ISSN (Online) : 2278-1021
ISSN (Print) : 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 3, Issue 3, March 2014

ESIP-path updates made easier

Ankita Guram[1], Anjali Pandey[2], Mansee Jadhav[3]

Student, Computer, K. J. Somaiya College Of Engineering, Vidyanagar, Vidyavihar, Mumbai, India[1,2,3]

Abstract: The communication with mobile devices used to be limited to voice call conversation only. But now this communication has different modes like messaging, chatting, video calling, etc. This various modes are used to provide mobile value added services. This paper describes mobile application Emergency Service Information Provider –path updates made easier which uses Location-based services (LBs) like GPS or global system for mobile (GSM) network to get location of mobile user. Using the retrieved location, it provides information about requested emergency service provider and it also manages different groups to get updated information about path.

Keywords: GPS, GSM, LBS, TDOA, TOA, AOA, Servlets, TOMCAT, MYSQL, SOAP, JSON.

I. INTRODUCTION

The advancement in communication devices offer more features than just conversation. In cell phone, global positioning system (GPS) tracking is one of those advances. As GPS technology has become more important an accessible to consumers, the varieties of GPS enabled devices have also increased at an incredible rate. At the time that the technology gets more advanced, even smaller and more versatile, handheld portable GPS devices are becoming increasingly popular like mobile phones. This paper proposes a system that uses a regular mobile phone with android operating system equipped with a GPS receptor and connected to a global system for mobile (GSM) network that takes advantage of these technologies in behalf of the user safety.

Assuming a hypothetical situation, when user wants to know location of nearest hospital in emergency situation and get information about updated paths from the member of his group. In this context, ESIP is a useful mobile application that combines several features which aims at providing requested information in minimal time.

The rest of the paper is organized as follows. Section II reviews the related work focusing on mobile and ubiquitous computing, location-based services, and other similar approaches. Section III describes the application development including its requirements, architecture and the technologies employed. Section IV evaluates our approach, presenting user interface and application functionality along with experimental evaluation and validation. Finally, section V presents the conclusions and some possible future work.

II. RELATED WORK

This section deals with some of the existing works related to the proposed mobile solution, mainly, using tracking systems through GPS or GSM cell.

Authors of paper [1] use location-based services (LBs) like GPS or global system for mobile (GSM) network to track a mobile device. Through the known geographic position, this application enables the user to track a mobile device and send alerts if it is out of the radius around an interest point, previously defined by the application administrator.

Authors of paper [2] present a type of architecture of LBS. In this architecture, TDOA positioning modules are appended into the mobile base stations in order to implement LBS. LBS gateway and application platform are two vital parts in this architecture. LBS gateway modules are added into MSC of the mobile communication networks. LBS application platform is similar to a mobile location server. TDOA positioning modules deal with rough location testing and simple data computing. LBS gateway is a comprehensive management device which processes location information related to the mobile users.

In paper [3], two techniques were described to locate and track cellular phones using digital cellular mobile telephony networks. The first technique is based on time of arrival (TOA) methods with a minimum of three base station required, while the later uses angle of arrival (AOA) methods that require only two base-stations, though greater accuracy is possible with three. Both TOA and AOA methods were examined for a multipath fading environment.

Another mobile tracking approach is proposed in [4]. The authors use a hybrid location scheme, which combines both the satellite-based and the network based signals. The proposed scheme uses the two-step Least Square method to estimate the three-dimensional position (i.e. the longitude, latitude, and altitude) of the mobile devices. The Kalman filtering technique is exploited both to eliminate the measurement noises and to track the trajectories of the mobile devices. A fusion algorithm is employed to obtain the final location estimation not only from the satellite-based but also from the network-based systems.

In paper [5], they are proposing an algorithm for the integration of emergency web services and the same is applied in the GIS-based emergency response system. We apply the quality criteria with different weights of preference. The final result is shown on the map with the various services composed for the given user request Also, the result in the form of text can be displayed along the map and the corresponding user request is forwarded and

ISSN (Online) : 2278-1021
ISSN (Print) : 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 3, Issue 3, March 2014

made available to the authorities to take appropriate emergency steps.

We have gathered suggestions of approaches in order to build the system described in the given sections. The proposed solution can furnish better functionalities and is very easy to deploy in a regular mobile phone with GPS

III. APPLICATION DEVELOPMENT

In this section, we will discuss the requirements of the ESIP, the application architecture and the technologies required for its deployment. Our emphasis will be on existing architectures, as well as emerging ones that foster its practical deployment.

A. System Requirements

A mobile application has specific requirements that ESIP also cope with. According to ubiquitous computing principles, the user interface must be as easy to use as possible, with minimal input from the user. One of the most important requirements of ESIP application is the use of location-based services (LBs) like GPS or GSM cell. When the application starts, three options are displayed to the user:

first to get information on map of required emergency service provider, second to view groups and third to comment about application. As soon as user selects first option, application fetches user's current location and shows it on the map. Then user has to select one of the emergency services.

If the user selects second option to view groups then following services are provided to user:

1) An individual user can create a group.
2) A user can be member of many groups.

Server manages groups in multi-threaded fashion. It hosts list of available groups and sends periodic notifications to the user for group updates.

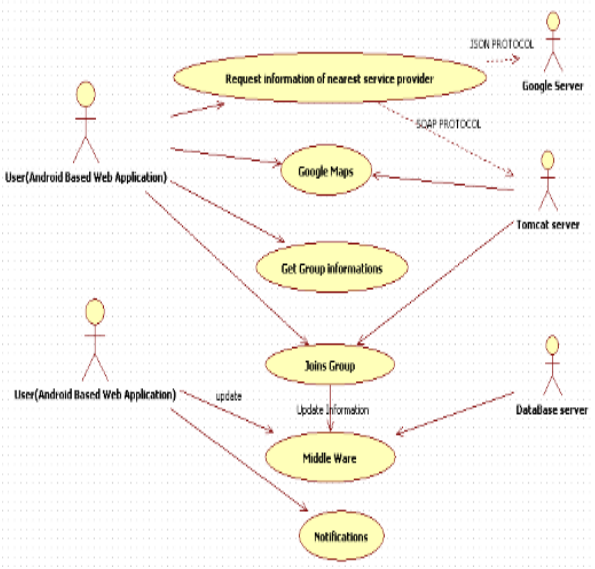

Fig. 1 Use case diagram of application

B. Application architecture

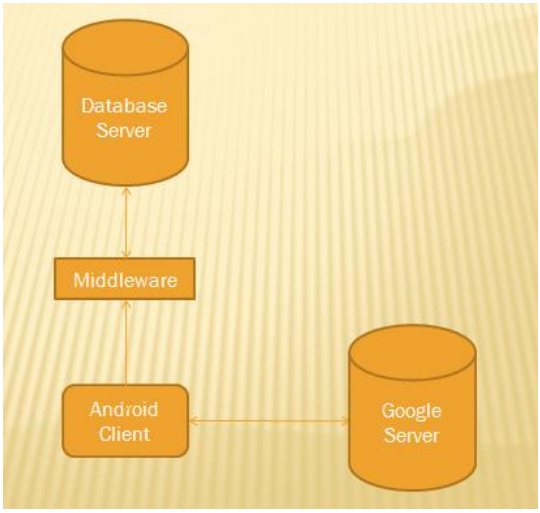

Fig. 2 Application architecture

The application architecture is shown in above figure 2. It consists of Database server, Google server, Middleware and android client. Database server is used to store user and group information in order to manage users and various groups. Google server is nothing but the Google map which is used to fetch user's current location information. Android client is the mobile application which is to be developed. It is an android application which is written in android language. Middleware is incorporated to provide web services.

If the user selects second option to view groups then following services are provided to user:

1) An individual user can create a group.
2) A user can be member of many groups.

Server manages groups in multi-threaded fashion. It hosts list of available groups and sends periodic notifications to the user for group updates.

C. Technologies:

Different technologies which are used throughout the application are explained as follows:

Server: Tomcat is the application server which hosts java Servlets and renders Java server pages. MYSQL is the database server used to store user information to allow only registered user use the application. It is also used to store group information such as group id, group name, group admin, etc. to manage groups which are used to get updated information about desired paths. Middleware: Middleware acts like bridge between database server and client. It is written in java and it is always up. It is implemented using SOAP (Service oriented Architecture Protocol).

Client: Client-side is an android based mobile application. It provides following services like location details, path updates, group management.

These services are provided with following technologies:

1) *Location details and Group management*: JSON protocol is used for group communication. JSON is used to fetch the details of a place or selected map object from the Google server.

ISSN (Online) : 2278-1021
ISSN (Print) : 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 3, Issue 3, March 2014

2) *Path updates*: SOAP protocol is used for communicating with Tomcat Server.

IV. EVALUATION AND VALIDATION OF ESIP

This subsection introduces a general idea of both mobile application (ESIP), as well as, their use in practical deployment.

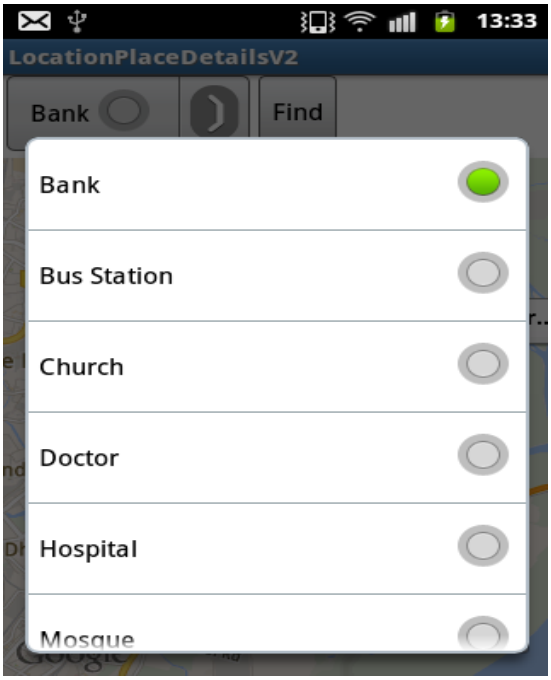

Fig. 3 Example of user interface

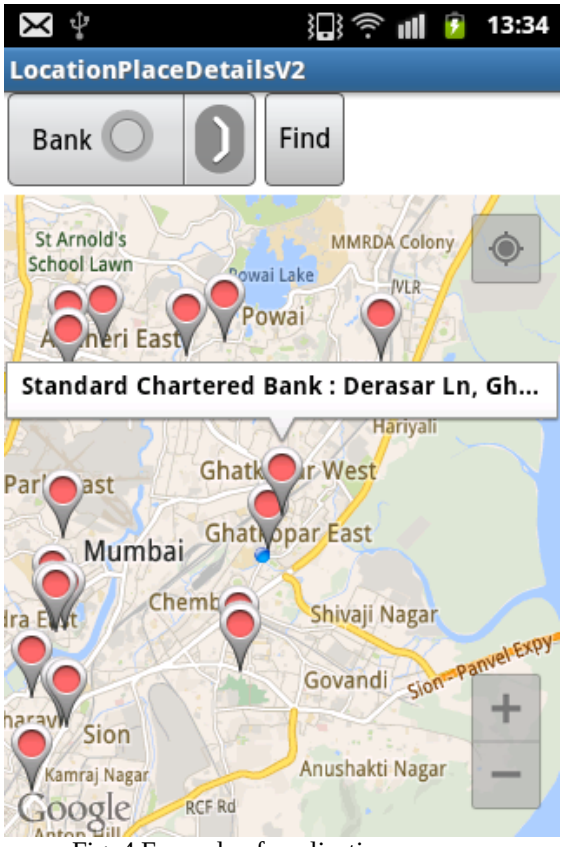

Fig. 4 Example of application response

V. CONCLUSIONS

Location based service (LBS) is emerging as a killer application in mobile data services, thanks to the rapid development in wireless communication and location positioning technologies. Proposed application in this paper is simple add on to the already existing features of mobile applications. Exploiting TOMCAT server, JSON server of Android has led to fabulous applications which play a crucial role in making our day to day life ease. Path Updates Made Easier takes into consideration the notifications provided by its various credible users and thus create awareness in its entire group of this update. This makes it easier to manage day to day activities. Thus this mobile application has made our life simply easier.

ACKNOWLEDGEMENTS

This project has been supported by Prof. Bhakti Palkar of our college K. J. Somaiya College Of engineering and also other professors have also helped us to improve the project and remove flaws in the project.

REFERENCES

[1] uís C. M. Varandas;Binod Vaidya;Joel J. P. C. Rodrigues ;"mTracker: A Mobile Tracking Application for Pervasive Environment "2010 IEEE 24th International Conference on Advanced Information Networking and Applications Workshops.
[2] Xiaoneng Gao;Jianwei Zhong;"Development of Application System for Mobile Location-based Services Based on TDOA Technology".
[3] Jami, I.; Ali, M.; Ormondroyd, R.F.; "Comparison of methods of locating and tracking cellular mobiles" in Novel Methods of Location and Tracking of Cellular Mobiles and Their System Applications (Ref. No. 1999/046), IEE Colloquium on 17 May.
[4] Chao-Lin Chen; Kai-Ten Feng; "Hybrid Location Estimation and Tracking System for Mobile Devices" Vehicular Technology Conference, 2005. VTC 2005-Spring. 2005 IEEE 61st Volume 4.
[5] S. Justin Samuel;T. Sasipraba;"A Quality based Web Service Composition Algorithm for the Integration of Emergency Web Services".