Personalized Travel Recommendation System On Multisource Big Data

KARTHIK R[1], Mrs.R. VIJAYALAKSHMI[2]
[2]Asso.Prof.
[1, 2] Krishnasamy College of Engineering and Technology

Abstract- *Big data increasingly benefit both research and industrial area such as health care, finance service and commercial recommendation. This project presents a personalized travel sequence recommendation from both travelogues and community- contributed photos and the heterogeneous metadata (e.g., tags, geo- location, and date taken) associated with these photos. Unlike most existing travel recommendation approaches, our approach is not only personalized to users travel interest but also able to recommend a travel sequence rather than individual people interest. Topical package space including representative tags, the distributions of cost, visiting time and visiting season of each topic, is mined to bridge the vocabulary gap between user travel preference and travel routes. We take advantage of the complementary of two kinds of social media : travelogue and community-contributed photos.*

Keywords- Travel database, travel information, heterogeneous metadata, contributed photos

I. INTRODUCTION

Programmed travel suggestion is an imperative issue in both research and industry. Enormous media, particularly the flourish of social media (e.g., Facebook, Tumblr and so forth.) offers extraordinary chances to address many testing issues, for example, GPS estimation and travel suggestion. Travelogue sites offer rich depictions about historic points and voyaging background composed by clients. Besides, people group contributed photographs with metadata (e.g., labels, date taken, scope and so forth.) via web based networking media record clients' day by day life and travel understanding. However giving a chance for prescribe customized travel interests and courses in view of client's advantage. There are two principle challenges for programmed travel suggestion. A few people may favour social spots like the Metropolitan Museum, while others may incline toward the city-scape like the Central Park. Other than travel topical intrigue, different qualities including utilization ability (i.e., extravagance, economy), favoured going by season (i.e., summer, pre-winter) and favoured going to time (i.e., night, morning) may likewise be useful to give customized travel proposal. Second, it is imperative to suggest a successive travel course instead of individual peoples interests. Specifically, our system decomposes a total score of each route into a set of features and their corresponding scores, and shows the total score as a stacked bar plot of the features. The system also visualises the differences between peoples interests in a single route to show how peoples interests in that route can exhibit vast diversity. This visualisation helps tourists who want diverse experiences by choosing the best route among multiple recommendations. Generalising to a broader class of routes, such a visualisation could also help users of online mapping apps to make decisions on suggested travel routes, such as by trading off distance, traffic, and scenery.

II. RELATED WORK

A. Social media recommendations

Social media recommendation aims to provide users with suggestions of photos, videos, or other web content they might like. Using location information in LBSNs can improve both the effectiveness and efficiency of traditional social media recommendations.

The efficiency of recommendation systems can be significantly improved by using location data to prune out irrelevant information (Scellato, Mascolo, Musolesi, & CrowCroft, 2011). This improves the efficiency of content delivery networks using a novel caching mechanism based on geographic location. A real-time recommendation system, as suggested in Sandholm and Dung (2011), has been built for online web content using a collaborative filtering method to make more diverse and personalised recommendations within a geographical area. Levandoski, Sarwat, Eldawy, and Mokbel (2012) have proposed a novel location-aware recommendation system (LARS) framework to exploit users' ratings of locations using a technique that uses the distance of querying users to influence recommendations.

B. Data mining

The data mining should run in parallel to provide quick results. Big data runs predictive analytics in parallel against huge quantities of data. The data warehouse uses integrated data where big data often has raw data in quantity.

Therefore, one way to choose between big data and the data warehouse for data mining is based on the data itself.

C. Dataset Preprocessing

The most popular LBSN, to study the user's check-in behaviour and social-historical ties on LBSNs. In the Foursquare dataset, we get a user's check-in history with timestamps and his/her friendship information. To collect user check-ins, Foursquare does not have any public application programme interface (API). So, we were not able to get the check-in history directly. However, users in Foursquare can choose to list on their respective Twitter accounts and publish their check in messages as tweets on Twitter, and these can be accessed through Twitter's public API. This contains a unique URL that points to a Four square web page, including the geographical information of the user's check-in location. We obtained check-ins with timestamps ranging from August 2010 to November 2011. To keep the friendships identical to the Four square data, the Foursquare user's social circle was directly used from Foursquare. In our experiment, we considered users who had at least 10 check-ins. We obtained 43,108 unique geographical locations as the location vocabulary.

III. LITERATURE VIEW

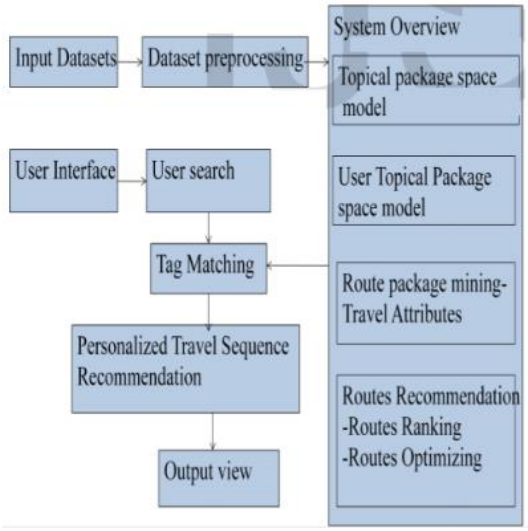
Shuhui Jiang, et al **[1]** Presented a personalized travel sequence recommendation system by learning topical package model from big multi-source social media, travelogues and community contributed photos. The advantages of this system are automatically mining user's and route's travel topical preferences including the topical interest, cost, time and season. They recommended not only POIs but also travel sequence.

JungeShen, et al **[2]** Proposed system that works on a novel query-dependent landmark ranking system based on heterogeneous travel information fusion to facilitate a smart travel guide. This system gets the initial ranking list of landmarks via text matching. The advantage is, maximize the satisfaction and minimize the information load. Less efficiency is a disadvantage of this paper.

Shuhui Jiang, et al **[3]** Author has proposed topic model-based collaborative filtering Personalized POI Recommendations method is proposed to facilitate comprehensive POIs recommendations for social users. The disadvantage is, dataset is small. Only textual information of geo-tagged is given.

IV. PROPOSED METHODOLOGY

We propose a Topical Package Model (TPM) learning method to automatically mine user travel interest from two social media, community-contributed photos and travelogues. To address the existing first challenge, we consider not only user's topical interest but also the consumption capability and preference of visiting time and season. As it is difficult to directly measure the similarity between user and route, we build a topical package space, and map both user's and route's textual descriptions to the topical. We combine user topical interest and the cost, time, season distribution of each topic to mine user's consumption capability, preferred visiting time and season. After user package mining, we rank famous routes through measuring user package and routes package. At last, we optimize the top ranked routes through social similar users' travel records in this city. Social similar users are measured by the similarity of user packages. package space to get user topical package model (user package) and route topical package model (route package)under topical package space.



V. ALGORITHM

Firebase Predictions applies machine learning to your analytics data to create dynamic user segments based on your users' predicted behavior. These predictions are automatically available for use with Firebase Remote Config, the Notifications composer, Firebase In-App Messaging, and A/B Testing. You can also export your app's Predictions data to BigQuery for further analysis or to push to third party tools. When you use Predictions with Remote Config, you can increase conversions by providing a custom experience based on each of your users' anticipated needs. You can also use Predictions with the Notifications composer to deliver one-time messages or recurring campaigns. For example, you can

automatically send a notification to users who are predicted to stop using your app. With A/B Testing, you can compare the effectiveness between different the Notifications composer campaigns, or use Remote Config to test the result of different ways of customizing the in-app experience for users in a predicted segment.

VI. FEATURES

1. **Application Framework:** It is used to write applications for Android. Unlike other embedded mobile environments, Android applications are all equal, for instance, an applications which come with the phone are no different than those that any developer writes. The framework is supported by numerous open source libraries such as open ssl, SQLite and lib c. It is also supported by the Android core libraries. From the point of security, the framework is based on UNIX file system permissions that assure applications have only those abilities that mobile phone owner gave them at install time.
2. **SQLite:** Extremely small (~500kb) relational database management system, which is integrated in Android. It is based on function calls and single file, where all definitions, tables and data are stored. This simple design is more than suitable for a platform such as Android.
3. **Handset Layouts:** The platform is adaptable to both larger, VGA, 2D graphics library, 3D graphics library based on OpenGL ES 1.0 specifications, traditional smart phone layouts. An underlying 2D graphics engine is also included. Surface Manager manages access to the display subsystem and seamlessly composites 2D and 3D graphic layers from multiple applications
4. **Data Storage:** SQLite is used for structured data storage .SQLite is a powerful and lightweight relational database engine available to all applications.
5. **Connectivity:** Android supports a wide variety of connectivity technologies including GSM, CDMA, Bluetooth, EDGE, EVDO, 3G and Wi-Fi.
6. **Web Browser:** The web browser available in Android is based on the open-source WebKit application framework. It includes LibWebCore which is a modern web browser engine which powers both the Android browser and an embeddable web view.
7. **Java Virtual Machine:** Software written in Java can be compiled into Dalvik byte-codes and executed in the Dalvik virtual machine, which is a specialized VM implementation designed for mobile device use, although not technically a standard Java Virtual Machine.
8. **Additional Hardware Support:** Android is fully capable of utilizing video/still cameras, touchscreens, GPS, compasses, accelerometers, and accelerated 3D graphics.

VII. CONCLUSION

In this paper, we proposed a personalized travel sequence recommendation system by learning topical package model from big multi-source social media: travelogues and community-contributed photos.

The advantages of our work are

1) the system automatically mined user ’s and routes’ travel topical preferences including the topical interest, cost, time and season,
2) we recommended not only POIs but also travel sequence, considering both the popularity and user ’s travel preferences at the same time. We mined and ranked famous routes based on the similarity between user package and route package.

VIII. FUTURE WORK

In future, we plan to enlarge the dataset, and thus we could do the recommendation for some non-famous cities. In future we will add some non-famous cities, having the most beautiful places but that may not be visited by the peoples or that can be unknown to the tourists but that will be made famous after visiting them. We plan to utilize more kinds of social media (twitter, Instagram, Flickr), and also we are planning to find the point of interest of user from images which are tagged on various social medias such as Instagram, Flickr, Facebook.

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