OPTIMAL MEETING LOCATION DETERMINATION USING STEALTH GEO POINTS SYNCHRONIZATION

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ABSTRACT

Location privacy in Location Based Services (LBS) is the ability to protect the association between user's identity, servers, database, query sources 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), Mobile Determination, User Authentication, Security.

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 equipements and provide position capability to provide the service or information to the user. LBS can be used for personal purpose or professional purposes. LBS is an information service and has a number of uses in social networking today as an services of entertainment, which is accessible with mobile equipements through the mobile network and which uses information on the geographical position of the mobile device. This has become much more important with the expansion of the Smartphone and tablet markets. LBS are used in a various field such as health, entertainment, object search, work, personal life, etc. LBS consist of services to identify a location of a object or person, such as discovering the nearest banking ATM machine or the whereabouts of a any person 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*. Users can share their current location by checking the 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 through 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 location preferences for set of users, the FRVP problem is help to find out 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 geo-location-specific, user-prefered, with semantically relevant tags for a images by leveraging rich contexts of the freely available community-contributed photos. For users and geo-locations, they have different favored tags assigned to a images, 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 information of location, and further enables other users of mobile device 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 For Mobile Communications (GSM) Modem and Google Map vehicle tracking system which integrates the Global system.

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

They use RFID technology to detect entities 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 query of the point of interest. 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 clocking algorithms, namely first one is MaxAccu_Clock and second one is MinComm_Clock, 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, to compute true minimum distance ratios which is less complex than performing the calculations on the sphere, The method uses to convert the original minimization problem into a simpler problem of minimizing a ratio of Euclidean distances is a stereographic projection, 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.

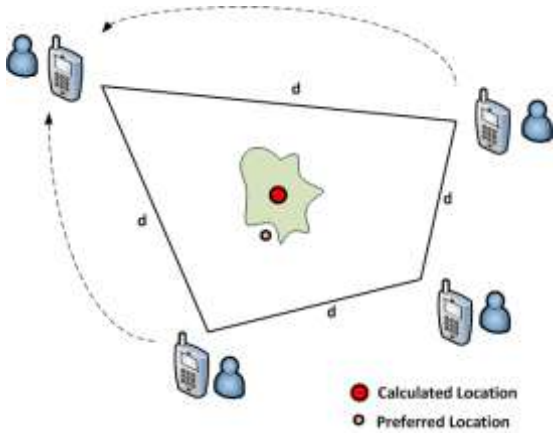
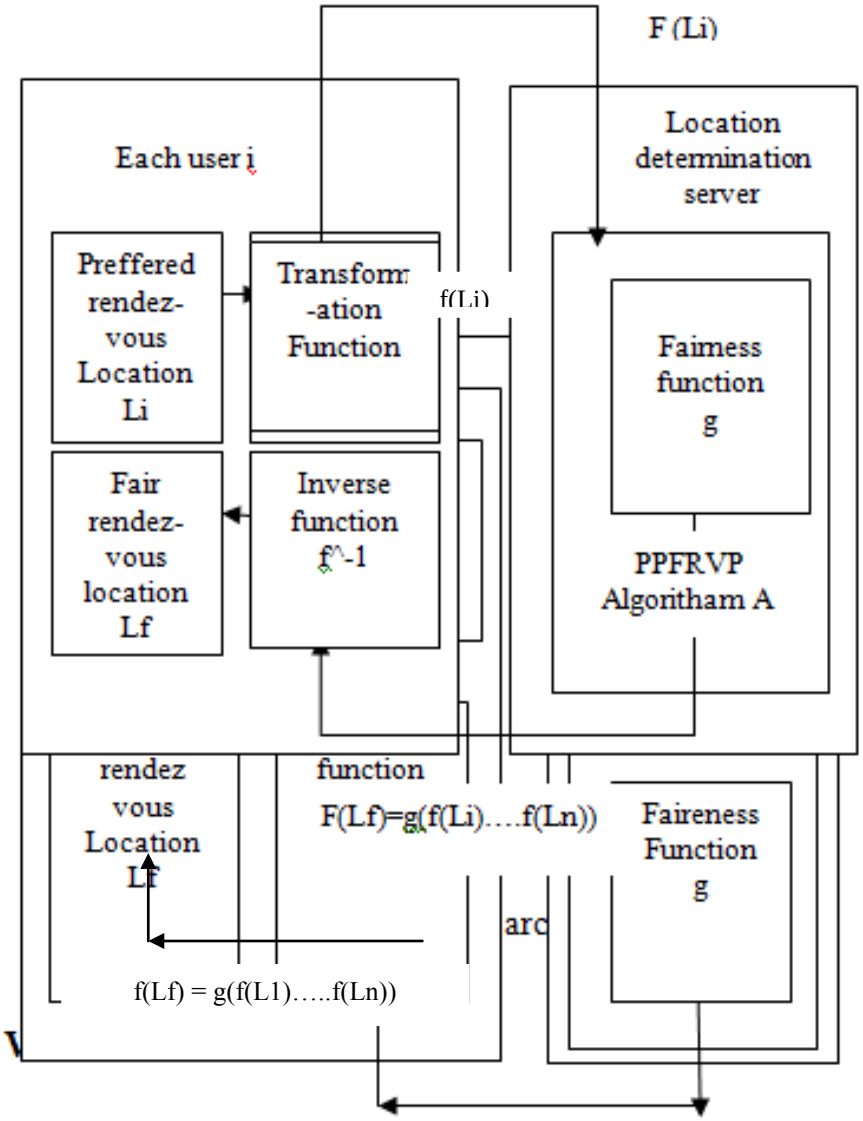


Figure 1: Proposed System Process Diagram

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. OVERVIEW OF ARCHITECTURE

In this work, we consider the problem of finding a rendezvous point among a set of user-proposed locations, such that (i) the rendez-vous point is *fair*
with respect to the given input locations, (ii) each user learns only the final rendez-vous location and (iii) no participating user or third-party server learns private location preference of any other user involved in the computation. We refer to an algorithm that solves this problem as Privacy-Preserving Fair Rendez-Vous Point (PPFRVP) algorithm. In general, any PPFRVP algorithm A should accept the inputs and produce the outputs.



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.

VI. 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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