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Spatial Aware Query Processing For Social Networks

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Abstract*: With the rapid advances in positioning and smartphone technologies, a number of social networks namely Facebook and twitter are gaining the dimension of location. Most of the location-based social networks released check-in services that allow users to share their visiting locations with their friends. The personal information such as location data and social data of users has been readily accessible from various mobile platforms and online social networks. The convergence of location data and social data, known as geo-social data, has enabled a new computing paradigm which explicitly combines both location and social factors to generate useful computational results for either business or social good. Spatial-aware query are used to retrieve a user group of size k where each user is interested in the query keywords and they are close to each other. We devising a model for location based query points and social network retrieves the k users which having the tight social relationship among them.*
Keyword: *location based service network, geo-social data, query points, spatial-aware queries.*

I. INTRODUCTION

The quick development particularly in area smart devices and social computing advancements, geo social information is promptly accessible and available from numerous portable stages and PDAs. The Geo social information joins both location details and social elements has prompted era of important and helpful computational results, which can be either social or business enhancement. With the increasing popularity of location based devices, recent years seen a great boom in location-based social networking services like Facebook check-in and Twitter location.by using all such services, mobile users are usually related with some point of interest(e.g., home, office and visiting places). By using this information, we are able to bridging the gap between the physical world and the virtual world of social networks, presents new opportunities for group-based activity planning and marketing [10]. The geo-social queries take set of mobile users, a query location point and certain social relationships as inputs and that return a set of users with the minimum location distance while satisfying the social constraint.

The essential criteria are important for group queries are finding a group of users familiar with the initiator by ensuring that each user in the group have tight social relations with most of the members in the group [8].The geo-social information of individuals are available by different applications, our interest is in evaluating the potential for identification of users based on this data and using a representative set of similarity metrics. The identification states tracked from the current trend of user profiling by mobile carrier, location-based service providers and by application developers. These entities owns pieces of information covering different aspects of the user's life and would be highly likely to have an interest in enriching their data by aggregating and exchanging the information from other parties.

For given set of spatial query points and a social network, a GSKCG query used to find a minimum user group in which the members satisfy certain social relationship and their associated regions can jointly cover all the query points. A GSKCG query also finds a group of users that covers all acquaintance constraint areas and that is socially durable while making the base expense for the organization. We are focusing on the effective group query processing and finding the group of users with minimum acquaintance in which members of group covers social relationship and their associated regions can together cover all the query points.

II. RELATED WORK

A. GEO-SOCIAL QUERY PROCESSING

Processing queries efficiently by considering both spatial and social constraints attracts increasingly more attention recently. A main aim is to mine user's location and social network data to find the relationships between the users and their locations. The authors of , have shown that users with minimal social distances usually live geographically close. Research in this direction is still in its infancy. The density-based clustering paradigm on places which are visited by users of a geo-social network (GeoSN). Armenatzoglou et al. proposed a general framework that offers flexible data management and algorithmic design for geo-social networks queries. Their architecture segregates the social, geographical and query processing modules. Each GeoSN query is processed via a transparent

combination of primitive queries issued to the social and geographical modules. Yang et al. proposed a socio-spatial group query to select a group of nearby attendees with a tight social relationship. They designed a new index structure called Social R-tree to integrate the users' social relationships into an R-tree for efficient query processing. This index is different from our Enhanced SaR-tree in that it is used to reduce the checking states during the enumeration. Zhu et al. presented a new family of geo-social group queries with minimum acquaintance constraint (GSGQs), and also designed a new index structure named SaR-tree to accelerate the GSGQs queries. However, the SaR-tree cannot be directly adopted by our GSKCG queries due to our regional spatial factor which differs from the point spatial factor in .

B. SPATIAL QUERY PROCESSING

Over the decades Spatial query processing based on R-tree or its extensions has been extensively studied. The existing research has focused on various types of queries, including k-cover group queries. Roussopoulos et al. proposed an efficient branch and-bound technique by using R-tree traversal algorithm to search the nearest neighbor object to a query point. Li et al. proposed a novel spatial-aware interest group (SIG) query and presented two kinds of IR-tree Based algorithms, interest-oriented and diameter oriented, to tackle SIG queries efficiently. However, these works cannot deal with queries considering the social factor, for example, the GSKCG query proposed a novel index structure, enhanced Social-aware R-tree, which integrates the user's social relationships into the R-tree, to process GSCKG queries efficiently.However Core Decomposition is one of main concern in spatial query processing which causes to time complexity and space complexity. The Effective pruning techniques are used to overcome the core decomposition problem.

C. SOCIAL QUERY PROCESSING

There have been some research on group queries and k-cover group queries over social networks with the goal of finding a user group with a certain social relationship. Social groups or teams are usually cohesive subgraphs formed by users with acquaintance relations. In [8], Yang et al. devised the social-temporal group query to find a user group of activity attendees with the minimum total social distance to the query initiator. Lappas et al. [7] and Li and Shan [5] studied the problem of expert team formulation which aims to find a group of experts covering all required skills and minimize the communication cost among them. In [1] Yafei al used k-core to model users' social relations, which is different takes into consideration the spatial factor.

III. CONCLUSIONS

This paper is reviewed geo-social queries that considers both user's associated spatial regions and their social acquaintance levels. This will help to find a minimum user group that covers all query points. We are proposing an efficient algorithm to find the optimal solution for geo-social queries and effective core decomposition, whose success lies in a set of effective pruning strategies and a novel index structure. Extensive experiments on two real-life datasets demonstrate the efficiency and effectiveness of our solution..

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