Location Based Mobile Services with Some Related Issues: A Review

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Abstract— This is the era of smart phone and they become more and more smarter day to day by adding new feature and by developing the many types of application. With the help of smart phone features, today the ecommerce site become very popular among all the people. The GPS system also one the most popular feature of smart phone. Android is one of the most popular mobile Operating system which help to run the android application or provide platform for many applications to execute. with the use of GPS system, the application can able to get the users current location. Location based service provide many facilities to smart mobile phone users. They can navigate map, set location while driving and many more. Location based service becomes very popular for all smart phone user and also in social networking. It also provides much attractive and useful functionality to all smart phone users. Location based service also help the users to continuously check their location without any interruption, find routes while driving, search particular place and find the best path with distance. There are many approaches for creating application with location based service which depends on the programmer capabilities and the applied algorithm.

Key words: Location Based Service, LBS, Mobile location finder, Location services

I. INTRODUCTION

Today is the era of internet. Internet is everywhere just like our nerves system. If we post anything in the social media it will spread to all because all are connected to each with some communication medium. It will also send location to all the people who are connected with sender, if he wants to share the location. It uses the GPS based positioning system to get location while using the smart phones. Location-based services use real-time geo-data from a mobile device or Smartphone to provide information about the particular location. Location-based services use a Smartphone's GPS technology to track a person's location, if that person has allowed the service to do that. After a Smartphone user allow the location tracking, the service can identify his or her location down to a street address without the need for manual data entry [1]. There is several ways to use the location based service some of these are listed below:

− Store Locator: using the location based service the user can easily find the nearest store location. There are many mobile applications available on the internet which helps the smart phone users to get nearest store with some security enable features.

− Location based Marketing: When we use free app available on Google play, they display some advertisement which local companies near about our location. They also use the Geo-location to put the ads on the app.

− Traveling Information: Location based service help the user by sending the real time information while traveling. This type of many applications is available on the Google Play. It also helps to explore the route while driving.

Many mobile applications can also be linked to existing social media platforms to allowing third-party developers to integrate Location based service into their service. Many social sites like Facebook, Google, Twitter, Linkedin also uses the location based service, which allows the users to check themselves and their friends at location like meeting or restaurant.

Location based service provide many facilities as listed above but it also have some issues like privacy, transparency, user consent.

To discover the current location of the user, Location based service use the real time positioning system. The accuracy of the location of the user depends on the methodology which used. To find the current location of the user se use the spatial location system that is based on the GPS system.

− GPS: The Global Positioning System (GPS) is a space-based navigation system that provides location all the time and anywhere in the earth.

− Longitude: Longitude defined as +180 degree to -180 degree east or west of the meridian.

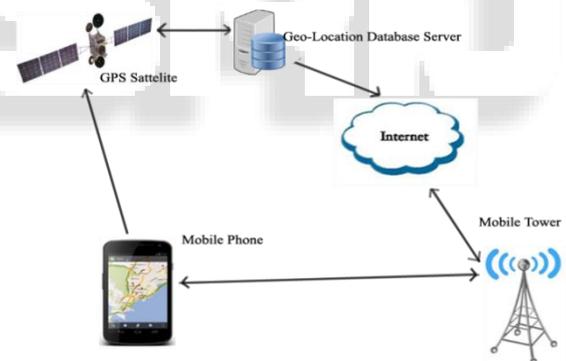− Latitude: Latitude defined as +90 t0 -90 degrees north or south of the equator.

Fig. 1: system architecture

− GPS System: GPS is a space-based navigation system that provides location all the time and anywhere in the earth. The GPS system provides many facilities to many organizations like military, civil, and commercial users around the world. GPS satellites circle the earth twice a day in a very precise orbit and transmit signal information to earth. The Global Positioning System uses a set of 24 satellites orbiting the earth. GPS receivers take this information and use to calculate the user's exact location. To calculate the exact location of the user, GPS receiver compares the time a signal was transmitted by a satellite with the time it was received. The time difference tells the receiver about their location, by calculating the distance measurements from a few satellites.

To discover the position of the mobile, The GPS system or location based service must use positioning

methods in real time. The accuracy of the methodology depends on the approach used. Locations of the user can be represented in two way i.e. spatial terms or as text descriptions.

The spatial location are represented with help longitude, latitude point which show the users current location on map. The text description uses the simple text information about the particular location of the user like address i.e. city name, district name, pin code or any other text description of user current address or any searched address.

II. ISSUES RELATED TO LOCATION BASED SERVICE

The location based service provides many beneficial facilities to smart phone users. Also the market noticed this trend in geo-development and reacted with an increasing availability of location based services that mainly run on our mobile devices [11]. But at the time when service provider capable to continuously track the user's location, the issue of privacy come into the front of user. And also the question comes that many users not willing to trust the third party application or third party service provider. Their many issues come with location based services that are listed below:

A. Privacy

privacy is the most important issue with the location based services. The organization knows that what its LBS service does, what type of data it collects, and whether that data is shared with social media or partners or third parties. The location based service directly transfers the users' location information to entities also service executes calculations that require the input of location and once they are introduced into the system will reveal spatial information on the user. Knowing this, user can imagine that lots of information ends up in third hands, is stored, analyzed and used for many purposes which not beneficial for use. For example suppose user want to plan for picnic and search for the desire location, with using the generated and saved information of spatial data the third person know the entire plan.

B. Transparency

Transparency is the second issue with the location based service. Apps that users use, can store all the information about the users. The third party can use this sensitive personal information, which means the apps with location based service not transparent and not faithful with the personal and important data in some cases.

C. User Consent

When the user install mobile apps which is not trusted, and also the location based service is accepted by the user while installing. So there may be problem with the user's privacy because these will get all your personal information like where you go at what time, and what the user's current location. These may be harmful to users with this type app which is not trusted.

III. LITERATURE REVIEW

There are many research papers based on the GPS system and location based service. Some of these that are reviewed are following:

"A Taxonomy of Indoor and Outdoor Positioning Techniques for Mobile Location Services" this paper is presented by the Vasileios Zeimpekis, George M. Giaglis and George Lekakos; the main focus in this paper is wireless communication system with mobility and location based service. This paper also focus on the positioning technique for self positioning, remote positioning technique and the wireless positioning techniques.

"Hierarchical Location Service for Mobile Ad-Hoc Networks" paper presented by Wolfgang Kie, Holger Fubler, Jorg Widmer and Martin Mauve; describes the fundamental for Position-based routing for packet routing in mobile ad-hoc network. Hierarchical approach is the approach to routing the nodes on area that it occupies and by dividing it into a hierarchy of region. According to this the lowest level regions are called cells. Regions of one level are aggregated to form a region on the next higher level of the hierarchy. Regions on the same level of the hierarchy do not overlap.

"A Scalable Location Service for Geographic Ad Hoc Routing" presented by Jinyang Li, John Jannotti, Douglas S. J. De Couto, David R. Karger and Robert Morris; describe the basic concept for Geographical location based service for distributed location service to track the mobile node locations. Consideration the problem of routing in large ad-hoc network for mobile host when geographical based location service. Also the efficiency and performance analysis in both case when nodes are not moving and when the nodes are moving.

"MLS: An Efficient Location Service for Mobile Ad Hoc Networks" presented by Roland Flury and Roger Wattenhofer; describes the mobile location service for distributed location service to track the position of mobile nodes and to route messages between any two nodes. Propose an algorithm for cost calculation when the message is routed from one node to another and propose a lookup algorithm for routing the nodes.

In the above works on location based service. all are based on the transmitting the message from one node another node and some are based on the hierarchical based approach with cost calculation and transferring the message from one node another node with some proposed algorithms.

IV. IMPLEMENTATION OF LOCATION BASED SERVICE

There are many techniques and approach to implement the location based service for smart phone. By using the Android Location API provide the following class [10]:

- GpsSatellite: This class represents the current state of a GPS satellite. This class is used in conjunction with the GpsStatus class.
- GpsStatus: This class represents the current state of the GPS engine.
- Geocoder: It handles the geocoding and reverse geocoding for the mobile application.
- LocationManager: The class provides access authentication to the location service.
- LocationProvider: It's an abstract super class for location providers. A location provider provides periodic reports on the geographical location of the device.

– LocationListener: Used for receiving notifications from the LocationManager when the location has changed.
– Criteria: This class represents the current state of a GPS satellite. Criteria class indicates the application criteria for selecting a location provider. Providers maybe ordered according to accuracy, power usage, ability to report altitude, speed, and bearing, and monetary cost

By using the above class the simple location based program can be coded. But to generate a app with the good efficiency and performance need to more attention to get the exact and fine location. Also need the some algorithm that may save the battery because in background the location based service will continuously run to get the location of user.

V. CONCLUSION

Every smart phone are enabled with GPS system which provide many location based services to mobile users. These services are very helpful to mobile users as well as it has some issues related to users privacy, transparency etc. To implement the location based service the mobile must be enabled with GPS system with user permission. There are some application related to location based service which forcefully on the GPS system and send data to server, which may be harm full to users. With the use of location based service there are a vast range of way to explore the idea to do something extra.

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