

# Providing emergency services using location based tracking on mobile devices

1Ankita Deshpande 2.DevashishLokhande 3Shrutika Vithalkar

Department of Computer Technology, YCCE

Nagpur- 441110, Maharashtra, India

## ***Abstract***

*In this application, we provide necessary help to the people trapped in the areas of disaster by tracking their location. A communication channel is established between the needy and the rescue team thereby providing assistance to these people as soon as possible. This paper presents the analysis of this application.*

generally means determining the location of a mobile phone supported by a mobile telecommunication network [8]. Mobile devices are present everywhere and subsequently there has been a growth in mobile applications . Mobile devices are highly used in case of emergencies like disasters such as earthquake, flood etc. And common measurement of efficiency of emergency services is response time.

## **1) INTRODUCTION**

Mobile information society is developing at a great speed as mobile telecommunication moves from second generation to third generation technology. Location-based services and personal navigation are the parts of mobile multimedia services. Personal navigation is a concept in which advanced mobile telecommunications allow people find out where they are, where they can find various products and services that they require and how they can get to a desired location. Location service

## **2) PROBLEM DEFINITION**

In this project, we are going to develop an android application and a web application for providing emergency services using location based tracking on mobile devices.

## **3) AIM AND OBJECTIVE**

The overall objective is to develop an application which provides emergency services using location based searching on mobile devices. The application intends at improving effectiveness and efficiency with faster response and also providing assistance during disasters.

#### 4) LITERATURE SURVEY

##### Location Based Services [1]

Location based Services can be classified in 2 categories-

###### a) Public Safety / Emergency Services

The location of the client can be known by the mobile carrier hence it is of great use during emergencies since it can be used during the emergencies to locate the mobile clients.

###### b) Consumer Services

Now-a-days, smart phones like (Android, Blackberry and phone) provide a set of location based applications and services with the help of which mobile users can access various services which are based on the location.

- There are two methods to implement LBS – Processing location data in a server and forwarding the generated response to the clients.
- Finding location data for a mobile device-based application that can use it directly.

For discovering the position of the mobile, LBS uses positioning methods in real time. The accuracy of the method depends on the approach used. Location can be represented in spatial terms or as text descriptions.

A *spatial location* can be represented in the used latitude-longitude-altitude coordinate system. Latitude is defined as 0-90 degrees north or south of the equator and longitude as 0-180

degrees east or west of the prime meridian, which passes through the Greenwich, England. Altitude is represented in meters above sea level. A *text description* is defined as a street location, including city and pin code.

###### i) Mobile Phone Service Provider Network-

The current cell ID is used to determine the location of the Base Transceiver Station (BTS) that the mobile phone is interacting with and the position of that BTS. It is the most basic method for this purpose as it uses the location of the radio base station to which the cell phone is connected. A GSM cell may be anywhere from 2 to 20 kilometers in diameter. Some other approaches used along with cell ID can achieve location granularity within 150 meters. The granularity of location information is poor due to Wide Cell Range. The main advantage is that no additional cost is attached to the handset or to the network for enabling this service.

###### ii) Satellites

The Global Positioning System (GPS) uses a constellation of 24 satellites which are in orbit of the earth. GPS finds the user position by calculating differences in the times the signals take to reach the requester/receiver from different satellites. GPS signals are decoded, so the smart phone must have in-built GPS receiver.

Assisted-GPS (A-GPS) [1] is the new technology for smart phones that integrates the mobile network with the GPS to give a better accuracy of 5 to 10 meters. This fixes the position within fraction of seconds, has better coverage and can, in some cases, be used inside the buildings. It consumes less battery power and requires fewer satellites.

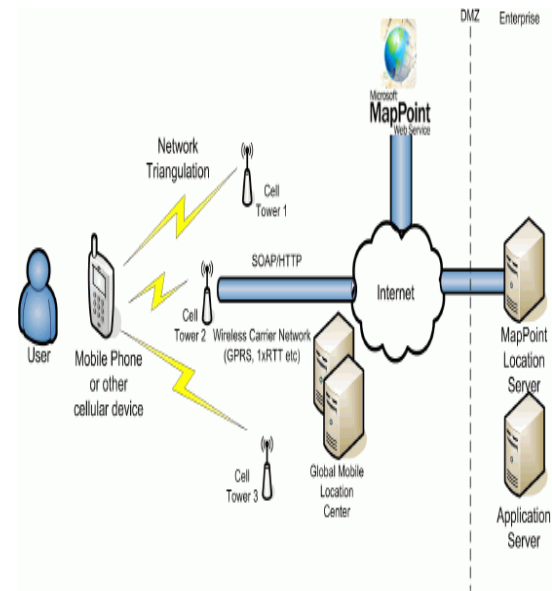
The granularity of location information is most accurate (Latitudes and Longitudes). The main disadvantage is cost of AGPS enabled handsets for the user.

Android's Network Location Provider determines user location using cell tower and Wi-Fi signals, providing location information in a way that works indoor and outdoor, responds faster, and uses less battery power.

Android support LBS Application Programming Interfaces (APIs) [10]. Location service allows finding out the device current location. The application request for periodic update of the device location information. The application can also register an intent receiver for proximity alerts like when the device is entering and existing from an area of given the latitude, longitude and radius.

Android also provide an API to access the Google maps for implementation. So with the help of the Google maps and the location APIs the application can show required places to the user on the map.

## 5) ARCHITECTURE AND DESIGN



Many LBS applications have client/server architecture. It can be abstracted into three main parts: Client, Server, and Wireless Communication link to connect Client and Server. Client is the one who is responsible for sending the user's request along with the geographical location of the mobile device to Server and Server is responsible for providing services based on the geographical location of the android mobile device. The contributions to information acquisition by collecting data in the field such as longitude, latitude, and altitude are made by Client. Server will put the information collected from the field into the database and will then provide services for all clients based on the database. In fact nowadays the role definitions of Server and Client are becoming more and more ambiguous. This critical information can be analyzed by the Server and it can put it into the database for service.

Although it is a trend for Location Based Services to collect information at the Client end, there are still some problems which are caused by wireless communication.

## 6) WHAT WILL THE APPLICATION DO?

If some disaster occurs and if a person who is registered on the application is trapped in some area, then he can immediately contact the rescue team, the rescue team can show him nearby safest place, and they can chat with him and the person can tell them his status, and using GPS they can reach to the person. The family of the trapped person can also see his last known location if they are also registered on the application. People having this application can also see weather forecast. Also through this application registered people will be able to search for nearby hospitals. So this application will be very beneficial for the people trapped in

disasters.

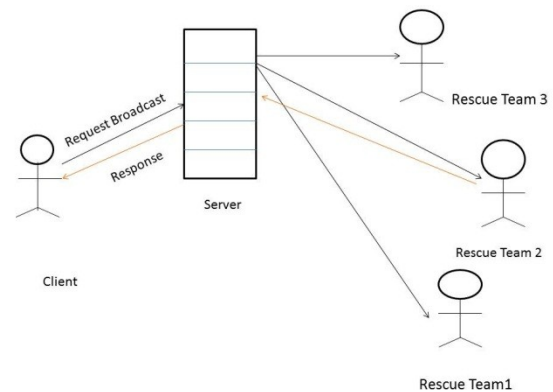


Fig Communication between Client and rescue team

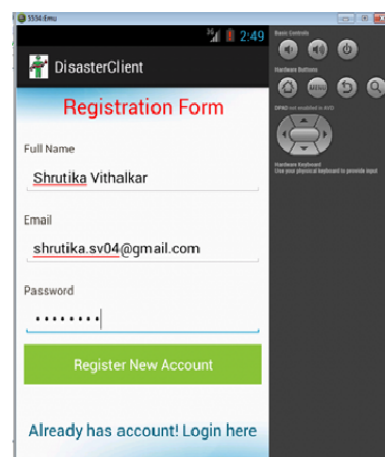
## 7) EXPERIMENTAL RESULTS

### 1. Registration form for new user

Name, email, password are taken as input for registering new user.

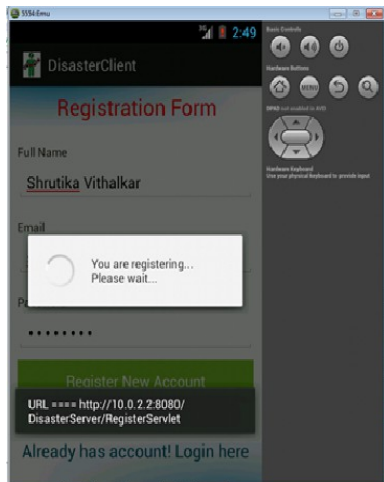
If he is already registered then he can directly login .

All the input information will be stored in a login table in the database.



## 2. Registering new user

After entering the data, control will be directed to server. Server will store the data to the login table.



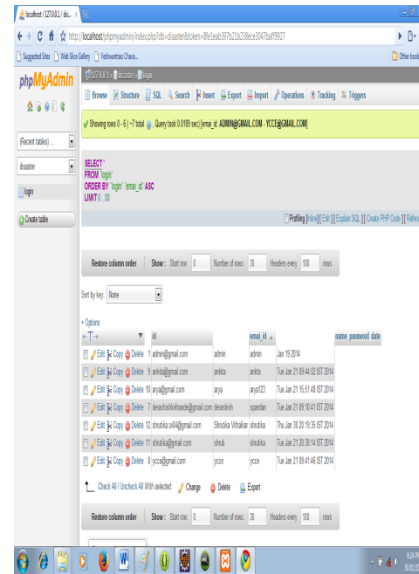
## 3.Login table in database

In database,Login table is created.It consists of field like sr no,full name,email id,password,time stamp.

Once register button is clicked, control will be transferred to the server.

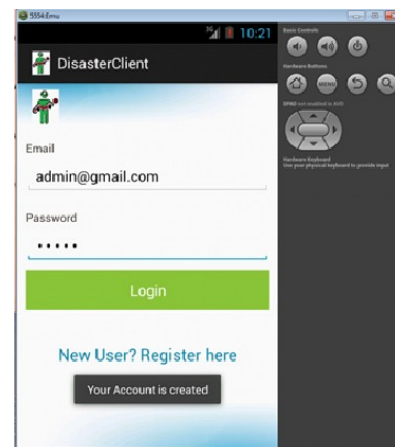
There will be one more table for storing location of person,i.e. latitude and longitude for showing their location on map. Once register button is clicked, control will be transferred to the server

.There will be one more table for storing location of person,i.e. latitude and longitude for showing their location on map.



## 4.Login form for the registered users

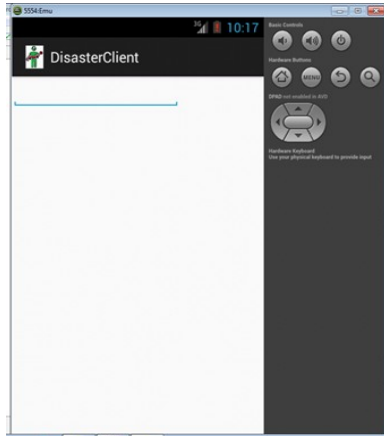
Once user has registered,he can login to app, authentication will be performed by server.Login table is used for verifying correct records.We are online server.On OnClick event of login button control will be transferred to the server.Connectivity is carried out using JSON.For server connectivity we need Server ip address .Since we are using localhost as server ,IP is static.Two parameters email id and password will be sent to server,further authentication will be performed.



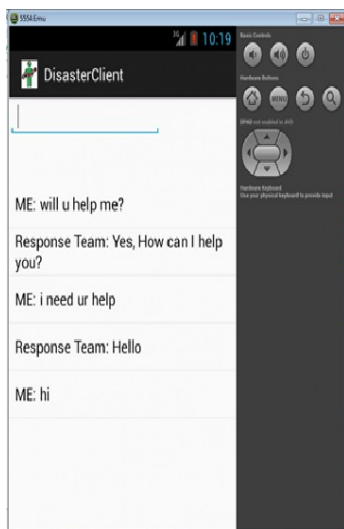
### 5.Chat window for trapped person

Once user logs in successfully,he can broadcast message to the rescue team and ask for help.

In addition to chat,location of trapped person will be added in chat editor.Rescue team can view the location of the person and provide assistance.



Example of chatting between rescue team and trapped person



### 8) CONCLUSION

Thus we conclude that location based services improve the emergency services. Thus more attention has to be given to work in this area. In our application, we focus on providing immediate response in case of emergency. It will also providenecessary help to the people trapped in these areas by tracking their location and thus this application will prove to be efficient for improving effectiveness of health services.

### 9)REFERENCES

- [1] ManavSinghal and AnupamShukla,” Implementation of Location based Services in Android using GPS and Web Services”, *IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 1, No 2, January 2012, pp 237-242.*
- [2] Aloudat, A., Michael, K. & Abbas, R.“Location-Based Services for Emergency Management: A Multi-Stakeholder Perspective”, *International Conference on Mobile Business (pp. 143-148). China:2009 IEEE.*
- [3] L.Peresco and K. Michael, “Control, Trust and Security: Evaluating Location Based services”, *IEEE Technology and society magazine ,Spring 2007.*
- [4] Aloudat, A.; Michael, K.; and Yan, J,”Location-Based Services in Emergency Management- from Government to Citizens”,*Global Case Studies 2007.*

[5] Perusco, L & Michael, K, “ Control, trust, privacy, and security: evaluating location-based Services”, *IEEE Technology and Society Magazine*, 2007, 26(1), 4-16. 2007 IEEE.

[6] LemoniaRagia, Michel Deriaz and Jean-Marc Seigneur, “Mobile Location Based Services for Trusted Information in Disaster Management”, *IEEE International Conference on Information Systems Development*.

[7] KanobeFredrick, “A Web-based blood donor management information system for the Red Cross Society, Uganda (WBBDMI)”.

[8] AnasAloudat and Katina Michael ,”The application of location based services in national emergency warning systems: SMS, cell broadcast services and beyond”.

[9] Qusay H. Mahmoud, ”J2ME and Location-Based Services”, developers.sun.com.

[10] Location Manager APIs– Android Developer <http://developer.android.com/reference/android/location/LocationManager.html>