

Implementing system for blood request management system using Data Mining

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ABSTRACT

Blood is fundamental constituent of the person and is a standout amongst the most necessities of life. The runtime accessibility of blood donors is less in India causing death toll. The motivation behind undertaking is to build up a blood ask for framework and conquer the unsolved issues. In this we propose a Progressive Web Application (PWA) for the blood ask for framework. The application makes conceivable a connection amongst clients and the blood donation centers everywhere throughout the city. The framework made will demonstrate the accessibility of blood units everywhere throughout the city and will give the administration at the earliest opportunity. The application will send ask for as indicated by what kind of blood amass it is and as quickly as time permits the blood unit will be conveyed to the destitute. The framework communicates the message to the enrolled blood donors and along these lines satisfying the demand of blood unit by runtime accessible blood donor. Utilizing this administration we have made an endeavor to make utilization of the abilities of cell phones and transform them into lifeline versatile social insurance benefit which is advantageous to clients.

Keyword: - Donor, PWA, Blood request Call System.

1. INTRODUCTION

Blood is a first and foremost component amongst the most critical necessities of our life there isn't a practical substitution for human blood. Blood adds to saving countless consistently in both regular and emergency conditions. According to the yearly requirement of blood unit in our nation is approx. 5 crore units of blood out of which max 80 lakhs units of blood were gathered. Every 2 seconds there is a requirement for blood. Everyday 38000 blood units is required by India. Life of patients is saved by the voluntary act of blood donors. Not only doctors but also blood donor's acts as a boon in saving human life's simply by giving blood. Blood is drawn willfully which can be entire blood or of particular segments.

Growth is found in number of cell phones clients in developed and developing nations. Cell phones data and correspondence innovation are used by M-Health for the conveyance of services for health. In the past system used for blood donation management were not that dependable as they use to scan for the donors get blood and collect them. Lesser enthusiasm for giving blood is found in donors due to the slow stocking process.

In the event of crisis circumstances like surgery or treatment, relatives of patients are requested to go to blood donation center and check whether the required type of the blood is present or not. Relatives need to discover contributor in the event of crisis who has the likeness of blood type with patients which is exceptionally frenzied and there is less possibility that blood donors will be present or not.

Conventional strategies, for example, data leaflets, video and camps for awareness are utilized to draw in more blood donors. Applications utilizing present day advancements have been executed to draw in donors and increment the rate of blood donation .Several websites and applications on this topic are available, however it is hard to figure out which one of them is usable and supportive. Lesser security is provided to the user. Because of inabilities of existing frameworks individuals who wish to donate blood standby. "Call for Blood" given by the Maharashtra State provides requestor of blood to call 104 helpline numbers for delivery of blood. This service isn't effective as the time taken to process is high.

In this paper we propose Call System for Blood which utilizes the capacities of most recent advances like Progressive Web Application and different. Our proposed framework can encourage scope of individuals and in this way going about as an aid.

2. LITERATURE SURVEY

There are several online application available for blood donation but {none of them } of them is really as effective because privacy of end user is not maintained and also user need to install those software app in phone consuming more storage. Also only few applications provide the tracking of blood. At the time of requirement of blood unit website and software only provide information about donors rather than blood banks. This becomes difficult for end user to contact blood banks and get blood from them as there is no source to deliver blood to the user. These systems do not give attention to the hassle of users in the emergency situation.

Here we provide you the information of related android application and web sites:-

1. Friends2Support.org:

It's a website and android based application. Information of blood donors is provided but does not give the information of the blood bank. And thus privacy is not maintained.

2. BloodDonationReminder:

User friendly environment allows donor to select date of next donation. When their date of next donation is arrived notification are given to user.

3. American Red Cross Blood Bank:

Client can plan arrangement, track total donation, gain rewards and welcome other to go along with them on a lifesaving group through this application. Application consists of few restriction that can lead the app in inefficient progress. There is no usage of GPS navigation in this application. In America for general blood idea framework in its country there is site and android application framework which work intelligently. This office isn't supported in India.

4. MPlus/Kerala Blood Bank

An Android application for Kerala people highlights few features of blood donor information bank of Kerala, sending request to MPlus clients and react specifically send to needier. This application is just for blood donation and GPS framework is not used in this.

5. Donor2Donor:

It is a platform that encourages blood/organ donation. Among people's awareness is spread to voluntarily to donate blood/organ. Donor2Donor application arranges donors, yet does not give guarantee of availability of required blood group

Following table shows comparison of various application.

Table 1: Comparison of Various application

3.2 Donor:

To login in the system each donor is provided with a unique donor id and password. Features like discovering blood unit type, blood camp details are the various features provided to the donor. For privacy purposes the session can be logged out easily.

3.3 Patient:

Patient can request for blood in case of emergency situation. According to the patient's condition the application searches for the donor and blood unit is provided by the system.

3.4 Application:

The application searches for the blood donor during emergency situations. GIS is used to track the donor. When the donor accepts the request to donate the blood the existing system generates one time password (OTP). The application blood camp details, maintains the record of the user, blood transfusion and etc.

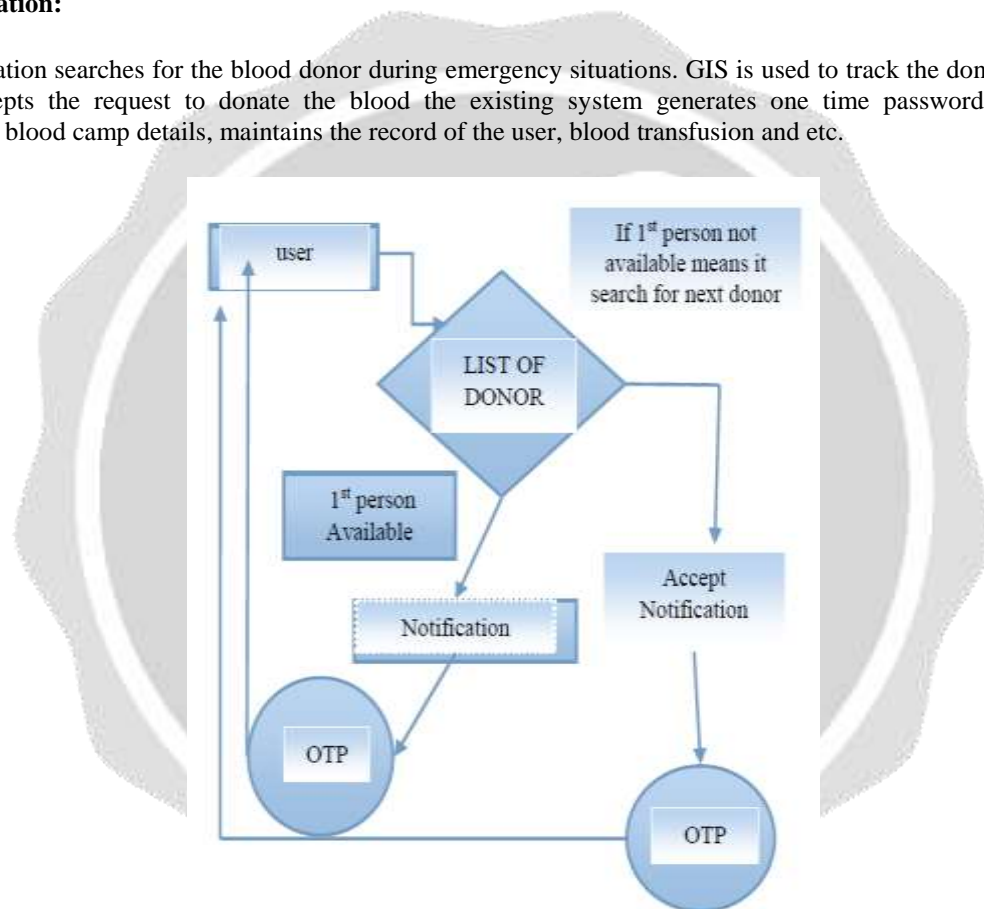


Fig 1(b) Existing System

4. PROPOSED SYSTEM

The latest technologies like Progressive Web based Application and a call system are used by our proposed Blood Call System. Considering the Researches, the system suggested that some improvements in the previous system will be helpful in making the system efficient. Progressive Web applications (PWA) being efficient enough can replace the existing web application and an android applications by combining them. The efficiency can be differentiated into features like reliability, fast, engaging and secure. Following Fig 2(a) and Fig 2(b) represents proposed system architecture.

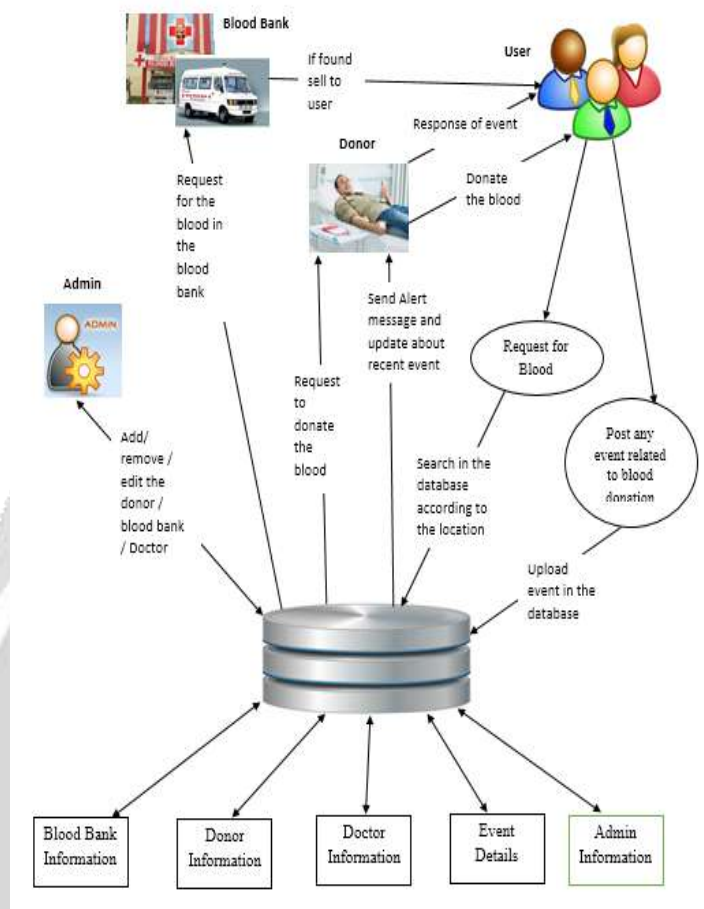


Fig 2(a) Architecture of proposed PWA

“Progressive Web App (PWA) is a term used to denote a new software development methodology. Unlike traditional applications, progressive web apps are a hybrid of regular web pages (or websites) and a mobile application. This new application model attempts to combine features offered by most modern browsers with the benefits of mobile experience.”

PWA in a nutshell:

- **Reliable** : Fast loading and works offline
- **Fast** : Smooth Animations, jank free scrolling and seamless navigation even on flaky networks
- **Engaging** : Launched from home screen and can receive push notification

Progressive Web Apps is right fit for web service because:

1. **They cost much less than native apps to develop**, and can be implemented using your existing web framework with no additional programming languages and technologies,
2. **Most key features are there to provide an ‘app-like’ experience**: push notifications, pinning to home screen, sync in the background, offline functionality, etc., along with an app-like look and feel,
3. **The app will be easy to expand** piece-by-piece with new functionality,

4. **PWAs are cross-platform**, so you can save time on adapting your service to many different environments,
5. **They are backed and promoted by Google**, ensuring that the approach will only grow in popularity,
6. **Bypassing the Play Store/App Store** allows you to get your app to market faster.

Proposed system contains following modules:

4.1 Admin of PWA:

The information about all blood banks, mobile vans and donors who are registered with the application is managed by the admin. Addition or removal the blood banks can be done too.

4.2 Admin of Call system:

When the user makes a contact to the system, this requirement is fulfilled by the admin of the system. Managing the emergency conditions and request placed for the enquiry of blood data is handled by the admin of the call system. In an emergency incidence, admin will first search for the blood in blood banks and nearby mobile van. If the blood unit is not accessible then it will look for donor by connecting through the call with the user.

4.3 Donors:

To login in the system the donor needs donor_id and password. Change of password, change of email-id are provided facilities to the donors. Donor gets an alert message from a system after a time period of 90 days for blood donation but also receives an alert about different events related to blood donation camp. To check the availability of donors which is needed in emergency the admin calls the donor. For better results location of donor is being tracked if available.

4.4 User:

The request for blood is done by the user. To satisfy the requirement of blood PWA or call to call system can be used by the user. Events related to camps related to blood donation can be added into the system by the user.

4.5 Admin of Blood bank:

The admin of the system manages the admin of blood banks and doctors. The blood bank manager updates the daily no of blood units available in the blood banks .The database provides all the information about manager of different blood banks. Donor's health is updated by Doctor to the system.

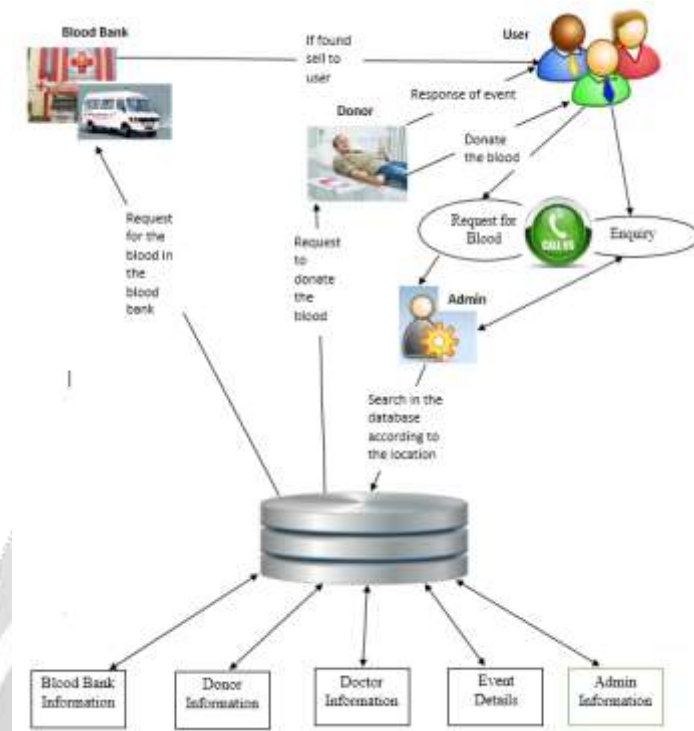


Fig 2(b) Architecture of proposed Call System

4.6 Database:

The database stores Information of blood banks, mobile vans, donor and Doctor by implementing Mysql in the form of tabular. The information about events like location of event, duration of event, etc is stored by mongo dB. The information required is obtained from database by using different techniques such as data mining, matching patterns, etc.

4.7 Application:

The application is designed to provide blood units in minimum time using different resources. The System first search in all the nearby blood banks and mobile vans, when request for blood is arrived. The system's volunteer delivers the blood to the requester and if required amount is available then it is delivered. In case of unavailability then system searches if the donor is available. Donor tracking is done by GIS and GPS system. The confirmation of requirement of blood units OTP is send to user. Conformation of donor is done through phone calls and message mechanism. System sends notification of events. The donor is provided with online form for through system followed by physical examination by doctor.

4.8 Algorithm

KNN algorithm is one of the simplest classification algorithm and it is one of the most used learning algorithms. **KNN** is a **non-parametric, lazy** learning algorithm. Its purpose is to use a database in which the data points are separated into several classes to predict the classification of a new sample point. KNN makes predictions using the training dataset directly. Predictions are made for a new instance (x) by searching through the entire training set for the K most similar instances (the neighbors) and summarizing the output variable for those K instances. For regression this might be the mean output variable, in classification this might be the mode (or most common) class value.

To determine which of the K instances in the training dataset are most similar to a new input a distance measure is used.

In our approach, we have considered the latitude and longitude of desired address. Haversine formula is used to determine the distance between two latitude and longitude points.

It is given as,

$$\begin{aligned} \text{Haversine formula} = \quad & a = \sin^2(\Delta\phi/2) + \cos \phi_1 \cdot \cos \phi_2 \cdot \sin^2(\Delta\lambda/2) \\ & c = 2 \cdot \text{atan2}(\sqrt{a}, \sqrt{1-a}) \\ & d = R \cdot c \\ & \text{where } \phi \text{ is latitude, } \lambda \text{ is longitude, } R \text{ is earth's radius (mean radius} = 6,371\text{km)} \end{aligned}$$

5. CONCLUSION

The application proposed by our system is the best workable idea for the delivery of blood in less period of time. This paper presented those applied outline and improvement of provision for blood conveyance. We assume that our proposed application is best result and provide convenient access to the blood donors and requester to handle the urgent situation.

6. ACKNOWLEDGMENT

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