Provide exact details with time & Duration directly in App.

II. Methodology

In today's world everything developed very rapidly and gives instant massage on mobile Phone. In this work, I try to work on handicapped related people using some sensor to get all related details instantly by mail or massage. In this I simply used the system that attach in shoes that get activated a shoes wear by handicapped person, after wearing shoes from that time period till remove shoes all them activate are recorded and store in database as well as send massage on mobile phone. Its store in all information on database so we can have used those informed any time to generate the report to examine handicapped person & gives exact solution & medicine to that person so its help doctor & patient to recover from it as early as possible.

Architecture:

Certain healthcare applications need the immediate attention of medical personnel like in diseases related to the clubfoot in child or metatarsus adducts for patients. Such situations need a real-time and critical response with significantly less latency.

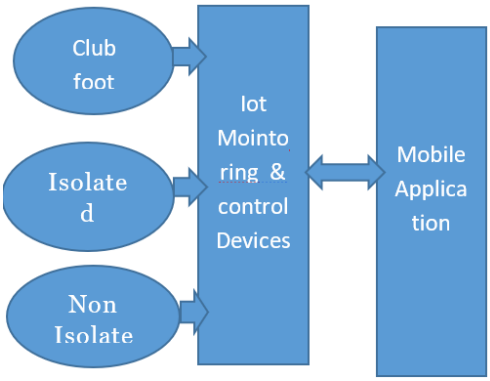

Fig.1 Architecture of IOT Club Foot

In a general cloud environment, the latency for data to be transmitted to the cloud, processing in the cloud, and getting a response involves significant latency, which is not acceptable. To overcome or limit the latency issues, which brings the computing and storage resources to the edge of the network, i.e., closer to the sensors. A regular healthcare system, where the vast majority of children are born in hospitals, the congenital clubfoot (CTEV,Congenital talipes equinovarus) diagnosis is easily set at birth by health professionals. The probability of overlooking, or mistaking, this disorder for another, is very small; therefore, practically all patients with congenital clubfoot are expected to be identified [1, 2]. From this viewpoint, where newborn children are diagnosed with congenital clubfoot, further steps are needed, including proper coding, registration, and reporting to a database before estimation of incidence is reliable. Under- and overestimation of the number of children with a preliminary diagnosis of congenital clubfoot may still occur. Overestimation is based on two forms of clubfoot: mild forms of fully reducible feet with no need for regular treatment; and complex forms with additional malformations of neurological origin. The etiology of clubfoot remains unknown and is controversial, and numerous theories are there. These include: nerve lesion muscular abnormality vascular defect, neuromuscular defect, regional growth disturbance, intrauterine extrinsic pressure induction, either primary , or secondary to early amniocentesis , a genetic component, either alone , or with a gene-environment interaction , connected to maternal smoking , seasonal variation .Anatomic observations [6] conclude the findings are of primary cause, although it may not be possible to distinguish primary from secondary abnormalities [9].

Although long held proposals of intra-uterine compression as a causative factor is unsubstantiated, Wynne-Davies still claims [11] "a feeling remains that mechanical pressure may be of some significance"(p 446). Evidence for this theory is criticised [9] for

being anecdotal. Some researcher [10] claim interruption in the development of a normal foot during the ninth week of gestation might be responsible for the deformity. This hypothesis of a regional growth disturbance [9, 10] is supported by two observations. First, a disproportionate amount of type I fibers in the posterior and medial muscle groups [8], which suggests the presence of a neural abnormality as muscle fiber types are neurally determined. Second, tendon sheaths of toe flexors and posterior tibial tendon have signs of cellular hypoplasia with smaller cell and cytoplasmic volume [9].Ethnic differences in CTEV occurrence is reported [22-24], with the lowest (0.6‰) incidence among the Chinese population, the highest (6.8‰) in the Polynesian region and a cumulative incidence of approximately one per 1000 live births among Caucasians. Studies on ethnic groups, populations, and families suggest a genetic component as one causative factor of congenital clubfoot. However, the mode of heritance does not follow a classic pattern [24] and both genetic and environmental factors are probably involved: the presence of a genetically determined connective tissue defect and a transient deforming force is supposed [24] to allow the mobile foot to be pushed into equinovarus position at a vulnerable time of its development.

Twin studies are useful for determining whether the cause of a disorder is genetic or not. As monozygotic twins have identical genes, dizygotic twins share 50% of the genes, and all twins share the antenatal environment, it is possible to assess the effect of genetic factors on congenital disorders. Increased rates of doubly affected monozygotic twins, compared with dizygotic twins (concordance), would indicate a genetic etiology for a disorder. This finding, confirmed by Engel et al. [25], suggests if a monozygotic twin is born with a clubfoot, the risk for the second to have the disorder is estimated to be one in three, strongly indicating a partly genetic etiology. The risk of having clubfoot in first-degree relative to a person with idiopathic clubfoot is higher than in the normal population. A sibling of a child with idiopathic clubfoot is reported [26] to have 2% to 4% risk of having a clubfoot. Through molecular genetic investigations, the search for predisposing genes has intensified. One single gene together with some unmeasured factor is proposed [27] but recently a possibly polygenic cause was suggested [28]. This polygenic threshold theory is supported by the finding of the Carter effect, i.e. females require a greater genetic load to inherit the disorder than males. Work by Wang et al. [15] demonstrates a link to gene Hoxd13, which is a gene directly regulating skeletal muscle protein (Fhl1).

The strongest evidence for an environmental, though intrauterine, cause is from research on the outcome of amniocentesis [12-14]. Early amniocentesis (EA=11–12 gestational weeks + 6 days) was associated with ten times higher rate of clubfoot than mid-trimester amniocentesis (MA = 15–16 + 6), or if this procedure was not performed [14]. This prospective randomized trial with the largest number of women enrolled had the same sex and laterality distribution as in other reports on clubfoot. This indicated the possibility of a similar mechanism without previous amniocentesis. Further, transient leakage of amniotic fluid could have contributed to the development of clubfoot by deformation, although it does not provide a full explanation.

III. Results

Seasonal variation is observed [2, 18, 19], with peak rates of clubfoot coinciding with observed peaks of enterovirus infection, suggesting a connection with a virus-causing agent. However, others [20, 21] have failed to prove this connection

Smoking during pregnancy is associated with an increased risk for certain birth defects, and among them especially strong association to oral cleft

prevalence has been demonstrated [12]. Isolated association between maternal smoking and clubfoot is reported [06]. Furthermore, evidence for a magnitude effect through joint exposure through maternal exposure and family history is larger than would be expected for an additive effect [14] and a potential important interaction between these two, or other, variables is suggested [15].

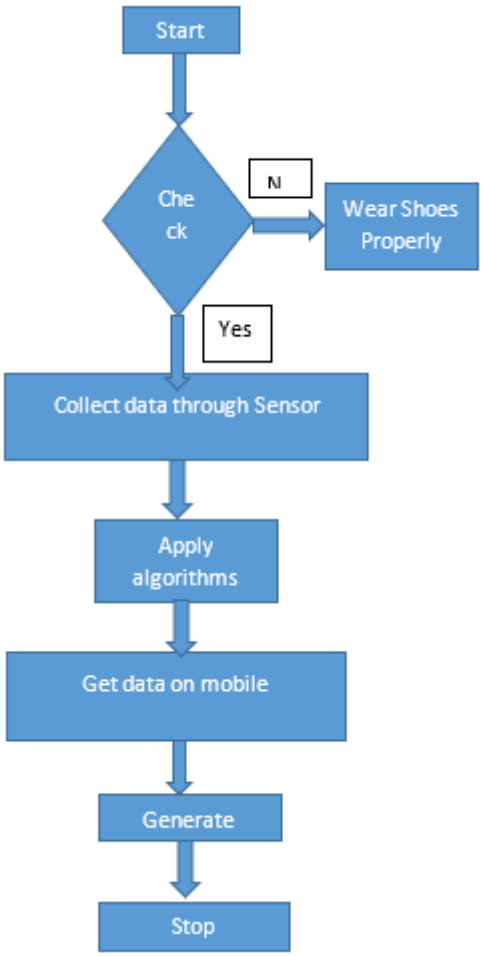

Fig 2. Method of research

Statistical significance in health-related measures is not synonymous with clinically important differences, for the patient or for the physician: questions that are more appropriate would be "How much change is enough to be important?" or "How much of a difference makes a difference?" To observers all changes in for doctors, consider computer application then following research method has found. In this research, moment sensor is used to observer the movement of child. One Microcontroller PIC18F24k40 series for RTC is used to take reading [26].

Fig.3 Club Foot Shoes

Fig.4 Club Foot Shoes with IOT

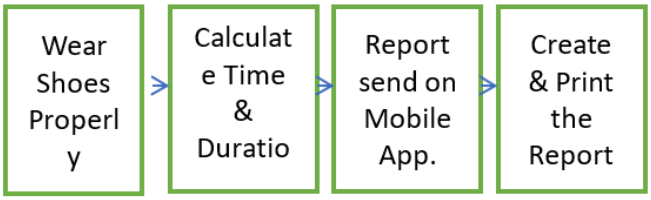

Fig.5 Stream of research

IV. CONCLUSION

IOT based clubfoot gives all data about patient to doctors so that doctor will get all information. According to that, he can give or change treatment for that patient. So the problem related to birth child get detected and treated as soon as possible. Patient recovery rate is increased.

V. REFERENCES

[1]. Rasheed N, Zaidi IH, Rasheed N, Hussain G. Awareness regarding clubfoot in parents. J Pak Orthopaedic Assoc. 2017;29:90–4.

[2]. Burfat A, Mohammed S, Siddiqi O, Samad L, Mansoor AK, Amin CM. Understanding the knowledge and perceptions about clubfoot in Karachi, Pakistan: a qualitative exploration. Iowa Orthop J. 2013;33:149.

[3]. Barker SL and Macnicol MF. Seasonal distribution of idiopathic congenital talipes equinovarus in Scotland. J Pediatr Orthop B 2002; 11(2):129-33.

[4]. Wallander H, Hovelius L, and Michaelsson K. Incidence of congenital clubfoot in Sweden. Acta Orthop 2006; 77(6):847-52. [Taylor & Francis Online],

[5]. Feldbrin Z, Muscle imbalance in the aetiology of idiopathic club foot. An electromyographic study. J Bone Joint Surg Br 1995; 77(4):596-601.

[6]. Ippolito E. Update on pathologic anatomy of clubfoot. J Pediatr Orthop B 1995; 4(1):17-24.

[7]. Nikkila A, Early amniocentesis and congenital foot deformities. Fetal Diagn Ther 2002;

[8]. Isaacs H, The muscles in club foot--a histological histochemical and electron microscopic study. J Bone Joint Surg Br 1977; 59-B(4):465-72.

[9]. Herceg MB, Histologic and histochemical analysis of muscle specimens in idiopathic talipes equinovarus. J Pediatr Orthop 2006; 26(1):91-3.

[10]. Pirani S, A method of evaluating the virgin clubfoot with substantial inter-observer reliability, in POSNA. 1995: Miami, Florida.

[11]. Laaveg SJ and Ponseti IV. Long-term results of treatment of congenital club foot. J Bone Joint Surg Am, 1980. 62(1): 23-31.

[12]. Hutchins PM, Long-term results of early surgical release in club feet. J Bone Joint Surg Br 1985; 67(5):791-9.

[13]. Engesaeter LB. Increasing incidence of clubfoot: changes in the genes or the environment? Acta Orthop 2006; 77(6):837

[14]. Danielsson LG. Incidence of congenital clubfoot in Sweden. 128 cases in 138,000 infants 1946-1990 in Malmo. Acta Orthop Scand 1992; 63(4):424-6. [Taylor & Francis Online],

[15]. Wallander H, Hansson G, and Tjernstrom B. Correction of persistent clubfoot deformities with the Ilizarov external fixator. Experience in previously operated feet followed for 2-5 years. Acta Orthop Scand 1996; 67(3): 283-7. 85.

[16]. Dobbs M B, et al. Factors predictive of outcome after use of the Ponseti method for the treatment of idiopathic clubfeet. J Bone Joint Surg Am 2004; 86-A(1): 22-7.

[17]. Andriesse H, Hägglund G, and Jarnlo G B. The clubfoot assessment protocol (CAP); description and reliability of a structured multi-level instrument for follow-up. BMC Musculoskelet Disord 2005; 6: 40.

[18]. Beatson T R and Pearson J R. A method of assessing correction in club feet. J Bone Joint Surg Br 1966; 48(1): 40-50.

[19]. Laaveg S J and Ponseti I V. Long-term results of treatment of congenital club foot. J Bone Joint Surg Am, 1980. 62(1): 23-31.

[20]. Munshi S, Varghese R A and Joseph B. Evaluation of outcome of treatment of congenital clubfoot. J Pediatr Orthop 2006; 26(5): 664-72.

[21]. Beckie T M and Hayduk L A. Measuring quality of life. Social Indicators Research 1997; 42(1): 21-39.

[22]. Andre M, Hagelberg S and Stenstrom C H. The juvenile arthritis foot disability index: development and evaluation of measurement properties. J Rheumatol 2004; 31(12): 2488-93.

[23]. Roye B D et al. Patient-based outcomes after clubfoot surgery. J Pediatr Orthop 2001; 21(1): 42-9.

[24]. Morris C et al. The Oxford ankle foot questionnaire for children: scaling, reliability and validity. J Bone Joint Surg Br 2008; 90(11): 1451-

[25]. S.T Sanamdikar, M.P Borawake(2021), “analysis of Several Characteristics of ECG Signal for Cardiac Arrhythmia Detection”, Vidyabharati International Interdisciplinary Research Journal,13(1) ISSN 2319-4979,pp-1-12.

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