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Selecting Optimal Meeting Point with Security Measures

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ABSTRACT:. Protecting privacy in location based services is an important requirement in wireless communication. Many privacy preserving approaches exist that allow protecting privacy in location based services. These applications often rely on current (or preferred) locations of individual users or a group of users to provide the desired service, which jeopardizes their privacy users do not necessarily want to reveal their current (or preferred) locations to the service provider or to other, possibly un-trusted users. The main aim of privacy-preserving algorithms is determining an optimal meeting location for a group of users.Privacy evaluation is performed by formally quantifying privacy-loss of the proposed approaches.The performance of privacy preserving algorithms is determined by implementing and testing their execution efficiency on Nokia smart phones. Further study is carried out to get an insight into the privacy-awareness of users in location based services and the usability of the proposed solutions.

KEYWORDS: Jeoparadizes; Privacy

I. INTRODUCTION

Mobile devices, such as smart phones and PDAs, are playing an increasingly important role in people's lives. Location based services take advantage of user location information and provide mobile users with a unique style of resource and services. Nowadays more and more location-based applications and services require users to prove their locations at a particular time. For example, "Google Latitude" and "Loopt" are two services that enable a user to track his friend's location in real-time. As location proof plays a critical role in enabling these applications, they are location-sensitive. The common theme across all these applications is that they offer a reward or benefit to users located in a certain geographical location.

Existing System:

The rapid proliferation of smart phone technology in urban communities has enabled mobile users to utilize context aware services on their devices. Service providers take advantage of dynamic and ever-growing smart phone technology landscape by proposing innovative context-dependent services for mobile subscribers. Location-based Services (LBS), for example, are used by millions of mobile subscribers every day to obtain location-specific information.

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. The check-in process at airports enables passengers to check in luggage onto a plane and to obtain a boarding pass. When presenting at the check-in counter, a passenger will provide evidence of right to travel, such as a ticket, visa or electronic means. At hotels or similar establishments, guests are usually required to check in (also called register or sign-in), which involves providing or confirming the guests personal information and providing a signature. 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.

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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 locations of other users. The other type of location-based services, which rely on sharing of locations (or location preferences) by a group of users in order to obtain some service for the whole group, are also becoming popular. According to a recent study [1], 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, where smart phone users can share a taxi with other users at a suitable location by revealing their departure and destination locations. Similarly, another popular service enables a group of users to find the most geographically convenient place to meet.

Disadvantages:

1. Privacy of a user's location or location preferences, with respect to other users and the third-party service provider, is a critical concern in such location-sharing-based applications. For instance, such information can be used to de-anonymize users and their availabilities, to track their preferences or to identify their social networks. For example, in the taxi-sharing application, a curious third-party service provider could easily deduce home/work location pairs of users who regularly use their service.

2. Without effective protection, even sparse location information has been shown to provide reliable information about a users' private sphere, which could have severe consequences on the users social, financial and private life. Even service providers who legitimately track users location information in order to improve the offered service can inadvertently harm users privacy, if the collected data is leaked in an unauthorized fashion or improperly shared with corporate partners.

II. RELATED WORK

Bingham and Martin (2001) [2] considered the all-inclusive travel costs for multiple participant meetings. Bingham and Martin method is based on costs measured in currency, and it optimizes for minimizing total travel cost for all participants, considering such components as airfare, hotel, local transportation, meals, etc. It is appropriate for planning larger meetings (such as conferences, conventions, and trade shows) since any "errors" for each participant are offset by reciprocal errors for other participants, and for a large number of participants, the overall cost is negligible. However, their method is not practical when groups are small, or when other travel costs (e.g., participant time) are a more important consideration.

Chithambaram and Miller (2005) [3] introduced a system to find the meeting location that is the closest to the geographic center of several participants. Their method averages the latitudes and longitudes of each participant. It proposes the "best" meeting place by selecting the nearest location to the center from a list of points of interest.

Kaufman and Ruvolo (2006) [4] introduced a method to optimize location selection, considering the current locations of the participants (obtained from GPS coordinates or the location of other events in the participants' calendars). Their method calculates the proposed location based on proximity to the participants and availability of the resources needed at the location. Their method serially applies "filters" such as airfares, but does not solve in aggregate such potentially conflicting multi-criterial costs as money, time, or social constraints. These preferential weights have potential to "zero out" optimal location meeting sets.

Santos and Vaughn (2007) [5] presented a survey of existing literature on meeting-location algorithms and propose a more comprehensive solution for such a problem. **Friends Together:** If five friends want to get together at a restaurant. Two will be leaving from their workplaces, another is arriving at the local airport, one is finishing class at the university, and another will be leaving from home. Some will be driving, some will be taking public transportation, and some will have a choice. And all can walk. They want to get together immediately to eat. There are over 1,000 restaurants in this metro area, and many are acceptable to all. Where shall they go?

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Business Meeting: Imagine that a two-day business meeting is planned at a large company. Dates are set. Participants will arrive from all over the world. It is essential that the meeting occur at one of the company's facilities. The company wants to minimize the total expense (this includes travel costs and employee time.) Participants will either fly or drive to the site. If some participants already work at a location that can host the meeting, they won't have to travel at all. At which company location should the meeting take place?

III. Problem Description

Privacy of a user's location or location preferences, with respect to other user's and the third-party service provider, is a critical concern in location-sharing-based applications. For instance, such information can be used to de-anonymize users and their availabilities, to track their preferences or to identify their social networks. Without effective protection, evens parse location information has been shown to provide reliable information about a user's private sphere, which could have severe consequences on the user's social, financial and private life. Even service providers who legitimately track user's location information in order to improve the offered service can inadvertently harm user's privacy, if the collected data is leaked in an unauthorized fashion or improperly shared with corporate partners.

The main goal is to provide practical privacy preserving techniques to solve the FRVP problem, such that neither a third-party, nor participating users, can learn other users' locations; participating users only learn the optimal location. The privacy issue in the FRVP problem is representative of the relevant privacy threats in LSBSs.

IV. Proposed System

The privacy issue in LSBSs is solved by focusing on a specific problem called the *Fair Rendez Vous Point (FRVP)* problem. Given a set of user location preferences, the FRVP problem is to determine a location among the proposed ones such that the maximum distance between this location and all other users' locations is minimized, i.e. it is *fair* to all users. The goal is to provide practical privacy-preserving techniques to solve the FRVP problem, such that neither a third-party, nor participating users, can learn other users locations, participating users only learn the optimal location. The privacy issue in the FRVP problem is representative of the relevant privacy threats in LSBSs.

Advantages:

The FRVP problem is formulated as an optimization problem, specifically the k-center problem and then analytically outlines 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 used for solving the above 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. Two 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. Practically efficiency and performance of two algorithms is tested by means of a prototype implementation on a test bed of Nokia mobile devices.

V. Expected Results

The expected results consists System Design-Optimal Meeting Location

User Registration with eMail

Login

Optimal Meeting Location Process

- Initiating Optimal Meeting Location
    - Selecting the Group Member
    - Send Request for Preferred Meeting Location
- Selecting their Preferred Meeting Location (it is for all users selected by Initiator)

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    - Open Google Map
    - Select the Preferred Meeting Location
    - Convert the click into X,Y co-ordinates
    - Store it in DB
    - Check for No of users and No of co-ordinate Set
- View the Status (it is for all users selected by Initiator)
    - Pending or Complete
    - View the locations in Google Map
- Start Optimal Meeting Location Calculation
    - Initiator has to press start button
    - Once the process is completed the final Optimal Meeting point co-ordinates are stored in db
    - Show the completed status to all the user
    - View the Optimal Meeting locations in Google Map

Fig.1. Determining optimal meeting location

Fig.2. User login page

VI. Conclusion And Future Work

Mobile has become a vital communication tool which everyone prefers to possess and carry along. The privacy issue in the Fair Rendez-Vous Problem (FRVP) is addressed effectively. The solutions are based on the

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homomorphic properties of well-known cryptosystems. The implementation and evaluation and the performance of algorithms are based on real time process. The proposed solutions preserve user preference privacy and have acceptable performance in a real implementation. Moreover, the proposed algorithms are extended to include cases where users have several prioritized locations preferences. Finally, based on an extensive user-study, the proposed privacy features are crucial for the adoption of any location sharing or location-based applications.

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BIOGRAPHY

Malathi S Y, currently pursuing M.Tech degree in Computer Science and Engineering from Kalpataru Institute of Technology,Tiptur in the year 2015.She completed her BE in Computer Science and Engineering from Alvas Institute of Engineering and Technology,Moodbidri in the year 2012.Her areas of interest include Computer Networks and Mobile Computing.

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