Voluntary Blood Donation Using Enhanced Gps Searching

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***Abstract* ---In today's world a number of online blood bank databases are available, however none of them offers the capability for the direct contact between the donor and the recipient. This is a major drawback particularly in cases where there is an urgent need of blood. Our work aims to overcome this communication barrier. By creating a blood bank database that contains entire details and collected from various sources like Blood banks, NSS, NGO's, hospitals and through web interface. The data collected will be maintained in a central server by a database administrator. This central database server will be associated with a Toll free number which is used to connect to the server. An new algorithm is defined based on the various parameters that needs to be accounted for, before blood transfer is done. The willingness of donor and the closeness of the donor to the place from where the call is coming are also considered for in defining this algorithm. Based on the algorithm the most eligible donor is found out. From the server, the call from the required person is routed to the eligible donor's number. Such a system considerably cut down the overheads involved in referring to a online database and then calling the donors and verifying their willingness at a time when there is a critical need for the blood. The representation of the continuously changing positions of the objects is fundamentally important in these applications. This paper reports on on-going research in the representation of the positions of moving-point objects. More specially, object positions are sampled using the Global Positioning System, and interpolation is applied to determine positions in-between the samples. Special attention is given in the representation of the position uncertainty**.

Index terms --- Global positioning system, volunteered geographic service, blood bank, voronoi cells , safe zone

I. INTRODUCTION:

Blood is one of the most critical elements of human life and it's truly referred to as 'river' of life. There are number of scenarios where urgent need of blood comes in the society. At these critical times, the online blood bank with has an automatic call routing facility will be of great aid. The new algorithm is defined to find the perfect donor at every point of time. When there is a need this kind of a system has more advantage's compared to present systems available. This helps in getting a immediate response rather than a SMS based system or simply internet based database system. An immediate fulfilment of the blood requirement made possible through this system can help same a number of human lives.

Blood is universally recognized as the most precious element that sustains life. It saves innumerable lives across the world in a variety of conditions. A blood bank is a place designed especially for the storage of blood and blood products. The term "blood bank" typically refers to a division of a hospital laboratory where the storage of blood product occurs and where proper testing is performed to reduce the risk of transfusion related events. Large coolers hold these products at a constant temperature and they are available at a moment's notice. The blood bank management information system offers functionalities to quick access to donor records collected from various parts of the country. It enables monitoring of the results and performance of the blood donation activity such that relevant and measurable objectives of the organization can be checked. They are providing the efficient search who needs the blood in their own city as fast as possible. Blood Bank accept the donated blood, only if donor satisfy all of the following conditions:-(i) If the donor are between age group of 18-60 years.(ii) If the donor's weight is 45 kgs or more.(iii) If the donor's hemoglobin is 12.5 gm% minimum. (iv)If the donor's last blood donation was 3 or moremonths earlier.Blood Bank do not accept donated blood, if donor have any of the following conditions :-(i) Cold / fever in the past 1 week. (ii) Under treatment with antibiotics or any other medication.(iii) Cardiac problems, hypertension, epilepsy, diabetes (on insulin herapy), history of cancer, chronic kidney or liver disease, bleeding tendencies, venereal disease etc.(iv)Major surgery in the last 6 months.(v) Vaccination in the last 24 hours.(vi) Had a miscarriage in the last 6 months or have been pregnant / lactating in the last one year.(vii) Had fainting attacks during last donation.(viii) Have regularly received treatment with blood products.(ix) Shared a needle to inject drugs/ have history of drug addiction.(x) Had sexual relations with different partners or with a high risk individual.(xi) Been tested positive for antibodies to HIV.

II. RELATED WORKS:

For this I have chosen five web based blood bank system for comparative studying of their MIS.

(i) Blood Bank India :- The MIS of Blood Bank India keeps the name of the donor who is donating blood, a unique id through which the donor can view his account , password for accessing the account , date of birth of the donor because his age must be in the range of 18-60 years, gender status of the donor, blood group of the donor, weight of the donor, mobile no, email id, address, city, state, date of last blood donation when a new blood donor registered himself as a Blood Donor. It provides the criteria of city wise and blood group wise search of the blood(a person who needs blood). After that when a search command is given then the MIS of Blood Bank will result the donor name from its database. A person or a hospital can request the blood from the blood bank when they need. For this the blood bank keeps the name of the patient, a blood group which is needed, city in which the blood needed, name of the hospital where the blood will be sent, address of the hospital, name of the doctor who demands for blood, date and time when the blood will required, contact name, contact email id, contact phone number, address, city, state of the person who needs the blood in their MIS.

(ii) BharatBloodBank :- The MIS of BharatBloodBank keeps the name of the donor, a unique id and password through which the donor can access his account, date of birth of the donor, gender status of the donor, blood group of the donor, weight of the donor, mobile no, email id, address, city, state, date of last blood donation, and information about Hepatitis B, C, AIDS, Cancer, Kidney disease, Heart disease(if a donor is suffered from these disease) when a new blood donor registered himself as a Blood Donor with BharatBloodBank. It provides the city wise and blood group wise, state wise and area wise search of the blood (**a person who needs blood).**It does not provide any mechanism that a patient can request for blood online.

(iii) e-Blood Donors :- The MIS of e-Blood Donors keeps the name of the donor who is donating blood, a unique id through which the donor can view his account , password for accessing the account , date of birth of the donor ,gender status of the donor, blood group of the donor, weight of the donor, photo, mobile no, email id, address, city, state, date of last blood donation when a new blood donor registered himself as a Blood Donor. It provides the criteria of city wise and blood group wise and gender wise search of the blood(a person who needs blood). It does not provide any mechanism that a patient can request for blood online.

(iv) Lions Blood Bank & Research Foundation:-Lions Blood Bank & Research Foundation keeps the availability of bloods and its type in their MIS and they provide the current status of availability of blood through their MIS in the format of blood group,number of availability of whole blood, number of availability of packed cells, number of availability of frozen plasma, number of availability of platelet .It does not provide any mechanism for register a person as a donor and also does not provide any mechanism that a patient can request for blood online.

(v) Web bloodbank :- Web blood bank keeps the name of the donor who is donating blood, an email as a unique id and password through which the donor can access his account , date of birth of the donor, gender status of the donor, blood group of the donor, RH factor of the donor, mobile no, email id, address, city, state, date of last blood donation related information in their MIS when a new blood donor registered himself as a Blood Donor**.**It provides the criteria of state wise, city wise and blood group wise and Rh factor wise search of the blood**(**a person who needs blood). A person or a hospital can request the blood from the blood bank when they need. For this the blood bank keeps the name of the patient, a blood group which is needed, number of unit needed, Rh facter type, city in which the blood needed, date and time when the blood will required, contact name, contact email id, contact phone number, address, city, state of the person who needs the blood in their MIS.

III. SIYSTEM ANALYSIS:

A. Existing System:

Blood bank has been established since olden days to save human life and promoting the habit of donating blood. This service is a paid service and will happen within hospitals and share donor's blood. The habit of donating blood has been improved nowadays and various social workers, NGOs and Lion's clubs are conducting various camps to collect blood and promote the habit of donating blood. It is difficult for the users to find out the blood banks that are nearest to their location. Also, they don't know whether the blood group is available there or not. If they go without knowing that, it will be waste of time. In addition to that, they have to go all blood banks till they get the required blood group.

B. Proposed System:

In proposed system, it is easy for the users to get the required blood group easily and quickly. They can know the nearest blood bank with the address. Also they can know if the blood group what the user wants is available or not. Through this they can save time. No need for users to go to each and every blood bank for their need in that urgent situation. They will get the required blood group immediately. It will help to save many human lives in critical situations. We are going to overcome the problems of the existing system by developing an app to the end users for searching the donor. In the proposed system, the "exact location" of the volunteers who are willing to donate can be found out easily by locating their latitude and longitude positions. Features such as rating, referring compatible persons and removing unavailable people from the database are also done. Rating is based upon the previous health condition of the volunteers. Any of the volunteers who are not present in the nearest surrounding location, can refer people who match the same requirements in that specific region. If they are under medication, they can put themselves in 'off state'.

IV. GLOBAL POSITIONING SYSTEM:

The Global Positioning System is able to determine exact positions on Earth anytime, in any weather, and anywhere. The system consists of 24 satellites that orbit Earth at 20000 km. The satellites transmit signals that can be detected by GPS receivers, which then are able to determine their locations with great precision.The principle behind the GPS is the measurement of the distances between a receiver and several satellites. A total of four distances, and thus signals from four satellites, are needed to solve a set of four equations that expresses the latitude, longitude, height, and time (Magellan Corporation 8). The distance from the satellite to the receiver can be calculated by multiplying the time it takes for the signal to arrive by the speed at which it travels{the speed of light.

We provide techniques that enable a scalable so-called Volunteered Geographic Services system. This system targets the increasing populations of online mobile users, e.g., smartphone users, enabling such users to provide location-based services to each other, thus enabling citizen reporter or citizen as a sensor scenarios. More specifically, the system allows users to register as service volunteers, or micro-service providers, by accepting service descriptions and periodically updated locations from such volunteers; and the system allows users to subscribe to notifications of available, nearby relevant services by accepting subscriptions, formalized as continuous queries, that take service preferences and user locations as arguments and return relevant services. Services are ranked according to their relevance and distance to a query, and the highest ranked services are returned. The key challenge addressed is that of scalable providing up-to-date results to queries when the query locations change continuously. This is achieved by the proposal of a new so-called safe-zone model. With safe zones, query results are accompanied by safe zones with the property that a query result remains the same for all locations in its safe zone. Then query users need only notify the system when they exit their current safe zone. Existing safe-zone models fall short in the papers setting. The new model is enabled by (i) weighted and (ii) set weighted imprecise Voronoi cells. The paper covers underlying concepts, properties, and algorithms, and it covers applications in VGS tracking and presents findings of empirical performance studies.

V. FILTERING

We assume that an aggregate R-tree is built on the set of weighted imprecise objects. Each index entry has a weight that is the largest one among all objects in its subtree. The IR-tree [18] can be viewed as an aggregate R-tree if we consider the textual relevance information stored in index nodes as virtual weights. The textual relevance, or weight, of an index node is calculated at runtime and is is guaranteed to be higher than that of any descendant entry. The correctness follows from the monotonicity property.The process of constructing a Voronoi cell follows the definition, by initializing the cell as the entire domain and then progressively refining it with half spaces w.r.t. other objects. When traversing an index node in the filtering step, it is determined whether any other object in a subtree of a node entry can possibly refine the cell.

Refinement Algorithm:

Both refinement algorithms are based on a quad-tree. The algorithms take the output of the filtering phase, a partial cell Φ ` Q and a candidate set C, as input. Each node of the quad-tree is a three-tuple: (region, child pointers, C). The region of the quad-tree root is set to be the minimum bounding square of Φ ` Q. Its set C is that obtained from the filtering step. The pointers refer to its four children, each of which occupies a quadrant. Quad-tree nodes are then split until they meet the stopping conditions. The two refinement algorithms use different stopping conditions. δ-refinement. First, δ-refinement is shown in Algorithm 2. We use Lemma 6 to trim objects passed from a parent node NQ to a children node. If the parent node is inside half space HQ:O, so are its children. This means that O can be pruned from NQ's candidates. A region can be marked as part of VQ if it is found to be inside VQ; and it can be disregarded if it is outside VQ. If a region is marked as undetermined, we can split it. If a region overlaps with VQ's contour, it is neither inside nor outside VQ, which then incurs infinite splitting. To avoid that, we set a threshold δ for the quad-tree leaf node size. The splitting stops either if a leaf node's region is marked as part of VQ or its size is smaller than δ. The quad-tree leaf nodes output by Algorithm 2 approximate VQ, and the gap between the approximated VQ and the exact VQ is within δ. The union of the undetermined regions' candidates is returned as CQ because the regions are on the contour, and their candidates help in rendering VQ. The derived CQ must be a superset of C ˚. But the quality of CQ is also controlled by δ. For a false positive object O P CQ ´ C ˚, the weighted distance error depends on the form of the weighted distance function, the Euclidean distance error being at most ? 2δ. Refinement˚. The

VI. OPTIMIZATION

A. Distance Calculation

In the initial system, to find the nearest volunteer donor in order to send the call request, the system calculates the distance as crow flies using both the healthcare centers and the living donors' coordinates. To determine the location of nearest donor, calculating the distance as crow flies was effectual on the paper, but some problems -such as traffic jam, physical conditions, or road conditions- appear when it is put into real life practice. Calculating the distance as crow flies isn't sufficient for the system. So an optimization in distance calculation is decided. Previously, to calculate the distance, requester healthcare coordinates was taken as the coordinates of the circle drawn virtually on the map with the radius of which the length is determined by the user. Then, appropriate ones among the donors whose coordinates are in the area covered by this circle are selected. Being in the area covered by the virtual circle does not mean that the donor can reach the hospital in real life. For this reason, an adjustment is made by taking actual road conditions into account and the Google maps functions are inserted into

distance calculation. This calculation helps to determine not only nearest volunteer living donor but the most realistic one. It should be noticed that one of the most important constraints in this system is the time. Any optimization or improvement on nearest donor determination will be vital in emergency cases.

B. Development environment:

The second improvement on the system is made for Android's users. As everyone agrees, many software and hardware products cannot meet the requirements of the new technologies because of its fast development. Even in the case they are sufficient to meet the requirements, ensuring the The initial system has been developed on Android Studio using ANT[18]. It is one of the oldest Java library and command-line tool whose mission is to drive processes described in build files as targets and extension points dependent upon each other ANT, Maven or Ivy. Each of them has its own strengths and weaknesses. ANT has structure but it is the developer's job to determine every development step. Also, it doesn't have the library management. For example, if the project needs a library with .jar extension, finding these related .jar files and copying the responsibilities. Maven [19] enforces a standardized project layout. This saves time getting new people working on the projects. It provides automatic resolution of dependencies which are cached so that if there are multiple projects, there is no need to keep making local copies. Maven also promotes the concept of a resource repository and can create complex products with minimal direction. This causes a real problem if the project has an unusual type. It's very easy to make the library management and move the project on Maven in case if the project complies totally with Maven's compelling structure. Gradle [17] is strengths of all above mentioned building tools. It offers both ANT's flexibility and library management without Maven's coercion. It easily allows the developer to create .jar and/or .war files using the project's source code, run the test and integrate the add uses Maven's library management, it ensures simple organization of .jar files' part. Another advantage provided by Gradle is the ability of managing multiple projects in a a solid infrastructure to enable to integrate any existing project without structural changes.

VII. FEASIBILITY STUDY

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are

- ECONOMICAL FEASIBILITY
- TECHNICAL FEASIBILITY
- SOCIAL FEASIBILITY

A. Economical feasibility:

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

B. Technical feasibility:

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

C. Social feasibility:

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

VIII. CONCLUSIONS:

In this study, we presented a smart phone's application for the volunteer blood donor to increase the willingness and accessibility with the purpose of providing a continuous blood supply. This application helps health care centers to provide the blood as quick as possible when their stocks are insufficient. The application sends periodically actual location information of available donors to main system and the blood requests to the donors. In this way, it provides an uninterrupted communication between the health care centers and volunteer donors. The distance of the volunteer donors to the healthcare center is an important criterion in the determination of the donors. Therefore an optimization is also realized on this process. In the initial system, the distance calculation is made by taking the distance as crow flies. In the optimized system, it is converted to the actual distance. This optimization makes the system more realistic. The second improvement is performed on the system's infrastructure. Especially, by taking into consideration the rapid development of mobile device technology which uses Android operating system, the system has been carried from the from ANT building environment onto Grade build automation platform. In further

studies, we aim the add evaluation of traffic density between living donors' locations and healthcare centers to the living donor selection criteria.

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