

Efficient and Effective Blood Distribution System using Data Mining

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ABSTRACT

Blood is a saver of all existing lives in case of emergency needs. During the blood transfusion process, the acceptor receiving blood should be considered before donating the blood. The blood donor information should be checked before displaying their details on the website. In this paper, we propose a web application to timely update the information regarding the donors, acceptor and patients where the administrator access the whole information about blood bank distribution system. It also maintains the amount of each available blood groups, if the stock of a particular blood group is lower than the required amount then the proposed method notifies the donor to donate blood. The web based application is readily scalable, efficient and adaptable to meet the complex need of blood bank who is key facilitators for the healthcare sector. Hence the life at threat can be saved by this optimization technique.

Keywords: Blood bank, donors, acceptors, administrator, Blood Distribution.

I. INTRODUCTION

The need for the blood is important for treating in medical field. For every second someone needs blood to save their life. The task of blood bank is to receive blood from various donors, to monitor the blood groups database and to send the required blood during the need to the hospital in case of emergencies. In developing countries, especially like India, the blood resource lacks in quantity which is a barrier to others life. The Southern regions of Asia are weak in regulation of BTS and sometimes transferring the real time data are difficult. There are many shortcomings like decentralized nature of donor and required blood is needed at serious times. Manually is difficult in the current existing system and tracking the database for particular blood group is complicated. The aim of serving an efficient quality of blood to the patient.[1]

The last minute update of information are done in bidirectional way. So the information regarding the

Blood Transfusion Services(BTS) is explained as entering the details about the blood groups, members, contact details, etc. and finding the donor with GIS. The update about the information after the donation of the blood by a donor is not entered in the system. The online blood bank management system helps to maintain the database and quality of blood. This increases reliability, fault tolerance and availability. The online blood bank management system with integration of GIS is important because when the lives are at stake than using the web based application searching for nearby blood donor is done where it is based on nearby location. Further, these details are accessible by anyone, so a strong authentication mechanism is needed. The services used in the proposed system are web services and domain services. Web services are used for transferring the data entered by the users to the data storage.

This paper is organized as follows: Section II the related work of the paper is illustrated. The problem

faced in existing system is explained in Section III. The introduction to the proposed system is stated in Section IV. At last, the conclusion and the future work is stated in the final part.

II. RELATED WORK

Bidirectional way of communication is a problem in pull technology; communication between server and client using push technology is solved by push server seen here[1]. Communication process between the blood center department and hospitals using Geo-location RVD Scoring Algorithm is proposed [2] with an easy to organize database of contact details and their blood groups are displayed for acceptors. Large amount of time is taken to analyses the data of donor in online is solved here [3]. So extract knowledge of blood donor's classification to aid clinical decisions in blood bank center is retrieved. [4] Medications for patients are often packed with reminder systems to remind about the day and/or time to take the prescribed medicine as per their health conditions. Some of these reminder systems has integrated with portable telecommunication devices especially like the mobile phones.(SMS System);m technology and Patient Compliance methodology is proposed to process dosage adjustment of medication and other general information that highlights correction of life styles, changes in diet and physical exercise and to live in a better way. Previously we could not implement large dataset classification and separation [5] classification, clustering, association, prediction and sequential patterns to store all the important details. The Advanced Data Mining Techniques with KDD are used to implement data mining techniques for predicting the blood donor's behavior and attitude on blood donor's data set, which have been collected from the blood bank center. In recent years, smart phone applications could not open directly in emergency time. An Emergency Panic Button [6] can be used to provide facility to the customer who suffers

from the accident. We can more implement this application using android operating system since it is open source software which says that the collection of the blood donor data from the smart phone application is not safer. Using cloud with data mining techniques, the implementation of blood donor recruitment strategies are recorded, where the information about the recruitment is to be considered by focusing on social networks and community rather than intrinsic altruism [7].

To improve data confidentiality using Novel Techniques by data mining where this novel technique in blood donor recruitment information and management system for smart phone app user is seen here[8]. In the developing countries, the rate of population is regarded to increase public relations and effective communication between each other, blood donor issues in disaster management, the donor interest is discussed in this paper. Most of the app could not provide location and spatial search for geographical Location for blood donors. By using GPS and GSM with blood donor app in smart phones they are tracked [9]. It can provide the location of the donor and spatial search for geographical location for blood acceptor.

Discovering the knowledge behind all data blood stock from the databases are separated where it consumes more time. Using Data Mining with Interactive Knowledge Discovery, the discovery of new and interesting patterns in large datasets in blood donors is proposed here [10]. In some places like where there are more than 50 hospitals and only 6 blood banks are available then the problem of low stock is maintained.[11] Then there should be recruitment of voluntary blood donor, retaining and recognising them. But the problem is the information while retrieving fails in this system.

III. EXISTING SYSTEM

The recruitment of blood donor when compared with other countries is very less in overall blood donating percentage annually. [14] Besides this recruitment, the screening of donor and the management system is not well maintained. The details of the information of donors are given for the usage of the users for contacting them when in need of blood in case of any emergency. The problem which currently exists in the medical field is that blood is needed immediately for an injured person or for any major operation, it is not easily available even though blood banks are present. [3] There are some websites present for donating blood where the phone numbers of the donors are present which are not reliable since they don't get often updated. At present there are no proper websites.

The primary disadvantage of BTS is that there is a concern of many discomforts in immediately following the process. Discomfort in the process is typically minor. However, the users feel weak and light-headed for several hours following the procedure. [4] There is no proper care of person who donates blood to patients. That is the medical history about the donor is not available with the website. If a donor has or had any medical problem comes forward to donate blood to a patient then it may lead to threat. [13]

Medical history like:

- ✓ A person who have anemia or are underweight for height from their height should not donate blood.
- ✓ People who have diseases that are transmissible via blood are disqualified from donating.
- ✓ Donors who have had ear, tongue, or other body part piercing are allowed to donate blood as long as the needle used in the piercing was sterile. If it was not or if this is unknown, the potential

donor must wait 12 months from the time of the piercing.

- ✓ Being positive for the AIDS or hepatitis viruses ruled out as a blood donor.
- ✓ Pregnant women and recent childbirth ruled out as a blood donor. This is because considering the safety of donating during and shortly after pregnancy has not been fully established. There may be medical risks to the mother and baby during this time.

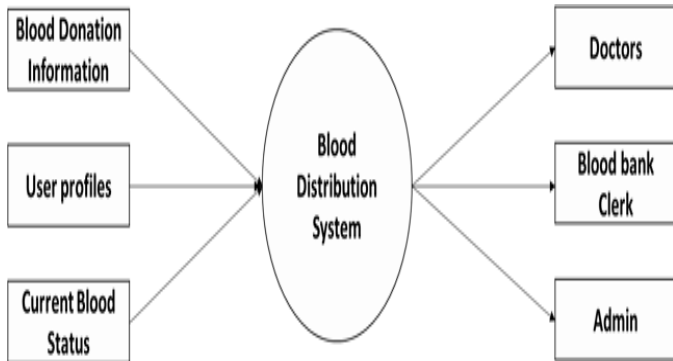
Thus the above following reasons are not considered in any websites. These kinds of information are not provided by the current system where it may lead to dead in person. Because the main reason is that the donor and the patient's body condition will not match all the time. There are short comings in web based application in the blood donation system:

- ✓ Difficulty in handling emergency situation,
- ✓ Slow internet access in some regions.
- ✓ No proper security for personal details.
- ✓ Misuse by third parties.
- ✓ No proper update about recent details.
- ✓ Needs a intermediate to work manually on information update.
- ✓ Time consuming (call or SMS to reach the donors).
- ✓ Leads to error prone results.

IV. PROPOSED WORK

The system to be developed will be consisting of roe based login for each and every type of user in the system. The user can be a clerk for blood donation camp, a doctor at hospital, clerk at Blood bank hospitals and an Admin for Blood monitoring and distribution systems.

Basic Data Flow



Modules

1. Authenticated Logins with Encryption scheme with SQL Injection prevention
2. Data Upload and Dataset Generation Modules
3. Mining Engines for Blood Distribution.
4. Admin Panel for Monitoring.
5. Email Services for user verification and forgot password services.

Results

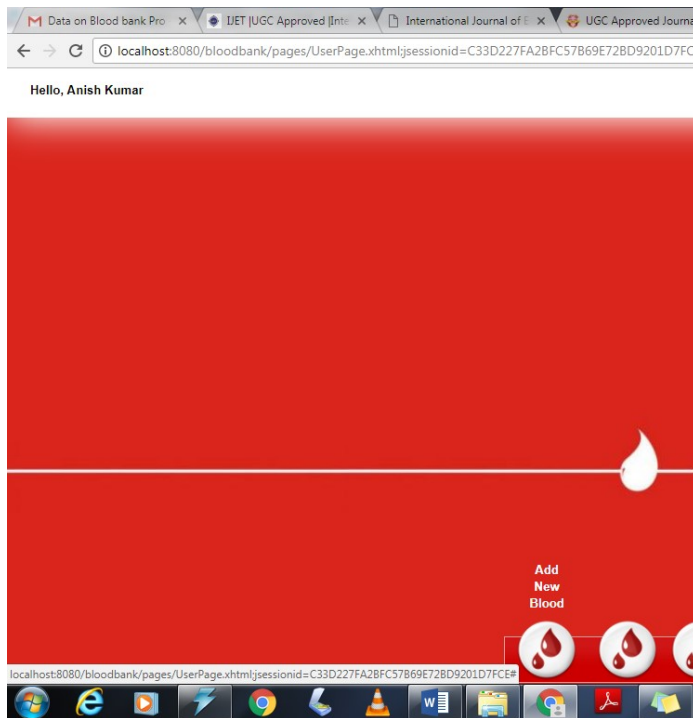


Figure 1. Admin Page

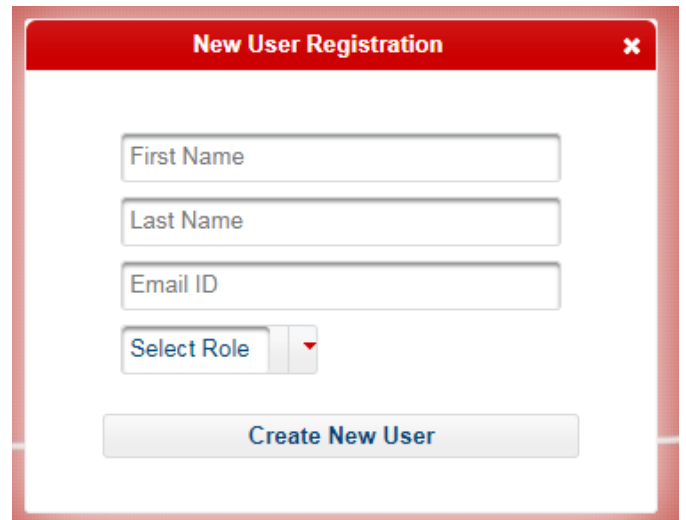


Figure 2. New User Registration

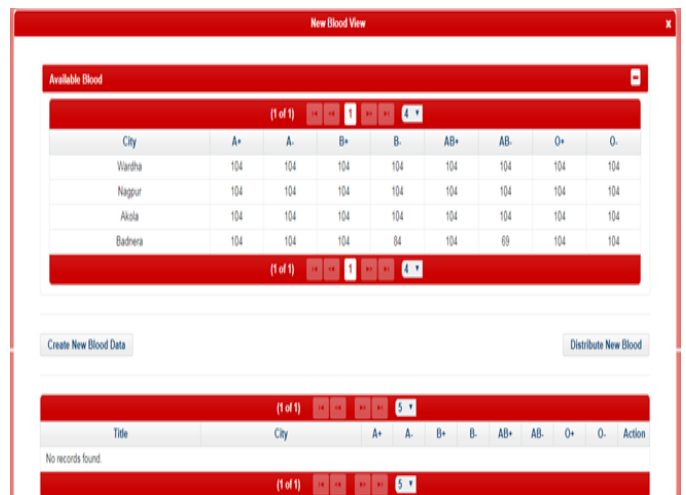


Figure 3. Add and Distribute Blood



Figure 4. Request Blood

V. CONCLUSIONS AND FUTURE WORK

In this paper, we have proposed an efficient and reliable blood donor information and management system with blood distribution based on data mining. The service provided by the proposed system is needed and valuable to health sector where a quality of the blood is considered for the safety of the patient through a systematic process by the blood management system. This system will be the solution for the problems such as misuse by third parties and updating the donated blood by the donor which replaces the older systems. The proposed system is a web based application helps us to reduce the human mistakes which are done in the existing system.

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