



GEO ALERT- A Location Based Alarm System Using GPS in Android

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ABSTRACT

The proposed idea of this Application Geo Alert helps to frequent travelers at various places, this application helps to find the particular location on which they are currently stand and also introduce with favorite tourist spot when they are in front of that place by providing alert and when the user would like to know about to that spot he will have to simply tap on that alarm that provides the history of that spot, so the unknown city will become familiar to every visitor who visit first time or every time in any particular area. Here we present the requirements for location based alerts resulting from a qualitative analysis performed at small area in the city, and explain that how these results are influencing ongoing design of a more comprehensive location based alert system.

Keywords: Alert, Geo, GPS, Location.

1. INTRODUCTION

Mobile computing research is spreading widely and quickly in today's era. Mobile phone is very essential in every individual's life, and it is increasing day-by-day for every age group from little children to old age people. Different kind of Mobile devices are available in market and new from simple mobile that is just used for calling and messaging to Smartphone they makes people's life easier and very secure in all sense. The smart phones are based on different operating systems like iOS, Symbians, Android, and many more. Let us discuss on Android based mobiles as they provide various applications which are dependent on day-to-day life. Android operating system [1] is a Linux based which has been developed as suitable for smart phones and tablet computers. The development initiated by Open Handset Alliance which led by Google ([http://en.wikipedia.org/wiki/Android_\(operating_system\)](http://en.wikipedia.org/wiki/Android_(operating_system))). Android operating system is use as platform for the application. In these kind applications location based applications are widely used as it makes life very easier and faster. The motivation for every location based information is -"Providing the exact information at right place in real time environment".

The reason behind the location based services [2] is to provide services to mobile users based on their knowledge of

their locations. Services such as digital map services, real time traffic information which are delivered to Smartphone user's current location to reduce data transmission, providing dynamic guidance services according to the user's location and current traffic condition; user can request for nearest cinemas, ATMs, restaurants etc.

Location based services offers lots of benefits to Smartphone user's. For the mobile users, the example of location based services is:

- Mobile Phone user can request for nearest business or service, such as banks, hotels, shopping malls etc.
- Provide alerts, such as notification of traffic jam on nearby location.
- Mobile user would be able to find the exact way to reach any particular place.
- Any user can find his/her friend at any location or receiving the location of the stolen phone.

The rest of the paper is organized as follows: Section 2 discusses System Architecture of location based alert system, Section 3 describes Implementation and Methodology of application, Section 4 describes the proposed System of GEO ALERT application, Section 5 discussion of Application Features, Section 6 defines the limitations of GEO ALERT, Section 7 discuss the Application's working process, Section 8 shows the result via screen shots of implemented application, finally we conclude the paper in Section 9.

2. SYSTEM ARCHITECTURE OF LOCATION BASED ALERT SYSTEM

Location based service (LBS) is a mobile service that has the capability to provide real time information based on the user's current location. Geographic Information system (GIS) is the heart of location based services, System which has been developed will act as collection centre, storing and supplying the geographical data for being manipulated by

the application [1]. Data which stored at the system will be used within making the decision process. Through this application, data will be collected to trace every unit location and every unit also can update any additional information. Gis integrates hardware, software and data for capturing, managing, analyzing and displaying all forms of geographically referenced information. Gis allows us to view, understand, question, interpret and visualize data in many ways that reveal relationships, pattern and trends in the form of globes, maps, charts and reports [6].

The architecture of the location-based alarm called GEO ALERT consists of several segments that are sufficient to create a fully functional unit. The absence of any of these parts means at the same time the impossibility of developing the system.



Figure 1: System Architecture of GPS

As we can see in image, there are three basic categories:

1. User- Mobile user is person who uses the possibilities provided by the Smartphone device and the GEO ALERT application installed on that device;
2. Mobile Device- Mobile device is hardware equipment which enables the usage of GEO ALERT application.
3. GPS system is the System of satellites and receivers intended for positioning.

3. IMPLEMENTATION & METHODOLOGY

The purpose and functionality of GEO ALERT application is provides the information available to their user when they arrive at certain location. GPS is becoming popular with location positioning system, today there is huge demand of location based applications. A Location based service [5] is an information and entertainment service; these services are accessible with mobile devices through the mobile network and utilizing the ability to make use of geographical position of the mobile device.

Triggering Action

LBS can be categorized as triggered LBS services (Push Service) and user requested LBS services (Pull service). In a triggered (push) LBS service [2] the location of user's mobile device is retrieved when the predefined set condition is fulfilled. For example, when a user drives on the way to his office, his user agent may get a location notification and automatically turn on the air-conditioner in his office.

In a user-requested (pull) LBS service, the user decides whether and when to retrieve the location of his/her mobile device and use it in the service. User-requested LBS service can include personal location (i.e. finding the current location of the user) or services location (i.e. finding the location of the nearest hotels, ATM etc). Navigation and direction system is an example of pull LBS services [5].

Reminder as per situation

Different locations may require different communication behaviors. For example, video or text conversation is not good when driving [3]. User agents usually based on location attributes, instead of geospatial coordinates or civil addresses, can choose appropriate communication behaviors. In a Location based alarm system we provide an alert when user reached any famous spot in city to provide knowledge and information of mobile user's current location.

Google Places API

On 10 May, 2011, at the Google I/O developer Conference in San Francisco, Google announced that the opening up and general availability of the Google Places API.

Google Places API [4] is a service that provides service information about places, spatial locations, geographic locations, places of user's choice- using http requests. User can get places request/response specifies locations as latitude and longitude coordinates. We use these API for implementing our application.

There are some places API are available:

Place Searches- It returns an array of places based on search string or locations defined by user.

Place Details- this request returns detailed information about specific place including user reviews.

Place Actions- user can schedule events, add or remove places.

Place Photos- user can request for places related photos stored in Google's place database.

Places Autocomplete- it provides autocomplete functionality to user for text based searching of geographic location by returning places a user type.

Android Permissions

To access shared resources on the system, Android applications register for the specific privileges they require. Some of these privileges enable the application to use phone functionality to make calls, access the network, and control the camera and other hardware sensors. Applications also require permission to access shared data containing private

and personal information such as user preferences, user's location, and contact information.

Applications that act as content providers might want to provide some on-the-fly permissions to other applications for specific information they want to share openly. This is done using ad-hoc granting and revoking of access to specific resources using Uniform Resource Identifiers (URIs) [7].

URIs index specific data assets on the system, such as images and text. An example can be considered of a URI that provides the phone numbers of all contacts:

```
content://contacts/phones
```

Android permissions used in our application:

- <uses-permission android:name="android.permission.CALL_PHONE" />
- <permission android:name="com.myproject.gpsalarm.permission.MAPS_RECEIVE" android:protectionLevel="signature" />
- <uses-permission android:name="com.myproject.gpsalarm.permission.MAPS_RECEIVE" />
- <uses-permission android:name="android.permission.INTERNET" />
- <uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
- <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
- <uses-permission android:name="com.google.android.providers.gsf.permission.READ_GSERVICES" />

4. PROPOSED SYSTEM OF GEOALERT APPLICATION

The whole process of developing the application named GEO ALERT was also implemented in its practical part. The final version of the application based on Android Mobile operating system consists of several tabs, each having its own functionality, and facilitating the application usage.

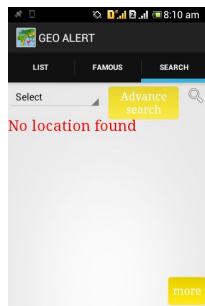


Figure 2: The Application in Android platform dependent Smartphone device

5. APPLICATION'S FEATURE

- An affordable technology keeps huge advantages
- Mobile user gets alert at a particular location when he travels around the city
- User would be able to find location or particular place from his current location
- User can directly call when he finds place and related address and contact number.

6. APPLICATION'S LIMITATION

- GPRS must be on every time user visits.
- Mobile must have internet facility.
- Android device's version must be of 4.0 or above, below this version this application will not work.

7. APPLICATION'S WORKING

This paper shows the working of application GEO ALERT via flow chart and via original pictures of application.

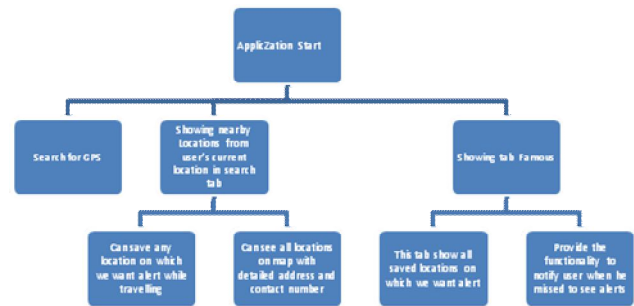
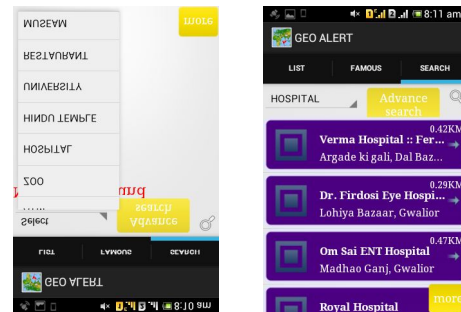


Figure 3: Flow chart of application GEO ALERT

8. RESULT

In this section some screen shots of the implemented application are presented as follows:



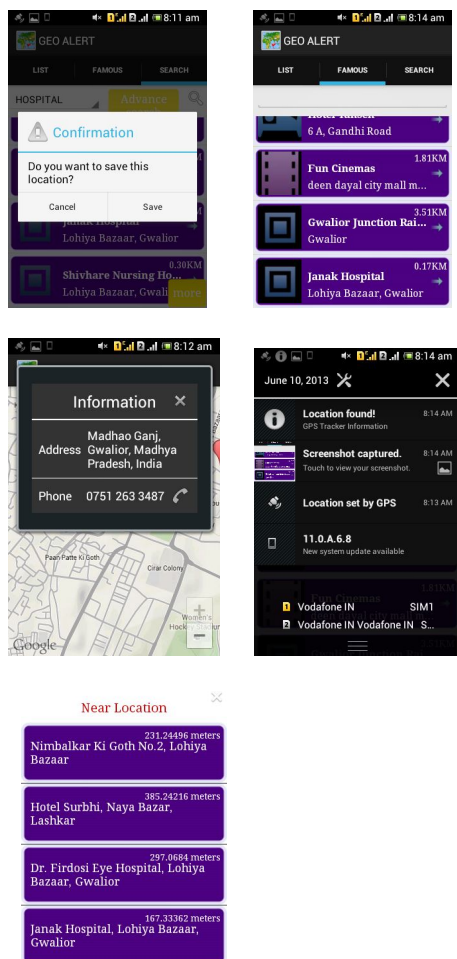


Figure 4: Screen shots captured when application is on running state

9. CONCLUSION

In this paper, we have discussed about location based services and its uses, system architecture of LBS system, and how it works. We summarize the features of location based services. Location information gets used more and more often in people's daily life. This paper focuses on communication related location-based services, GPS and system Architecture. The location based alert application makes life very easier and knowledgeable about various places.

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