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AN EFFICIENT RECOMMENDATION AND SUGGESTION SYSTEM FOR TRAVEL ROUTE USING PLACES OF INTEREST IMPLEMENTATION

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ABSTRACT

With the popularity of social media (e.g., Face book and Flicker), users can easily share their check-in records and photos during their trips. In view of the huge number of user historical mobility records in social media, we aim to discover travel experiences to facilitate trip planning. When planning a trip, users always have specific preferences regarding their trips. Instead of restricting users to limited query options such as locations, activities, or times, we consider arbitrary text descriptions as keywords about personalized requirements. Moreover, a diverse and representative set of recommended travel routes is needed. Prior works have elaborated on mining and ranking existing routes from check-in data. To meet the need for automatic trip organization, we claim that more features of Places of Interest (POIs) should be extracted. Therefore, in this paper, we propose an efficient Keyword-aware Representative Travel Route framework that uses knowledge extraction from users' historical mobility records and social interactions. Explicitly, we have designed a keyword extraction module to classify the POI-related tags, for effective matching with query keywords. We have further designed a route reconstruction algorithm to construct route candidates that fulfill the requirements. To provide befitting query results, we explore Representative Skyline concepts, that is, the Skyline routes which best describe the trade-offs among different POI features. To evaluate the effectiveness and efficiency of the proposed algorithms, we have conducted extensive experiments on real location-based social network datasets, and the experiment results show that our methods do indeed demonstrate good performance compared to state-of-the-art works.

Keywords: Location-based social network, text mining, travel route recommendation

I. INTRODUCTION

LOCATION-BASED social network (LBSN) services allow users to perform check-in and share their check-in data with their friends. In particular, when a user is travelling, the check-in data are in fact a travel route with some photos and tag information. As a result, a massive number of routes are generated, which play an essential role in many well-established research areas, such as mobility prediction, urban planning and traffic management. In this paper, we focus on trip planning and intend to discover travel experiences from shared data in location-based social networks. To facilitate trip planning, the prior works in provide an interface in which a user could submit the query region and the total travel time. In contrast, we consider a scenario where users specify their preferences with keywords. For example, when planning a trip in Sydney, one would have ―Opera House‖ . As such, we extend the input of trip planning by exploring possible keywords issued by users. However, the query results of existing travel route recommendation services usually rank the routes simply by the popularity or the number of uploads of routes [1]. For such ranking, the existing

works derive a scoring function, where each route will have one score according to its features (e.g., the number of Places of Interest, the popularity of places). Usually, the query results will have similar routes. Recently, aimed to retrieve a greater diversity of routes based on the travel factors considered. As high scoring routes are often too similar to each other, this work considers the diversity of results by exploiting Skyline query [2].

II. LITERATURE SURVEY

1. Efficient Keyword-Aware Representative Travel Route Recommendation Authors: Yu-Ting Wen, Jinyoung Yeo, Wen-Chih Peng and Seung-Won Hwang

Description: —With the popularity of social media (e.g., Facebook and Flicker), users can easily share their check-in records and photos during their trips. In view of the huge number of user historical mobility records in social media, we aim to discover travel experiences to facilitate trip planning. When planning a trip, users always have specific preferences regarding their trips. Instead of restricting users to limited query options such as locations, activities, or time periods, we consider arbitrary text descriptions as keywords about personalized requirements. Moreover, a diverse and representative set of recommended travel routes is needed. Prior works have elaborated on mining and ranking existing routes from check-in data. To meet the need for automatic trip organization, we claim that more features of Places of Interest (POIs) should be extracted. Therefore, in this paper, we propose an efficient Keyword-aware Representative Travel Route framework that uses knowledge extraction from users' historical mobility records and social interactions. Explicitly, we have designed a keyword extraction module to classify the POI-related tags, for effective matching with query keywords. We have further designed a route reconstruction algorithm to construct route candidates that fulfill the requirements. To provide befitting query results, we explore Representative Skyline concepts, that is, the Skyline routes which best describe the trade-offs among different POI features. To evaluate the effectiveness and efficiency of the proposed algorithms, we have conducted extensive experiments on real location-based social network datasets, and the experiment results show that our methods do indeed demonstrate good performance compared to state-of-the-art works.

2. Mining interesting locations and travel sequences from GPS trajectories

Authors: Y. Zheng, L. Zhang, X. Xie, and W.-Y. Ma

Description: The increasing availability of GPS-enabled devices is changing the way people interact with the Web, and brings us a large amount of GPS trajectories representing people's location histories. In this paper, based on multiple users' GPS trajectories, we aim to mine interesting locations and classical travel sequences in a given geospatial region. Here, interesting locations mean the culturally important places, such as Tiananmen Square in Beijing, and frequented public areas, like shopping malls and restaurants, etc. Such information can help users understand surrounding locations, and would enable travel recommendation. In this work, we first model multiple individuals' location histories with a treebased hierarchical graph (TBHG). Second, based on the TBHG, we propose a HITS (Hypertext Induced Topic Search) based inference model, which regards an individual's access on a location as a directed link from the user to that location. This model infers the interest of a location by taking into account the following three factors. 1) The interest of a location depends on not only the number of users visiting this location but also these users' travel experiences. 2) Users' travel experiences and location interests have a mutual reinforcement relationship. 3) The interest of a location and the travel experience of a user are relative values and are region-related. Third, we mine the classical travel sequences among locations considering the interests of these locations and users' travel experiences. We evaluated our system using a large GPS dataset collected by 107 users over a period of one year in the real world. As a result, our HITS-based inference model outperformed baseline approaches like rank-by-count and rank-by frequency. Meanwhile, when considering the users' travel experiences and location interests, we achieved a better performance beyond baselines, such as rank-bycount and rank-by-interest, etc.

3. Exploiting geographical influence for collaborative point-of-interest recommendation Authors: M. Ye, P. Yin, W.-C. Lee, and D.-L. Lee

Description: In this paper, we aim to provide a point-of-interests (POI) recommendation service for the rapid growing location-based social networks (LBSNs), e.g., Foursquare, Whrrl, etc. Our idea is to explore user preference, social influence and geographical influence for POI recommendations. In addition to deriving user preference based on user-based collaborative filtering and exploring social influence from friends, we put a special emphasis on geographical influence due to the spatial clustering phenomenon exhibited in user check-in activities of LBSNs. We argue that the geographical influence among POIs plays an important role in user check-in behaviors and model it by power law distribution. Accordingly, we develop a collaborative recommendation algorithm based on geographical influence based on naive Bayesian. Furthermore, we propose a unified POI recommendation framework, which fuses user preference to a POI with social influence and geographical influence. Finally, we conduct a comprehensive performance evaluation over two large-scale datasets collected from Foursquare and Whrrl. Experimental results with these real datasets show that the unified collaborative recommendation approach significantly outperforms a wide spectrum of alternative recommendation approaches.

4. Exploring social influence on location-based social networks

Authors: Y.-T. Wen, P.-R. Lei, W.-C. Peng, and X.-F. Zhou

Description: In recent years, with the popularization of mobile network, the location-based service (LBS) has made great strides, becoming an efficient marketing instrument for enterprises. For the retail business, good selections of store and appropriate marketing techniques are critical to increasing the profit. However, it is difficult to select the retail store because there are numerous considerations and the analysis was short of metadata in the past. Therefore, this study uses LBS, and provides a recommendation method for retail store selection by analyzing the relationship between the user track and point-of-interest (POI). This study uses regional relevance analysis and human mobility construction to establish the feature values of retail store recommendation. This study proposes (1) architecture of the data model available for retail store recommendation by influential layers of LBS; (2) System-based solution for recommendation of retail stores, adopts the influential factors with specified data in LBS and filtered by industrial types; (3) Industry density, area categories and region/ industry clustering methods of POIs. Uses KDE and KMeans to calculate the effect of regional functionality on the retail store selection, similarity is used to calculate the industry category relation, and consumption capacity is considered to state.

RELATED WORK

The content used for querying takes the form of spatial database. Best keyword cover query takes form of keywords or objects. For example, college. Given a spatial database P, which consist of set of points. For a query q, where q belong to set of objects, it search for nearest neighbour within the object by searching its or better decision making, concept of keyword rating was introduced along with its features other than distance. For such search , query will take form of feature of objects. It search for nearest neighbour based on a new similarity measure, named weighted average of index rating which combine keyword rating, keyword search and nearest neighbour search. Baseline algorithm requires spatial objects in the form of files which include fields like spatial location and its document identifier and its address. Spatial objects are objects obtained from spatial data. All operations revolve around spatial objects. Input to baseline algorithm require single query keyword in the form of objects. The first step in baseline algorithm is to set a variable bkc as zero. The next step is to generate candidate keyword cover. Candidate keyword cover generate spatial objects that contain those query keywords. Keyword significance has been calculated using term frequency inverse document frequency as similarity measure. Term frequency inverse document frequency is a combination of term frequency and inverse document frequency.

The default value is set as zero. The score obtained is compared with first score. If its value is greater than zero, it has been set as best keyword cover. Score calculation can be obtained as a pruning strategy. The next step is to perform nearest neighbour search upon

candidate keyword covers generated. Nearest neighbour search algorithm has been computed using a traditional similarity measure named Euclidean distance. This similarity measure is based on distance. Nearest neighbour search algorithm sets its default value in terms of users current user location. Based on that location, rest of distance with respect to that location has been calculated. The one least distance with respect to query location has been considered best keyword cover. When number of query keywords increases, its performance drops. It running time is very high.

Existing System:

With the popularity of social media (e.g., Facebook and Flicker), users can easily share their check-in records and photos during their trips. In view of the huge number of user historical mobility records in social media, we aim to discover travel experiences to facilitate trip planning. When planning a trip, users always have specific preferences regarding their trips. Instead of restricting users to limited query options such as locations, activities or time periods, we consider arbitrary text descriptions as keywords about personalized requirements. Moreover, a diverse and representative set of recommended travel routes is needed. Prior works have elaborated on mining and ranking existing routes from check-in data. To meet the need for automatic trip organization, we claim that more features of Places of Interest (POIs) should be extracted.

III. PROPOSED SYSTEM

We propose an efficient Keyword-aware Representative Travel Route framework that uses knowledge extraction from users' historical mobility records and socialinteractions. Explicitly, we have designed a keyword extraction module to classify the POI-related tags, for effective matching with query keywords. To provide befitting query results, we explore Representative Skyline concepts, that is, the Skyline routes which best describe the trade-offs among different POI features. The experiment results show that our methods do indeed demonstrate good performance compared to state-of-the-art works.

We propose an efficient Keyword-aware Representative Travel Route framework that is knowledge extraction from users' historical mobility records and social interactions. The experiment results show that our method do indeed demonstrate good performance compared to state of the art work.

Since all performance operations depend on objects, there exist a problem of choosing which objects first for querying when given multiple features of different objects. For this purpose keyword rating has been associated with objects. Rating is based day to day importance of object in daily life. Rating takes value of integer ranging from 1 to 5. This algorithm not only involve keyword rating but also involve features of objects as well. Objects must be selected to add features.

Input to keyword nearest neighbour expansion variant algorithm is a set of query keywords in the form of features associated with objects. The first step is to select principle query keyword to perfIorm search. In other words, to identify the first object in which feature has been associated for searching. Objects linked with principle query keyword are called principle objects. Indexing has been used to find required object associated with keyword. After identifying the object, it search for objects having highest keyword rating. The one with highest keyword rating are usually set as the first object in which search has to be carried out.

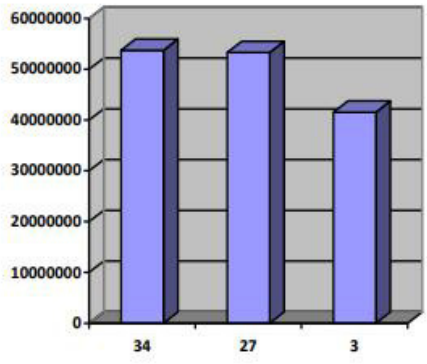

Fig 1:Proposed sytem

It also helps to find best route search. If feature is set as input, first step is to identify the object with highest keyword rating to perform search. Then nearest neighbour search algorithm has been performed to find nearest neighbour of user's query with respect to current location. From current object, next object with highest keyword rating has been identified. Then is feature with

respect to second object has been calculated and value is obtained . Thus best route search has been obtained. This paper also helps to find Boolean range query using keyword search. Query takes form of keyword and its range. Object nearest to that range will be displayed as a result.

ANALYSIS

The proposed method comes with two algorithms. Our experiment is based on real data. The dimensionality is always 2. Baseline algorithm applied on real data focus on retrieving data using single query keyword. Keyword nearest neighbour expansion variant algorithm retrieve data using multiple query keyword. Fig 1 shows barchart representing execution time of baseline algorithm versus dataset count or number of files searched for a particular query keyword. Vertical axis indicate execution time during search process. Execution time is the difference between start time and run time when search procedure occur. When a single query keyword is searched in a file of thirty four, its execution time is 8433 milliseconds. Similarly, when searching takes in a file count of three for one query keyword, its execution time is 508 milliseconds. When searching takes place in a file count of twenty seven , execution time is 5071 milliseconds. It has been observed that execution time increases as files to be searched increases. File count is linearly proportional to execution time. keyword cover count of keyword nearest neighbour expansion variant algorithm. When keyword cover count is one , its execution time is 82 milliseconds. When keyword cover count is two, its execution time is 121 milliseconds. When keyword cover count is three, its execution time is 127 milliseconds.

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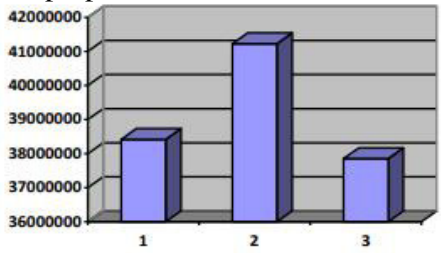

Fig.3.Memory analysis

With the popularity of social media (e.g., Facebook and Flicker), users can easily share their check-in records and photos during their trips. In view of the huge number of user historical mobility records in social media, we aim to discover travel experiences to facilitate trip planning. When planning a trip, users always have specific preferences regarding their trips. Instead of restricting users to limited query options such as locations, activities, or time periods, we consider arbitrary text descriptions as keywords about personalized requirements. Moreover, a diverse and representative set of recommended travel routes is needed. Prior works have elaborated on mining and ranking existing routes from check-in data. To meet the need for automatic trip organization, we claim that more features of Places of Interest (POIs) should be extracted. Therefore, in this paper, we propose an efficient Keyword-aware Representative Travel Route framework that uses knowledge extraction from users historical mobility records and social interactions. Explicitly, we have designed a keyword extraction module to classify the POI-related tags, for effective matching with query keywords. We have further designed a route reconstruction algorithm to construct route candidates that fulfill the requirements. To provide befitting query results, we explore Representative Skyline concepts, that is, the Skyline routes which best describe the trade-offs among different POI features. To evaluate the effectiveness and efficiency of the proposed algorithms, we have conducted extensive experiments on real location-based social network datasets, and the experiment results show that our methods do indeed demonstrate good performance compared to state-of-the-art works. Recommended font sizes are shown in Table 1.

IV. CONCLUSION

A detailed report of two algorithms to retrieve best keyword cover was presented. Best keyword cover query aims to recover spatial objects with respect to user's requirement. Algorithms are used to find answer to such query. It also comes with best keyword cover route search which helps to find best route.

V. REFERENCES

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