ENHANCING VARIABLE VOLUNTEERED GEOGRAPHIC SERVICE FOR SEARCHING BLOOD DONOR USING ANDROID APPLICATION

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ABSTRACT

Techniques are present that enable the users to get a solution regarding issue based on their location they are in, based on so-called Volunteered Geographic Services (VGS) system. Using this service getting the response at right time is made possible. It focuses the growing population of the online mobile user's, e.g., people who use smart phones since with diffusion of on-line mobile users, it is relevant to provide scalable means of enabling such users to connect with other nearby users so that they may help each other with specific tasks. This not only validates the users to provide services based on their location but also enables them to act as a volunteer in these scenarios. Here the users act as service users and service volunteers. More precisely the system accepts service description and periodically updated locations from those volunteers and it allows users to subscribe to notifications of all the available nearby services that are relevant to their subscription. This subscription is a continuous query which consists of i) keywords that describes user's preference ii) periodically changing user's location as parameters such that the system returns relevant service and users have to notify the system only when they exit. Here we need to take in to account three aspects 1) volunteer's imprecise location; 2) the distance between the location of user and volunteer; 3) the relevance of service offered. The paper presents the underlying concepts and algorithm and also the application of VGS tracking and presents the findings of experimental results.

Keyword: - *Volunteered Geographic Services, Voronoi Cell*.

I.INTRODUCTION

Smart phones are the future, with the growth of mobile technology; more people will use their phones than computers to get online. The number of mobile devices is set to more than double in the next years and so follows the increase in the number of online mobile users. Thus it is important for us to provide flexible means of communication between the online mobile users for particular purposes. In the United States it is estimated that only 111 million citizens are eligible blood donors, or 37% of the population. However less than 10% donate annually In the UK the NHS reports blood donation levels at "only 4%" while in Canada the rate is 3.5%.the main problem here was the unreachability. Thus it is important to provide more volunteer services at reach.

Users who are in need of blood can request the volunteers by updating their location and requesting blood by specifying the blood group. The volunteers who act as the mobile service providers respond to the query sent by the users and these volunteers are being selected from the nearby location [1, 3] of the users, thus providing nearby services along with the use of timer which enables the user to get the blood at the right time possible thus reducing the user's tension.

For this, we use the Volunteered Geographic Services, which is a type of service that takes input as geographic data [2] provided by the users and volunteers and presents an output to the query, raised by the user.

The information volunteered by an individual is linked to a specific geographic region and thus the VGS system provide benefits to the end user, in part due to its ability to collect and present data which is reliable and quick.

The system is being implemented by using voronoi cells [9, 10]. A Voronoi diagram is a partitioning of a plane into regions based on distance to points in a specific subset of the plane. Voronoi diagrams have practical and theoretical applications to a large number of fields, mainly in science and technology. An application of this is a **Mobile Blood Connect** where users request blood and other registered people, on receiving information from a users query, respond within a location and in a specified time. The Volunteered Enlarged Geographic Services system is important because there is a need of immediate blood rather than getting blood from the blood banks, where the blood banks pose the following problems:

- Inadequate instrumentation for separating and storing the blood into individual components.
- Struggle to compete with banks running on commercial motives.
- Inability to transfer blood between blood banks which sometimes leads to units expiring on shelves.

The rest of this paper is organized as follows: Section 2 presents a review of significant researches. The proposed Volunteered Enlarged Geographic Service is explained in Section 3.Implementation part is explained in Section 4. Experimental results of the proposed system are presented in Section 5 and Conclusion is drawn in Section 6.

II. RELATED WORK

The method of marking and enlarging the area is done using the concept of voronoi cells which are represented as planes partitioned into regions. Regions are marked around certain points and the cells are split.

Xike Xie, et al [9] propose the Uncertain-Voronoi Diagram (or UV-diagram), which divides the data space into disjoint "UV-partitions". In this modal, each UV-partition P is associated with a set S of objects, such that any point q located in P has the set S as its nearest neighbor with non-zero probabilities. The benefit of the proposed method is that the UV-diagram enables queries that return objects with non-zero chances of being the nearest neighbor (NN) of a given point q and supports "continuous nearest neighbor search" and also allows the analysis of nearest neighbor information.

Leyla Kazemi and Cyrus Shahabi [5] proposed PiRi, a privacy-aware framework for PS systems. This method enables participation of the users without compromising their privacy. The Partial inclusivity and Range independence system can be used for various purposes like to protect the campaign participants from location-based attacks by disassociating a query from the query location.

Xike Xie, et al [10] proposed a new so-called safe-zone model that is enabled by (i) weighted and (ii) set weighted imprecise Voronoi cells. The benefit of the proposed model is that it defines the problem of privacy in participatory sensing and identifies its unique challenges assuming an un-trusted central data server model.

Dieter Pfoser and Christian S. Jensen [2] proposed that object positions are sampled using the Global Positioning System, and interpolation is applied to determine positions in-between the samples. The benefit of the proposed method is that it shows how queries involving uncertainty may be answered using the standard filter-and-refine approach known from spatial query processing.

III.VOLUNTEERED GEOGRAPHIC SERVICE (VEGS)

Generally in addition to recreational purposes, the need for social networking and mobile devices has gone up an extra notch paving its way for emergency purposes. By which it is easier for the message to be extended to a wide range of people. But getting the right response at the right time is not always possible, as the responding person may be far away from the user, or the response is not appropriate. To overcome this we use a so-called Volunteered Geographic Service using which the users can get a solution for their problem at the right time. Here the users act as service users and as service volunteers. The service users update their query along with their location so that the query is passed to those volunteers who are within the covered area with time and we call the responding user as volunteer because they volunteer their services to other users within a preset time. In addition, they periodically send their location to the system. Volunteers can reply to the user's query based on their interest. For example user may be in need of some specific blood group, he dispatches his query along with his location to the system. The system sends this query to all those volunteers who are nearby to the user and who matches the user's query with a timer. Volunteer who are willing to donate blood may respond to the user.

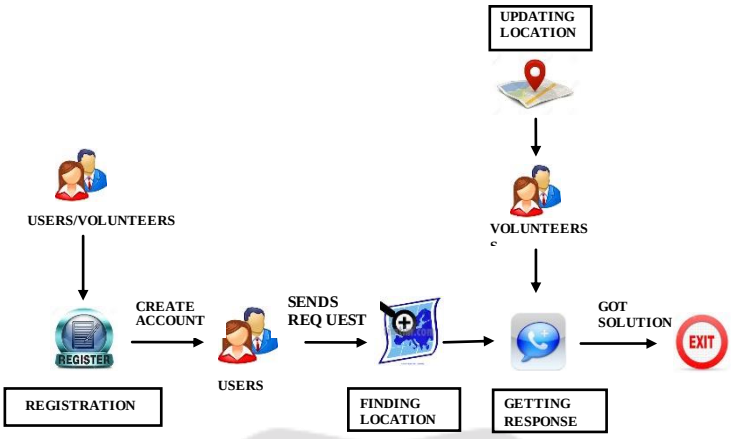

Fig1: System Architecture

III A. Registration

The users/volunteers will register by providing the available details such as, name, contact number, location. Through this they will get required blood group nearest to their location. When the user signs in into the application they enter the user name and the password. Using these credentials the donors can add their details and the user can retrieve the required donor details.

III B. Dispatching Query

Once the user has registered, they will be into VGS system. They can use this system in case of medical emergency i.e. the users can get the required blood group with the help of those volunteers who are nearby to them. By the way, user can send a query which consists of user's interest and user's location as parameters. Once the query is updated, it is dispatched to all the volunteers who are covered under mentioned location.

III C. Finding location

Once the query is dispatched, the system finds the location of all the volunteers who fall under the user's location. The latitude and longitude id of user is generated and volunteer's longitude and latitude id which matches the user id is found.

III D. Getting Response with Updated Location

As the query is updated into the system, it will be visible those volunteers who are covered within the mentioned location. They can view those queries and the interested volunteers can answer to the queries with their location being updated periodically.

IV. IMPLEMENTATION

DENSITY BASED CLUSTERING ALGORITHM

Density based clustering algorithm plays an important role in finding non linear shapes structure based on the density. It is based on the concept of density reachability and density connectivity.

Density Reachability -If point "a" is within m distance from point "b" and "b" has enough number of points in its neighbors who are within distance m(mean) then the points "a" is density reachable from point "b".

Density Connectivity -If there exist a point "c" which has enough number of points in its neighbors and if both the points "a" and "b" are within the m(mean) distance, then the point "a" and "b" are said to be density connected. It becomes a chaining process i.e. if "b" & "c" are neighbors, "c" & "d" are neighbors, "d" &"e" are neighbors and "e" in turn is the neighbor of "a" then "b" & "a" becomes the neighbors.

Algorithmic steps for Density Based Clustering

Let Y= {y1, y2, y3... yn} be the set of data points. It requires two parameters: Mean (m) and the least number of points needed for cluster formation (lstPts).

Step1- Start with an arbitrary point that has not been visited.
Step 2- The neighborhood of this point is extracted using m (All points which are within the m distance are neighborhood).
Step 3- If this point contains sufficient neighborhoods then clustering process starts and it is denoted as visited else this point is denoted as noise (This point later becomes the part of the cluster)
Step 4- If a point becomes the part of the cluster then its m neighborhood also becomes the part of the cluster and the above procedure is repeated from step 2 for all m neighborhood points. This is continued until all points in the cluster are determined.
Step 5- Again a new point which is not yet visited is fetched and processed, so that further clusters are discovered.
Step 6- This process stops when all the points are marked as visited.

V.EXPERIMENTAL RESULTS

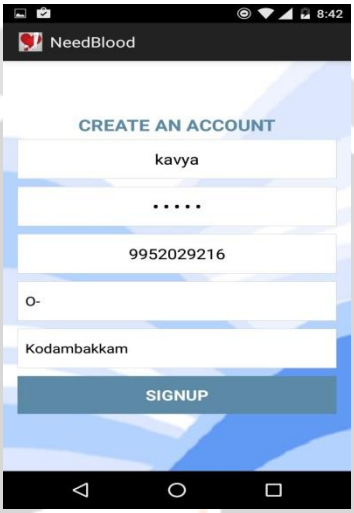

Fig 2. Registration

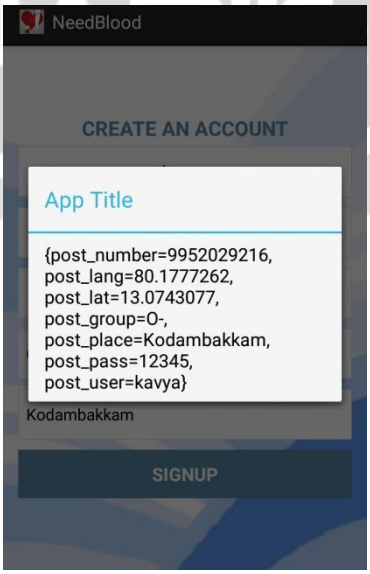

Fig 3: Dispatching Query

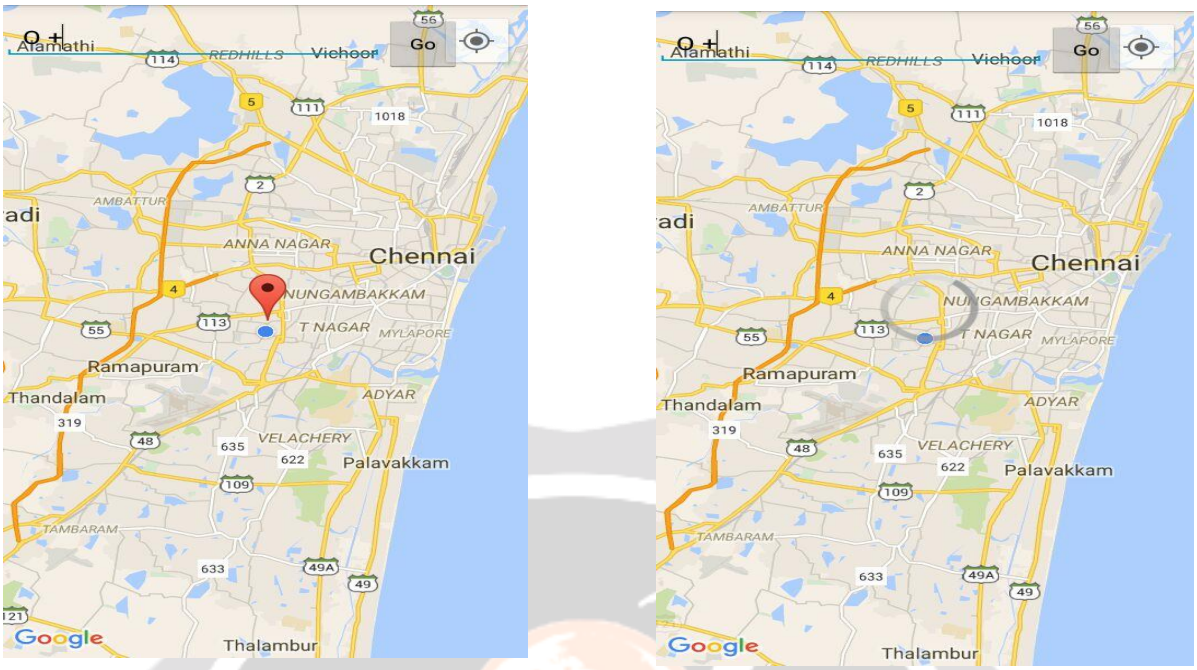

Fig 4: Finding Location

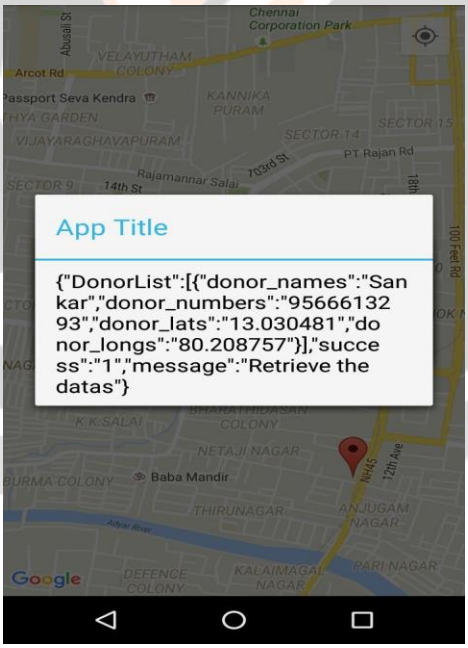

Fig 5: Getting Response

VI.CONCLUSION

In this paper, we have studied the problem of Volunteered Geographic Service that enhances the services provided to the mobile users, in accordance with location. Our proposal is versatile in such a way that it supports the following features: 1) Its adaptivity to different distance, 2) Capability of getting a right response at a right time, 3) Easier for the message to be extended to a wide range of people

VII. REFERENCES

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