

Location Based Profiling and Notifications Using Android Applications

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Abstract

Location -based profiling system position a person's mobile phone to provide some context based service. Some of these services called 'location tracking' or 'push LBS' application - need frequent updates of the current position to decide whether a service should be initiated at the current moment - or to deduct from a location profile a future point in time for service provision. Thus, such distributed and ubiquitous systems will continuously collect and process locations in relationship to a personal context of an identified customer , combining personal information with other data stream This will introduce the concept of location as part of a person's identity. A mobile phone device on which it will be possible a request the location of the nearest location and be provided with alerts that we reached that placed. This is where are study focuses on the ability of mobile devices which provides software solution which are location sensitive.

Keyword: *Android, LBS, GPS, Google maps*

1. Introduction

A Location-Based service (LBS) is an information or entertainment service, accessible with mobile devices through the mobile network and utilizing the ability to make use of the geographical position of the mobile device. LBS can be used in a variety of contexts, such as health, indoor object search, entertainment, work, personal life etc.

LBS include services to identify a location of a person or object , such as discovering the nearest banking cash machine or the whereabouts of a friend or employee. LBS include parcel tracking and vehicle tracking services. LBS can include mobile commerce when taking the form of coupons or advertising directed at customer based on their current location. They include personalized whether services and even

location based games. They are an example of telecommunication convergence. Location based services offer many opportunities. For the mobile user, some examples location based services are :

1. Requesting the nearest business or service, such as an ATM or Restaurant.
2. Receiving alerts, such as notifications of a sale on gas or warning of traffic jam.
3. Finding a buddy(Friends).

2. System Architecture

Figure 1 shows the system architecture. It can be divided into six parts which are task management components, User interface components, Service management components, Storage and retrieval management component. The work flow of this architecture is shown as follows:

- 1) User interface component receives available task list from task generator in the task manager component when the system is initialized .
- 2) As user issues a task, the command receiver will dispatch it to the semantic translator to get task relevant information.
- 3) The semantic translator translates the task and then store related information to the database and calls trigger manager.
- 4) The trigger manager collects all kind of context information to decide whether or not to start the service related to the task. (It might be atomic or composite).
- 5) When service starts; It will get all related content information to provide personalized services.
- 6) When changes occur in the database, it evaluates module, detect and decide whether there is a need to do reasoning. The evaluation result of content reasoning

will be stored to database as a kind of advanced content information.

As can be seen in the picture the system contains composite services which are composed by a set of atomic services. It can dynamically change by service register and unregister at runtime. For example navigate service content voice reminder service, digital map service, dynamic route service, speed alarm service. The voice reminder service and speed alarm service can be added or cancelled according to user's demand.

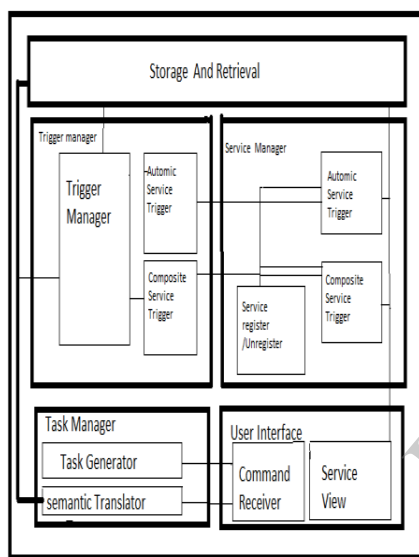


Fig 1. Architecture Of LBS

3. Background Works

a. Location Based Services

Location based services is mobile service that has the capability to provide real time information based on the user's action. Location based Services are used mobile

data services for rapid development in wireless communication and finding the position. Using the LBS we will finding the nearest restaurant or all shopping malls within 5 miles at any places and at any time. Virrantaus [1] defined LBS as bellow:

"Information services accessible with mobile devices through the mobile network and utilizing the ability make use of the location of the mobile device 'Open

Geospatial Consortium' [2] defined LBS service similarly: "A wireless IP service that uses geographic information to serve a mobile use, any application service that exploits the position of a mobile terminal."

b. Google maps and GPS

Global Positioning System is Use to find out the approximate current position. GPS is also provides user with positioning, navigation and time services. It is easier to utilize map information by connecting GPS receiver to PC and PDA. GPS receivers are now embedded into mobile phones and application using location of user in real time are available. The GPS chips are now included in many devices to analyze satellite signals and determine the user's location with high accuracy. In a large social event, such as a big conference, since people come to release their location information and the location privacy is not important. Most important key technology advances for the development of location base applications is the use and availability of positioning system.

c. Reminder as per Location

Different location required the different reminder names so that it require different communication behaviours. For example sometimes user want to purchase some books from book market and generally he/she forget to buy it, so by using the reminder application user can stored the related information of current location to the database and when the person come under the location then it automatically show the message according to that location and retrieve the information to mobile phone.

d. Alarm or Profiling as per the situation

For setting the outdoor and indoor profile user required the alarm as per the situation. So that the different situation required the different alarm such as silent, general, etc. For example. sometime user is in college then the profile must be silent at that location.

e. Notification as per location

Notification is also the most important part of LBS. Notification is nothing but the advertisement or some offers system are done on product. For example set his/her status into the shopping mode, it is possible for the sale department to send coupons to user and provide a better services and marketing products.

4. Working Of LBS Components

The working of LBS in order to make LBS services possible that shows in the fig 2, some infrastructure elements are necessary, including mobile devices, applications, communication network, positioning component, and service servers. Mobile devices are tools used by users to access LBS services, to send request and retrieve result. Such devices can be portable navigation devices(PND), Personal Data Assistants(PDA), laptops, mobile phone, and so on. Application is the interface for users to access the LBS services. It is usually software developed by application provider, downloaded and installed on user's mobile devices (small screen size, limited processor power, battery capacity), LBS applications need to be lightweight and battery saving.

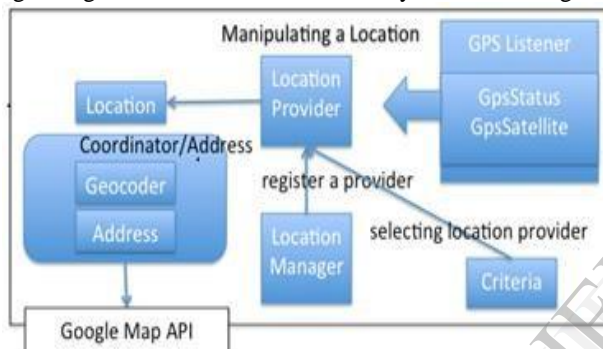


Figure 2. Working Of LBS Components[3]

Location Manager

Location manager class of android is present to manage all other component needed to establish a LBS system.

Location Provider

Location provider represents the technology to determine the physical location. Location Provider component of Android application is a present to determination of available provider and selection of suitable one.

GPS Listener

GPS Listener work as the main part as it used to listen the instructions from the location provider. It takes the location from the location provider, it also work with the GPS Status and GPS Satellite. It also done the manipulation a location

Google Map API

Google Map API(Application Programming Interface) it provides the interface between user and mobile device to fetch the exact location. It gives the address or coordinators. The geocoder and Address are used to provide the address to the Google map.

5. Advantages And Disadvantages Of LBS

5.1 Advantages

1. Discounts and coupons - sends alerts for discount within a geographic radius of an opted in consumer's location.
2. Keeping track of children and teens - parents can be alerted when kids leave or arrive at specified location, such as school or home.
3. Location based advertising - our spatial trigger feature enables a cost effective launch.
4. Road traffic management - using our commercially proven Real Time Traffic Information feature.
5. Emergency call positioning - meeting strict governmental demands.

5.2 Disadvantages

1. LBS required the High Cost.
2. Does not support some application like Firefox.

6. Future Scopes And Conclusion

LBS is new technology. The potential of the services can improve the aspect of life. So we can realize in future many application are based on the LBS. Some future scope of LBS are following:

1. News to your location: It is possible to deliver the breaking news to the user and keep him updated for a specific issue of his location using handheld device. This can be done by SMS or TV stream services.
2. Job dispatch and fleet management: Using the remote tracking taxis and trucks to locate the position of the customers. So knowing the approximate current location of the truck or packages will provide a better services to the user. For example, a user now would

able to track the location of an important document and knows the location of the document using the internet tracking ID.

3. LBS games and Entertainment: For example, treasure hunting games where the players complete to recover the missing treasure. The missing treasure is not real but it is placed in a physical location. By observing the players it can be possible to determine the treasure is found by which player. Moreover, it is possible to change the treasure into another type of game.

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