

## **Improving Performance and Privacy in Location Based Service Applications Using Gps**

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**Abstract:** *Location based Services offer many advantages to the mobile users to retrieve the information about their current location and process that data to get more useful information near to their location. With the help of GPS in phones and through Web Services using GPRS, Location based Services. Advances in wireless communication technology have allowed affordable data service fees, and current smartphones are equipped with GPS; as a consequence, LBS applications are emerging as next-generations. The Global Positioning System (GPS) is a space-based satellite navigation system. Nearest Location details intimates in Alert Message Service. Systems are known for accuracy in the range of several meters. In a retail scenario, this accuracy may be sufficient for so-called macro navigation (finding the right area in a shop of a specific item) but insufficient for micro navigation, i.e. finding an item in a shelf. Especially location-based services cannot be established due to the inaccuracy of the positioning.*

**Keywords:** *Location-Based Services (LBSs), location privacy, security, Global Positioning System (GPS)*

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### **I. Introduction**

Technological innovation now allows any application developer to provide the geographic location of the user. *Location-Based Services (LBSs)* are permission-based applications that use real-time location intelligence from a customer's mobile device. This data facilitates the providers in rendering diversified services which can include finding specific locations as well as sharing the user's location in real time. Location-based services (LBS) provide the mobile clients personalized services according to their current location. They also open a new area for developers, cellular service network operators, and service providers to develop and provide value-added services: advising clients of current traffic conditions, providing routing information, helping the users to find nearby shopping malls, etc., The popularization of smartphones has led to greater use of various location-based services (LBS). In earlier mobile phones with fewer functions, also known as feature phones, LBS were confined to simple location-tracking services. Smartphones, however, have completely changed LBS with their powerful operating systems and various applications. LBS applications with a wide variety of business models have emerged, and LBS and social networking services (SNS) have been combined. Geographical Information System (GIS) has been the heart of LBS in order to provide all the functionalities in LBS. They also open a new area for developers, cellular service network operators Location-based services offers many merits to the mobile clients.

The popular social networking services are experiencing rapidly growing uptake from mobile users. Some of these popular service categories include mapping and navigation, search and information, social networking and entertainment. We utilize two approaches in attempting to understand the relationship between LBS usage and privacy concerns. One adopts the conventional point of view that privacy concerns serve as inhibitors of LBS diffusion. The other approach assumes that privacy concerns may not be a major factor in hindering the spread of LBS applications, as most users are now aware of the benefits of LBS apps and are willing to assume some risks when using LBS.

### **II. Conceptual Background**

Location-Based Services (LBSs) refers to a broad range of services that are based on (or enhanced by) information about the physical location of a user and/or device. It becomes a popular and important way to provide real-time information and guidance. Many papers we reviewed are based on the various LBS systems, on their architectures, and the different governing platforms and technologies on which they are based. In order to increase interoperability among the various systems and technologies, the necessity for standardization and homogenization is also taken under consideration.

The location of the device can be retrieved by,

## 2.1 Mobile Phone Service Provider Network

The current cell ID is used to locate the Base Transceiver Station (BTS) that the mobile phone is interacting with and the location of that BTS. It is the most basic and cheapest method for this purpose as it uses the location of the radio base station that the cell phone is connected to. A GSM cell may be anywhere from 2 to 20 kilometers in diameter. 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 advantage is that no additional cost is attached to the handset or to the network to enable this service.

## 2.2 Satellites

The Global Positioning System (GPS) uses a constellation of 24 satellites orbiting the earth. GPS finds the 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. 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. It addresses signal and wireless network problems by using assistance from other services. Such a technology in our smart phones can assist in various ways like tracking current location, receiving turn-by-turn direction instructions, route tracking, etc. 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. There are several works achieving privacy-preserving location queries while using lots of different techniques for securing the location privacy being highlighted. Privacy-preserving location has three main concepts; the concept of dummy node, the concept of cloaking-region, and the concept of encryption location. However, many of these researches have a problem where the quality of the LBS and Quality of Service (QoS) decreased when anonymity is improved. The next sections will cover researches on these concepts. Despite such benefits, LBS may also involve a high risk of privacy violations, as users' location information must be disclosed. According to Samuelson there are four types of privacy: location privacy, electronic communication privacy, individual information privacy, and public place privacy. This study focuses on location privacy—the right to limit how much information about one's current and past location(s) is tracked and shared.

## III. Improving The Similarity For Privacy In Location-Based Service

Android support LBS Application Programming Interfaces (APIs) [7]. Location service allows finding out the device current location. The application can request for periodic update of the device location information. The perceptions of actual users of LBS smart phone applications in order to understand their post-adoptive behaviors according to their level of privacy concerns.

### 3.1 Android Location API

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

**LocationManager-** The class provides access to the location service. It also provides facility to get the best Location Provider as per the criteria.

**LocationProvider-** It's an abstract super class for location providers. A location provider provides periodic reports on the geographical location of the device.

**LocationListener-** This class 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 LocationProvider.

### 3.2 Google Places API

The Google Places API [8] is a service that returns data about Places — defined within this Web Service as, spatial locations, or preferred points of interest using HTTP requests. Place response specifies locations as latitude/longitude coordinates. The four types of requests are available with the Google Places API.

**Place Searches** - It returns an array of nearby Places based on a location defined by the user.

**Place Details** - It returns more specific data about a user defined Place.

**Place Check-ins** - It allows the request that a person has checked in to a Place. Check-ins is used to gauge a Place's popularity; frequent check-ins will boost a Place's priority in application's Place Search responses.

**Place Reports** - It allows the users to add new locations to the Place service, and to delete Places that the application has added to the database.

A causal relationship between continuous usage intention and actual use as measured by a surrogate variable, usage frequency, is also assessed. Finally, privacy concerns, which are very important in the LBS context, are included in the research model as a moderating variable. Here, all of the paths in the suggested research model are tested with the overall sample first, and the samples are then divided into two groups according to their level of privacy concerns to determine the structural differences between the two sub-models. In transaction process, the system responds immediately to user requests. GPS used to provide the exact location of the mobile user. By using this technology user can update their location by using Google Maps. Location Based Service is used to identify location and navigates you to the directions to the nearest station.

#### IV. Discussion

The continuous usage of LBS is a risk-taking behavior if the individual possesses higher privacy concerns; that is, we can say that risky shift phenomenon exists in this circumstance. On the contrary, the users' hesitant behavior toward the continuous use of LBS, when they have high privacy concerns, shows no sign of risky shifts. In sum, this research attempted to examine whether the risky shifts phenomenon is valid in the LBS context and successfully found out which condition generates risky shifts. We just considered how to do the computations given that all the necessary data is available and were not taking care about privacy issues. Before we progress, we want to discuss this important question of privacy in LBS. Social influence showed stronger effects in conjunction with high levels of privacy concern, indicating that groups with a high degree of privacy concern may be more active LBS users than low-concern groups. An informed decision implies that the LBS user operates under reasonable knowledge about the service level implications of revealing his location with a given degree of inaccuracy. Under this platform, a user first obtains an overview of the impact of using inaccurate locations in a certain query.

#### V. Conclusion

Locations based services promise a very bright future considering all the key aspects of technologies required to operate the LBS available in the market. Moreover, the number of people that it can reach is far from expectation due to the number of mobile users around the world. With the great advances in LBS, threatening the user security is the intensions of many intruders to steal user's privacy. For LBS 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 in 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. In this context, this study attempted to understand the post-adoptive behaviors of LBS application users by concentrating on the moderating effects of users' privacy concerns. The study revealed that cautious shifts are still a factor in the relationship between performance expectancy and continuous usage intention of LBS, a finding that is consistent with traditional views. Meanwhile, risky shifts occur due to the effect of social influences in the presence of stronger privacy concerns. So it is easy way to access the transaction in ubiquitous access. Here, Location based service used to identify nearest stations and transactions becomes easier by using GPS.

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