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Identifying Feasible Central Meeting Location from Multiple Geo-Points

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Abstract

Location privacy in Location Based Services (LBS) is the ability to protect the association between user's identity, query sources, servers and database, thereby preventing an impending attacker from easily linking users of LBS to certain 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 accessible online platform that can be used by head office, regional managers. This survey paper projects the privacy-preserving algorithm to find the most favorable meeting location for a class of users. GSM calculates the location of all users.

Keywords— *Location Privacy, Global System for Mobile Communication (GSM)*

I. INTRODUCTION

Location-based services (LBS) are a general class of computer program-level services that use location data to control features; these Services include applications that depend on the user location to provide a service/information that is relevant to the user at that location. LBS normally use mobile devices with positioning capability to provide the service or information to the user. LBS can be used for personal or professional purposes. LBS is an information service and has a number of uses in social networking today as an entertainment service, which is accessible with mobile devices through the mobile network and which uses information on the geographical position of the mobile device. This has become more and more important with the expansion of the Smartphone and tablet markets. LBS are used in a variety of contexts, such as health, indoor object search, entertainment, work, personal life, etc. LBS include services to identify a location of a person or object, such as discovering the nearest banking cash machine or the whereabouts of a friend or employee. LBS include parcel tracking and vehicle tracking services [1]. Two popular features of location-based services are *location check-ins* and *location sharing*. By checking into a location, users can share their current location with family and friends or obtain location-specific services from third-party providers.

Location privacy is the ability to prevent other parties from learning one's current or past location. Generally, Location Based Service (LBS) gives an information service about the physical location of a user [9].

The remaining paper is organized as follows: Section II describes the related work. Section III presents the proposed work. Section IV describes

the proposed solution of the system. Lastly section V presents the conclusion.

II. RELATED WORK

Igor Bilogrevic, Murtuza Jadliwala [1] proposed privacy-preserving algorithms for determining an optimal meeting location for a group of users. They perform a thorough privacy valuation by formally quantifying privacy-loss of the proposed approaches. They address the privacy issue in LSBSs by focusing on a specific problem called 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 greatest distance between this location and all other users' locations is minimized.

Rinku Dewri and Ramakrishna Thurimella[2] proposed a user-centric location based service architecture where a user can observe the impact of location inaccuracy on the service before deciding the geo coordinates to use in a query. They construct a search application based on user-centric location-based service architecture where a user can observe the impact of location inaccuracy on the service accuracy.

Jing Liu, Zechao Li, Jinhui Tang [3] authors focus on the personalized tag recommendation task and try to identify user-preferred, geo-location-specific as well as semantically relevant tags for a photo by leveraging rich contexts of the freely available community-contributed photos. For users and geo-locations, they have different favored tags assigned to a photo, and propose a subspace learning method to individually uncover the both types of preferences.

Linke Guo, Chi Zhang [4] proposes a privacy-preserving revocable content sharing scheme in geosocial networks. Proposed scheme allows mobile users to share their encrypted location-based contents on an untrusted server without revealing genuine location information, and further enables other mobile users who physically check in at the particular location to search and decrypt the content if they have the equivalent attributes.

Muhammad Ridhwan Ahmad Fuad and Micheal Drieberg [5] present the development of the remote vehicle tracking system which integrates the Global System for Mobile Communications (GSM) Modem and Google Map.

Wei Xin, Cong Tang, TaoYang [6] uses LocSafe method, a "missed-connections" service is used which grantees based on RFID technology, in order to prove an encounter sharing among users in the past. LocSafe is comprised of three parts: RFID Tags, LE Collectors, and social service provider.

They use RFID technology to detect encounters, and use attribute-based encryption and broadcast encryption to create trust and protect users, privacy. We evaluate LocSafe by a study of "missed-connections "troubles and study of system implementation.

Wei Li, Wei Jiao, Guangye Li [7] Location-Based Service(LBS) combined with mobile devices and internet become more and more trendy, and are widely used in traffic navigation, intelligent logistics and the point of interest query. However, most users worry about their privacy when using the LBS because they should provide their precise location and query content to the undependable server. This paper analyses the query association attack model for the constant query in mobile LBS.

Jianliang Xu, Xueyan Tang [8] identifies and addresses three new issues concerning location cloaking approach. First, study the representation of cloaking regions and show that a circular region generally leads to a small result size for region-based queries. Second, develop a mobility-aware location cloaking technique to resist trace analysis attacks. Two cloaking algorithms, namely MaxAccu_Cloak and MinComm_Cloak, are designed based on different performance objectives. Finally, develop an efficient polynomial algorithm for evaluating circular-region-based kNN queries.

Hanunah Othman, Habibah Hashim, Jamalul-lail Ab Manan [9] studies recent schemes designed to present location privacy and anonymity to LBS users. The main idea is to solve recent practical problem by proposing a new framework of LBS

Middleware called Trusted Anonymizer (TA) secured by Trusted Computing (TC) technologies.

Leone C. Monticone, Richard E. Snow [10] provides an analysis of the case where the MRs operate in or above circular service areas on the surface of a spherical Earth. The analysis provides an accurate and competent way, which is less complex than performing the calculations on the sphere, to compute true minimum distance ratios. The method uses stereographic projection to convert the original minimization problem into a simpler problem of minimizing a ratio of Euclidean distances, which is expressed as a function of a single real variable, over the boundaries of discs (i.e., circles) in the complex plane.

III. PROPOSED WORK

This proposed system will hide the location of users by using stealth geo-synchronization. Great circle algorithm will be use for calculating the distance between multiple geo-locations. Then by using polygon centroid calculation, central point will be determined. This system will provide the central location which will be approximately same for all users by considering user preferences; it will also provide privacy about users location.

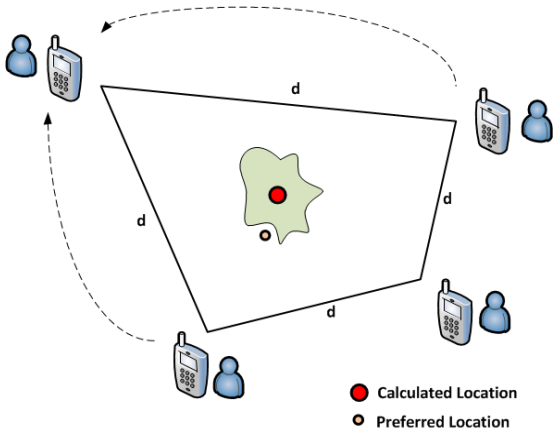

Figure 1: Proposed system process diagram

Above figure shows the overall working process of proposed system. This process includes multiple stages of execution. As per shown consider a condition there are five users in group planning to meet in centrally preferred location then one user from all will become master user and after which all user will share their location with master user and master user will execute the process. After execution system will calculate the central location by calculating the centroid of the polygon created by the user's connection. Once system get the central location it will ask user about his preferred location and after this using Google mapping API system will find out the nearest location selected by the user and once it found system will inform all user about final meeting location and if user wants he can view the travelling path to the location.

IV.PROPOSED SOLUTION

From the idea of the proposed system we are clear with two outcomes. These two outcomes are discussed below.

1) Provide central feasible location

Central feasible location will be calculated by using great circle algorithm and polygon centroid calculation. Then by using Google map API users location will be track.

2) Provide privacy to all users

Privacy can be provided by using stealth geo-synchronization.

V.CONCLUSION

The proposed system will provide a location based service. This system will provide the central location or the location which is nearer to all users by using great circle algorithm and users location will be determined by using Google map API and GSM. Location privacy is the ability to prevent other parties from learning one's current or past location. Generally, Location Based Service (LBS) gives an information service about the physical location of a user. Proposed system will also provide privacy about user's location.

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