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Implementation of Recommendation on Location Based Services

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ABSTRACT

Today mobile is very useful thing. It is a need of everybody. In every Era "Location" is a strong component of "Mobility" Location based services (LBS) are services offered using mobile phone by taking mobile's geographical location. The proposed system is providing location based services and offers with respect to user interest. Vendors are allowed to post and edit an advertisement for users. The system contains various modules such as advertising , Tourist place, Parking place etc.

It also provides user's feedback, ranking based suggestion in secured manner. The purpose of this system is to notify the user based on their preferences and their interest in the particular area and notify them using android application. This will lead to lower advertising costs and expenditures also save the time of user for finding the located area of ads with help of GPS.

1. INTRODUCTION

Location based services has enable people to locate and trace the location of other parking place, historical place, meuseum, tourist place from the comfort of their home as long as they have the required gadget such as smart phone. Requesting location based information is usually initiated by a user called the client or network provider. In mobile application development which has further divides into two type for application such as LBS (Location Based Services), GPS (Global Positioning System).

LBS and GPS which actually are extension of mobile apps is the central focal of the proposed system and research work. Location-based Services or LBS refer to a set of applications that has the knowledge of the geographical position of a mobile device or user in order to provide services based on that information. 'Location based services (LBS) provide the mobile clients intrest based services according to their current location. Location Based Service (LBS) is a platform that provides information services based on the current location. The location information (longitude and latitude coordinates) of mobile end user can be obtained through the mobile communication network or the Global Navigation Satellite Systems (GNSS). Location-based services offer many advantages to the mobile user. For the mobile user, the examples of location based services are as follow:

To determine the nearest services, such as an Tourist Places, Meuseum, Historical Places, Parking Places, Malls and Hotels

- Receiving alerts, such as notification of tourist places, historical place, meuseum, company, sale in shopping mall.

Location based Services can be classified Consumer Services- Now days, smart phones like Android, Blackberry and iPhone provide a set of location based applications and services which helps the mobile users to access the multiple services based on the user current location.

- **Maps Navigation-** The users can use the Google Maps to get to the particular location or to trace the route between any two locations.
- **Marketing /Advertising-** Many shopping malls advertise their items based on the location of the clients. For Example – Sale in Shopping Mall near to your location.

There are two methodologies to implement LBS-

- To process location data in a server and to forward the generated response to the clients or user.
- To find location data for a mobile based application that can use it directly.

To discover the geographical position of the mobile, Location Based Services must use positioning methods in real time. The accuracy of the methodology depends on the methods used. Locations can be represented in spatial terms or as text descriptions.

A *spatial location [2]* can be represented in the used longitude and latitude coordinate system. Longitude as 0-180 degrees east or west and latitude is defined as 0-90 degrees north or south of the equator and

The location of the device can be retrieved by-

- **Satellites-** The Global Positioning System (GPS) uses a constellation of 24 satellites orbiting the earth. GPS finds the mobile user position by calculating differences in the

times the signals, from different satellites, take to reach the receiver. GPS signals are decoded, so the smart phone must have in-built GPS receiver.

Assisted-GPS (A-GPS) 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 a seconds, has better coverage and can, in some cases, it is used inside the buildings, consumes less battery power and requires few satellites. The granularity of location information is most accurate (Latitudes and Longitudes). The disadvantage is cost of A GPS enabled mobile phones for the user.

2. Background

In the last few years, the smart phones (Android, Black berry and iPhone) have taken over the market of Nokia based Symbian Phones in India. And these smart phones come equipped with A-GPS functionality which provides the spatial coordinates of the user location. 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. Assisted GPS, also known as A-GPS or AGPS, improves the performance of standard GPS in devices connected to the wireless network.

A typical A-GPS enabled cell phone uses GPRS or other such Internet based data connection to build a contact with the assistance server for A-GPS. As this technique does not take into account the cell phone service provider network completely, we only pay for the GPRS usage charges and nothing else. The only down-side to this technology is that an A-GPS server cannot utilize any of the three standby satellites available for GPS connections.

AGPS minimizes the amount of memory and hardware that must be integrated into mobile devices in order to provide GPS-quality device locating ability as required by mobile devices. This keeps the mobile device simple and allows longer battery time.

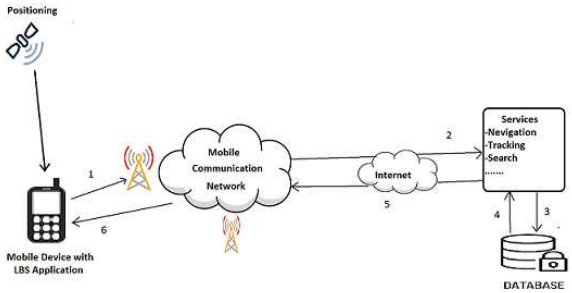

Figure - Architecture of A-GPS System

GPS is real-time solution provider whereas AGPS is not real-time solution provider. The network usage is required every time we move out of the service area. It is useful only for locating a particular place in small area. There is no privacy in GPS and A-GPS since the Assistance server knows the location of the device. There needs to be communication over the wireless for processing of GPS information so this could be expensive.

3. Implementation and Methodology

Location-based service is another key feature that gets used in smart phone applications. It is often combined with google maps to give a good experience to the user about their current location. Android support LBS Application Programming Interfaces (APIs). Location based service allows finding out the device current location.

3.1. Android Location API

These are the different classes present under Location API package to retrieve the Location information of the mobile user.

- **Location Manager-** The class provides access to the location based service. It also provides facility to get the best Location Provider as per the criteria.
- **Location Provider-** It's an abstract super class for location providers. A location provider provides periodic reports on the geographical location of the mobile device.
- **Location Listener**- This class to provides callback methods which are called when location gets changed. The listener object has to be registered with the location manager.
- **Criteria-** The class provides the application to choose suitable Location Provider by providing access to set of required properties of the Location Provider.

Android also provide an API (Application Program Interface) to access the google maps. So with the help of the google maps and the location APIs the application can show required places to the user on the map.

Fig- Screen shows admin dashboard

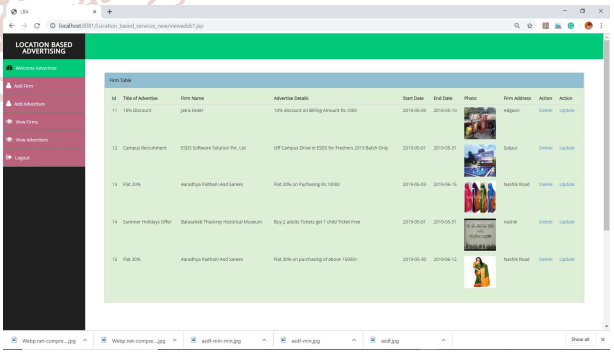

Fig- Screen shows advertiser dashboard

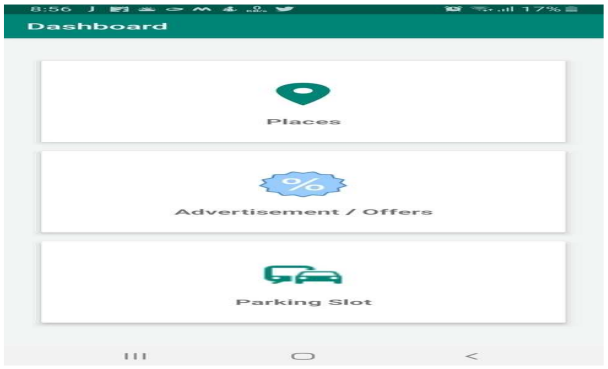

Fig- Screen show user dashboard

4. System Testing

We developed the mobile app on Android covering all the mentioned APIs and the app was tested using Samsung Galaxy J8handset (which is A-GPS enabled handset).
Android Version – 9.0 (pie)

Android Permissions android.
Permission. INTERNET
android. Permission. ACCESS_FINE_LOCATION
android. Permission. *ACCESS_COARSE_LOCATION*

5. Conclusion

There are various methods to implement Location Based Services. The different kinds of methods include:

- **Technology Method-**

For Location Based Services to be operational on a large scale, mapping under the geographical information system (GIS) needs to be more comprehensive than it is today. This raises significant challenges for improving the breadth and the depth of the existing coverage of GIS. The most important factor in enabling the growth of LBS is wide availability of cheap GPS enabled handsets. GPS enabled handsets are being manufactured now a days very rapidly. The issue of cost remains to be tackled, since these phones are still all high-end units.

- **Market failure-**

One of the main constraints to the provision of value added services, in general, and Location Based Services in particular, is the market structure of the mobile industry and the failure to unleash the forces of competition. A key essential need for Location Based Services provision needs cross-network connections to be seamless, and the current practices go against a cooperative attitude for Location Based Services provision.

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