WHERE SHALL WE MEET PROPOSING OPTIMAL LOCATIONS FOR MEETINGS

Saniya H. Daruwale[1], Aishwarya S. Chaudhary[2], Amruta V. Abhale[3], Shraddha Y. Chaudhary[4], Prof. K. D. Patil[5]

[1] *Student, Information Technology, Sanjivani College of Engineering Kopargaon, Maharashtra, India*
[2] *Student, Information Technology, Sanjivani College of Engineering Kopargaon, Maharashtra, India*
[3] *Student, Information Technology, Sanjivani College of Engineering Kopargaon , Maharashtra, India*
[4] *Student, Information Technology, Sanjivani College of Engineering Kopargaon , Maharashtra, India*
[5] *Assistant Professor, Information Technology, Sanjivani College of Engineering Kopargaon , Maharashtra, India*

ABSTRACT

Equipped with the generations of smart phones and mobile devices, today everyone is dependent on these gadgets to organize and plan their daily lives. These applications often rely on current locations of individual user or group of users. Users do not want to share their current location to the service provider or others. The existing system proposes privacy preserving algorithm for determining an optimal meeting location for the group of users. System will propose the method for searching the location according to user's location. Privacy of a user's location or location preferences, with respect to other users is a critical concern in such location-sharing-based applications. The privacy issues in LBS's are addressed by focusing on a specific problem called the FRVP problem. By means of a targeted user-study, we attempt to get an insight into the privacy-awareness of users in location-based services and the usability of the proposed solutions.

Keywords:- *Mobile Application, Privacy, Obvious Computation, FRVP (Fair Rendez-Vous Point) Problem, PPFRVP (Privacy Preserving Fair Rendez-Vous Point) Problem, LDS (Location Determination Server), GPS (Global Positioning System), LBS (Location Based Services), Mobile Cloud Computing.*

1. Introduction

In today's world for sharing the data most of the people depends on some of mechanism to share their resources with the help of devices. Now a day's people are connected to each other precisely dependent on smart phones and mobile devices. These mobile devices and smart phones provide services to users; the location based services are also included in the scenario. LBSs are used by millions of mobile users every day to obtain the information to specific location. The privacy preserving algorithms are used for determining an optimal meeting location for a group of users or individual user. A thorough privacy evaluation is performed by formally quantifying the privacy-loss of the proposed approaches. LBSs are a general class of computer program-level services that depends on the user's location to provide service information that is relevant to the user at that location. Two most popular features of location-based services are check-ins and location sharing [1].By checking into a location, users can share their current location with family and friends or obtain location-specific services from third-party providers. The obtained service does not depend on the location of other users. The other types of location-based services, which rely on sharing of locations (or location preferences) by a group of users in order to obtain some services for the whole group, are also becoming popular. One prominent example of such a service is the taxi-sharing application, offered by a global telecoms operator, where smart phone users can share a taxi with other users

at a suitable location by revealing their destination locations. In today's world, many people work in corporate offices and they need to travel more for business reasons. Scheduling meeting in the office is a manual work still, in which the scheduler does not consider any other terms except the time to schedule the meeting. In such cases, the employees have to attend the meeting in correct time irrespective of the place. This may increase pressure and workload of the employees. In order to make work easy a meeting scheduler can be built which tracks the location of the employees and using that location of the employees a common place can be decided to schedule he meeting, thus reducing the cost, time, distance and workload of the employees. The privacy issues in LBSs are addressed by focusing on a specific problem called the FRVP (Fair Rendez-Vous Point) problem. Given a set of user locations preferences, the FRVP problem is used to determine a location among the proposed ones such that the maximum distance between this location and all other user's locations is minimized, i.e. it is fair to all users (participants).

2. Literature Survey

2.1 Privacy-Preserving Optimal Meeting Location Determination on Mobile Devices:

The rapid development of smartphone technology has enabled the mobile users to utilize context-aware services on their mobile devices. Service providers take advantage of this dynamic and ever-growing technology by proposing innovative context-dependent services for mobile subscribers. The Meeting Scheduler determines optimal location for meetings and provides privacy preserving algorithms for user's privacy [1].

2.2 Meeting Scheduler Using GPS and G-API on Android Devices:

In today's world, many people work in corporate office and they tend to travel more for business reasons. Scheduling meeting in the office is a manual work still, in which the scheduler does not consider any other terms except the time to schedule the meeting. In such case, the employees have to attend the meeting in correct time irrespective of the place. This may increase pressure and workload of the employees. In order to make the work easy a meeting scheduler can be built which tracks the location of the employees and using that location and considering the vehicle in which they travel, a common place can be decided to schedule the meeting reducing the cost, time, distance and workload of the employees[2].

2.3 Survey Paper on Location Privacy Preserving and Finding Optimal Meeting Location using Secured Homomorphism:

Privacy of the user's location, with respect to other users and the third-party service providers is a critical issue in the location sharing based applications. Such information can be used to cause harm to users. So consideration of privacy of users is very much needed. There are certain algorithms proposed that can provide security to user's location [3].

2.4 Optimal Meeting Location Determination Using Stealth Geo Points Synchronization Optimal Meeting Location Determination Using Stealth Geo Points Synchronization:

To overcome the problem of finding a rendezvous point among a set of user-proposed locations there is an algorithm that solves this problem called as Privacy-Preserving Fair Rendez-Vous Point (PPFRVP) algorithm [4].

2.5 Optimal Meeting Location Determination on Mobile Devices with Privacy Preservation:

The privacy issue in the FRVP problem is representative of the relevant privacy threats in LSBSs. By formulating the FRVP problem as an optimization problem, specifically the k-center problem, and then analytically outline the privacy requirements of the participants with respect to each other and with respect to the solver (in this case, a third-party service provider). Then two algorithms are proposed for solving the formulation of the FRVP problem in a privacy-preserving fashion, where each user participates by providing only a single location preference to the FRVP solver or the service provider. The proposed algorithms take advantage of the homomorphic properties of well-known cryptosystems, such as BGN, ElGamal and Paillier, in order to privately compute an optimally fair rendez-vous point from a set of user location preferences.The Secure Hash Algorithm is used by the source end for cipher process and shares the Meeting point locations to destination. For all the quoted rules of FVRP and SHA provides an efficient result to share the optimal meeting points between source and destination end. The Secure Hash Algorithm (SHA) is implemented to provide the optimal location oriented transmission with privacy preserving concern. The Security And Privacy Measures Are Handled By Well-known Cryptographic Concepts Like SHA And BGN [5].

2.6 Privacy-Preserving Processing In Location Based Queries:

One of the popular services provided by mobile devices and remote servers is LBS (e.g., Google Latitude), in which users can utilize the geographical information for gaining entertainment services. To incorporate Context information revealed by user mobility, the systems also take into account the visited physical locations of users in

the data. Since this information can be conveniently obtained by GPS devices, it is hence referred to as GPS locations. GPS locations play an important role in mobile web search [6].

2.7 Long-term location privacy protection for location-based services in mobile cloud computing:

Location privacy in mobile clouds is a critical concern to both researchers and practitioners. Although greatly facilitating people's lives, rapidly growing LBSs also cause potential threats against their users. In LBSs, users have to send queries that contain their current locations and identifiers to cloud providers to obtain the location-specific information. User privacy (e.g., user name) either is explicitly given in these identifiers or can implicitly be derived from other data like IP address in queries [7].

2.8 A Survey of Privacy-Preserving Algorithms for Finding meeting point in Mobile Adhoc Network:

Location privacy in Location Based Services (LBS) is the capability to protect the connection between user's identity, uncertainty sources, servers and database, thereby restraining an impending attacker from conveniently linking users of LBS to convinced locations. Smart Phones have become most important gadget for maintaining the daily activities, highly interconnected urban population is also increasingly dependent on these gadgets to regulate and schedule their daily lives. These applications often depend on current location of user or a class of user. Use of Smart Mapping technology is also increasing in large area; this system provides an easy attainable online platform that can be used for accessing many services [8].

2.9 Selecting Optimal Meeting Point with Security Measures:

There are two popular features of location-based services are location check-ins and location sharing. Check-in is the process whereby a person announces their arrival at a hotel, airport or sea port, and by analogy on a social network service. Many social networking services, such as Foursquare, GooglebLatitude (closed), Google+, Facebook, allow users to what has been referred to as self-reported positioning or more commonly known as a "check in", to a physical place and share their locations with their friends. Location sharing services are used by almost 20% of all mobile phone users. One prominent example of such a service is the taxi-sharing application, offered by a global telecom operator [9].

2.10 Location Privacy Preserving of Mobile Users using Secured Homomorphism:

The location privacy preservation in mobile surroundings is difficult for two reasons. First off wireless communications are simple to intercept e.g. eavesdropper can collect transmitted data of mobile users at certain public place. Besides, since individuals are in public discernible, context data will simply be obtained from their conversation or behaviors. As a result, partial flight related to user's real identity is inevitably exposed to the eavesdropper. Second, the limited resources of mobile devices greatly limit Privacy Enhancing Technologies one may apply and deploy in wireless network. Current solutions rely on simple schemes to hide the real identity of a mobile user from a passive adversary, rather than complex cryptographic technologies [10].

2.11 Design and Development of GPS-GSM Based Tracking System with Google Map Based Monitoring:

The Global Positioning System (GPS) which will receive the coordinates from the satellites among other critical information. Tracking system is very important in modern world. This can be useful in soldier monitoring, tracking of the theft vehicle and various other applications [11].

3. Problem Statement

The meeting scheduler system is used for scheduling the meeting for organization. The meeting scheduler has one admin user and others are participants for the meeting. Meeting scheduler system will arrange nearest meeting location for meeting as per the employees sufficient location. All the data of employee is stored on one database server and for that database security is provided so that unauthorized user cannot access the data. The system will reduce the workload of employees and schedule the meeting efficiently.

4. System Framework

4.1 System architecture

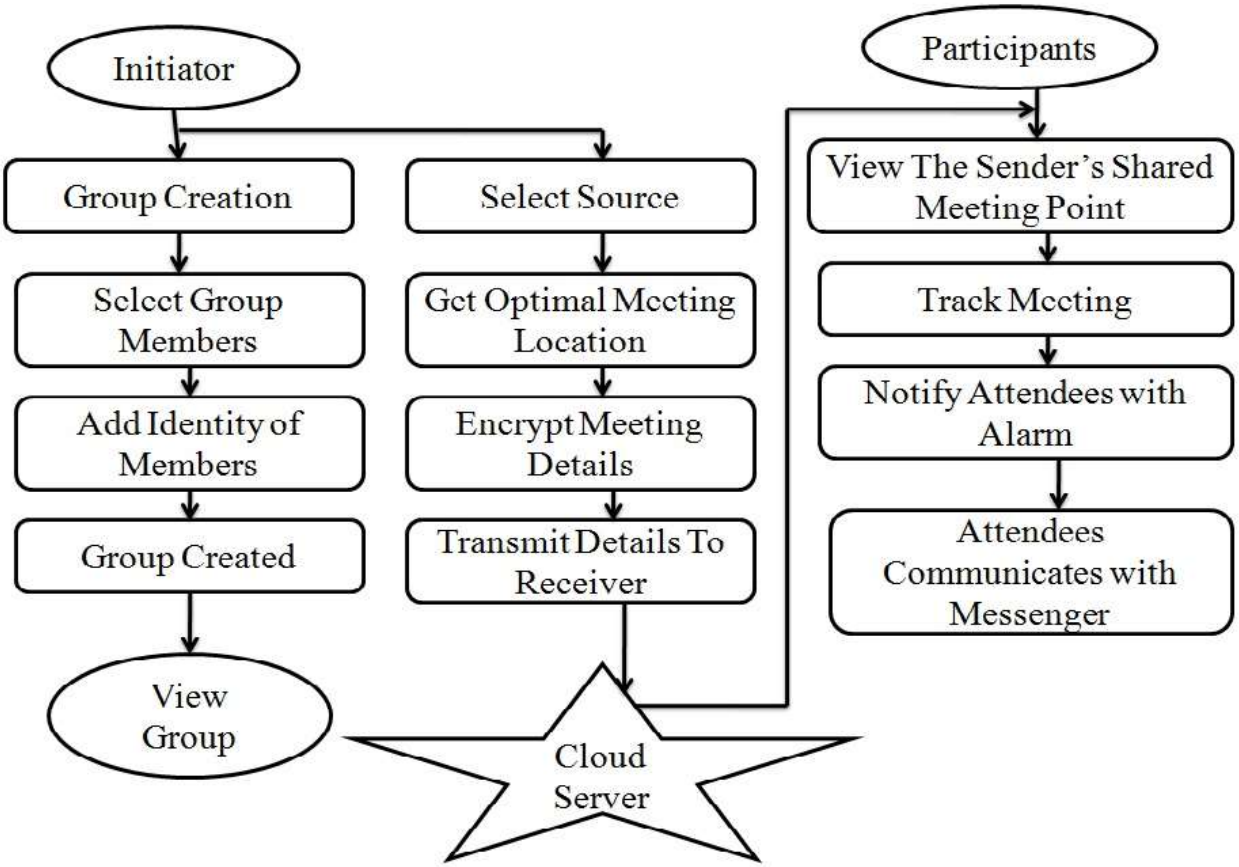

Fig -1: System Architecture

It addresses the privacy issue in Location-Sharing-Based Services (LSBS) by focusing on a specific problem called the *Fair Rendez-Vous Point (FRVP)* problem. For a set of user location preferences, the FRVP problem is to settle on a location amongst the proposed ones such that the maximum distance between this location and all other users' locations is minimum, i.e. *fair* to all users.

4.1.1 Location Determination Server:

The primary type of LDS adversarial behavior that we want to protect against is an honest-but-curious or semi-honest adversary, where LDS is assumed to execute the algorithms correctly. It may try to learn information about the users' location preferences from the usual inputs, the intermediary results and the produced outputs. Service providers have a commercial interest in providing a faithful service to their customers, the assumption of a semi-honest LDS is generally sufficient.

4.1.2 Users:

Similar to LDS assumptions, the main goal of system is to protect against semi-honest participating users who may want to learn the private location preferences of other users form the intermediate results and the output of FRVP algorithm.

5. CONCLUSION

In this work, we addressed the privacy issues in the Fair Rendez-Vous Problem (FRVP). The system will provide the central location which is nearest to all users. As the privacy of the user's location is a critical concern in location sharing based services, the system will take care of the privacy of the user's location. The users will be able to learn the final meeting locations only. Thus the system will schedule the meeting efficiently and reduces the work load of the employees. Finally, based on an extensive user-study, it is showed that the proposed privacy features are crucial for the adoption of any location sharing or location-based applications.

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