TRAVEL RECOMMENDATION SYSTEM USING GEOTAG BASED ON SOCIAL NETWORKS

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ABSTRACT

The main aim of this project is to provide personalized travel sequence plans for passionate travelers using community contributed pictures with GeoTagging, people attributes and textual and image descriptions of photos available in Social Networking Sites.Social Media based recommendation is the most well-known approach, and is widely utilized in products, services and travel recommendations Location based collaborative filtering travel recommendation methods first mine Point of Interest(POIs) in a city which has been visited by social users using geo-tags or GPS trajectories. Then similar users are detected by calculating the location co-occurrences from users' travel history and past experience. Then similar users are detected by calculating the location co-occurrences from users' travel history. Finally, the POIs of a new city are recommended according to similar users' visiting history.

Keywords: - *Points of Interest (POIs); geo-tagging ; collaborative filtering;*

1. INTRODUCTION

Big data increasingly benefit both research and industrial area such as health care, finance service and commercial recommendation. This paper 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 user's travel interest but also able to recommend a travel sequence rather than individual Points of Interest (POIs). 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. We map both user's and routes' textual descriptions to the topical package space to get user topical package model and route topical package model (i.e., topical interest, cost, time and season). To recommend personalized POI sequence, first, famous routes are ranked according to the similarity between user package and route package. Then top ranked routes are further optimized by social similar users' travel records. Representative images with viewpoint and seasonal diversity of POIs are shown to offer a more comprehensive impression. We evaluate our recommendation system on a collection of 7 million Flickr images uploaded by 7,387 users and 24,008 travelogues covering 864 travel POIs in nine famous cities, and show its effectiveness. We also contribute a new dataset with more than 200 K photos with heterogeneous metadata in nine famous cities.

Assuming the size of each photo is 2 megabytes (MB), this requires 3.6 terabytes (TB) storage every single day. Indeed, as an old saying states: "a picture is worth a thousand words," the billions of pictures on Flicker are a treasure tank for us to explore the human society, social events, public affairs, disasters, and so on, only if we have the power to harness the enormous amount of data. Big Data applications where data collection has grown

tremendously and is beyond the ability of commonly used software tools to capture, manage, and process within a "tolerable elapsed time." The most fundamental challenge for Big Data applications is to explore the large volumes of data and extract useful information or knowledge for future actions. The unprecedented data volumes require an effective data analysis and prediction platform to achieve fast response and real-time classification for such Big Data.

There are two main challenges for automatic travel recommendation. First, the recommended POIs should be personalized to user interest since different users may prefer different types of POIs. Take New York City as an example. Some people may prefer cultural places like the Metropolitan Museum, while others may prefer the city scape like the Central Park. Besides travel topical interest, other attributes including consumption capability (i.e., luxury,economy), preferred visiting season (i.e., summer, autumn) and preferred visiting time (i.e., morning, night) may also be helpful to provide personalized travel recommendation. Second, it is important to recommend a sequential travel route (i.e., sequence of POIs) rather than individual POI. It is far more difficult and time consuming for users to plan travel sequence than individual POIs. Because the relationship between the locations and opening time of different POIs should be considered. For example, it may still not be a good recommendation if all the POIs recommended for one day are in four corners of the city, even though the user may be interested in all the individual POIs.

To address the challenges mentioned above, 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 first challenge, we consider not only user's topical interest but also the consumption capability and preference of visiting time and season.

2. RELATED WORK

James Hays and Alexei A. Efros Carnegie Mellon University [1]. Estimating geographic information from an image is an excellent, difficult high-level computer vision problem whose time has come. The emergence of vast amounts of geographically-calibrated image data is a great reason for computer vision to start looking globally – on the scale of the entire planet! In this paper, we propose a simple algorithm for estimating a distribution over geographic locations from a single image using a purely data-driven scene matching approach. For this task, we will leverage a dataset of over 6 million GPS-tagged images from the Internet. We represent the estimated image location as a probability distribution over the Earth's surface. We show that geolocation estimates can provide the basis for numerous other image understanding tasks such as population density estimation, land cover estimation or urban/rural classification.

Shuhui Jiang SMILES LAB, Xi'an Jiaotong University, China [2] While automatic travel recommendation has attracted a lot of attentions, the existing approaches generally suffer from different kinds of weaknesses. For example, sparsity problem can significantly degrade the performance of traditional collaborative filtering (CF). If a user only visits very few locations, accurate similar user identification becomes very challenging due to lack of sufficient information. Motivated by this concern, we propose an Author Topic Collaborative Filtering (ATCF) method to facilitate comprehensive Points of Interest (POIs) recommendation for social media users. In our approach, the topics about user preference (e.g., cultural, cityscape, or landmark) are extracted from the textual description of photos by author topic model instead of from GPS (geo-tag). Consequently, unlike CF based approaches, even without GPS records, similar users could still be identified accurately according to the similarity of users' topic preferences. In addition, ATCF doesn't predefine the category of travel topics. The category and user topic preference could be elicited simultaneously. Experiment results with a large test collection demonstrate various kinds of advantages of our approach.

Yayun Ren, Xueming Qian, Shuhui Jiang [3]. With the rapid development of social networks, more and more users choose to share their own photos with their friends. Especially, users prefer to share the photos they took during traveling, thus there emerges many user generated content for place-of-interests (POIs). So based on the user contributed photos, we can summarize each POI by mining location-of-interest (LOI, which represents the attractive viewpoints of POI) and selecting some representative images from them. It is important for scheduling a traveling,

and in this paper, an effective POI summarization approach is proposed by an improved geo-clustering with visual and views verification, which helps us to have a representative and comprehensive perception for POI. In our approach, we firstly collect POI related photos from social media, and filter the raw data by the combination of tags and geo-locations. Secondly, we mine LOIs for each POI by the improved geo-location clustering method. Finally, we employ visual and views verification to select images from LOIs to summarize the POI. We conduct a series of experiments based on Flcoickr dataset. Experimental results demonstrate the effectiveness of our proposed method.

Maarten Clements [4] We propose a new task of recommending touristic locations based on a user's visiting history in a geographically remote region. This can be used to plan a touristic visit to a new city or country, or by travel agencies to provide personalised travel deals. A set of geotags is used to compute a location similarity model between two different regions. The similarity between two landmarks is derived from the number of users that have visited both places, using a Gaussian density estimation of the co-occurrence space of location visits to cluster related geotags. The standard deviation of the kernel can be used as a scale parameter that determines the size of the recommended landmarks. A personalised recommendation based on the location similarity model is evaluated on city and country scale and is able to outperform a location ranking based on popularity. Especially when a tourist filter based on visit duration is enforced, the prediction can be accurately adapted to the preference of the user. An extensive evaluation based on manual annotations shows that more strict ranking methods like cosine similarity and a proposed RankDiff algorithm provide more serendipitous recommendations and are able to link similar locations on opposite sides of the world

María del Carmen Rodríguez-Hernández University of Zaragoza, Spain 692383@unizar.es[5] Recommendation systems have been successfully used to provide items of interest to the users (e.g., movies, music, books, news, images). However, traditional recommendation systems do not take into account the location as a relevant factor when providing suggestions. On the other hand, nowadays, there exist an increasing amount of georeferenced data and users are usually interested only in nearby items (e.g., restaurants, museums, cinemas). Hence, the emergence of location-aware recommendation systems have acquired a great attention by the research community in the last decade. In this paper, we provide a survey of location-aware recommendation systems in mobile computing scenarios. Firstly, we describe brie y the fundamentals of recommendation systems. Then, we introduce some of the most relevant existing approaches for location-aware recommendation. Moreover, we present the main applications of this type of systems in several recommendation scenarios, such as music, news, restaurants, etc. Finally, we discuss new avenues and open issues in the area.

Daniel Herzog ,Wolfgang Wörndl, Boltzmannstr. 385748 Garching, Germany[6] Internet-based services are available to recommend destinations and activities for organized trips. Only few systems support travelers when creating composite trips consisting of multiple destinations or activities. The idea in this work is to select travel regions that maximize the value of the composite trip for the user while still respecting her limitations in time and money. The value of a travel region can be determined by the similarity between a specified user query and the cases in a travel region database. The recommendation algorithm needs to find a decent routing between the regions while still satisfying diversity of the whole trip. We developed an algorithm based on an approximation for the knapsack problem and extended it to recognize dependencies between the regions while calculating best combinations. It is able to determine the optimal duration of stay per region and its performance improves when benefiting from the hierarchical structure of our travel database. In an expert study, we verified the results of our approach. The study proves that our algorithm for composite trips delivers good recommendations which satisfied an expert user more than baseline algorithms. Regions in the composite trip fit together better and a decent routing between the regions can be ensured. Nevertheless, the algorithm leaves room for improvement by combining less similar regions in a composite trip, thus leading to a higher diversity of the recommendation.

Himani M. Mishra1, Dr. Ms. V. M. Deshmukh 2 Maharashtra, India [7] Travelling has become a very well known interest of people now a days, especially when many places own their explicit specialty. It has become a good source of monetary support for many nations. In the era of computers, electronics, information technology, now a day's people who are not aware of peculiarities of places, rely on travel package recommender systems suggested by various sites and applications. Following is the review of work done in this area.

Abdul Majid , Ling Chen , Gencai Chen , Hamid Turab Mirza ,Ibrar Hussain , John Woodward ,College of Computer Science, Zhejiang University,PR China[8] ,The proliferation of digital cameras and the growing practice of online photo sharing using social media sites such as Flickr have resulted in huge volumes of geotagged photos

available on the Web. Based on users' traveling preferences elicited from their travel experiences exposed on social media sites by sharing geotagged photos, we propose a new method for recommending tourist locations that are relevant to users (i.e., personalization) in the given context (i.e., context awareness). We obtain user-specific travel preferences from his/her travel history in one city and use these to recommend tourist locations in another city. Our technique is illustrated on a sample of publicly available Flickr dataset containing photos taken in various cities of China. Results show that our context-aware personalized method is able to predict tourists' preferences in a new or unknown city more precisely and generate better recommendations compared to other state-of-the-art landmark recommendation methods.

Subramaniyaswamy V, Vijayakumar V, Logesh R Indragandhi V[9]This paper purposes a system which helps user in finding tourist locations that he/she might likes to visit a place from available user contributed photos of that place available on photo sharing websites. This paper describes methods used to mine demographic information and provide travel recommendation to users. This paper also describes an algorithm adaboost to classify data and Bayesian Learning model for predicting desired location to a user based on his/her preference

Chang Choi, Miyoung Cho,Junho Choi[10] Nowadays, travel information is increasing to appeal the tourists on the web. Although there are numerous information provided on the web, the user gets puzzled in finding accurate information. In order to solve these web problems, the concept of semantic web comes into existence to have communication between human and computer.In this paper, we propose intelligent recommendation system based on Jeju travel ontology. The proposed system can recommend the tourist more intelligent information using properties, relationships of travel ontology. Next, the system is responsible for finding personalized attractions and plotting location of traveler on the AlMap.

3. EXISTING METHODOLOGY

Social Media -based recommendation approaches are effective and efficient, but suffer from the well-known "time complexity problem and cost satisfaction" in recommendation systems, due to travel data being very sparse. In this circumstance, it makes accurate similar user identification very difficult if the user has only visited a small number of POIs.

The category topics are usually determined by the naive category information from recommended systems in Topic Model Method(TM). From the predetermined categories, it is convenient to calculate user preferences. Unfortunately, for rich photo sharing networks like Flickr, there is no such defined category information. Thus the naive topic-based recommendation approach cannot be utilized directly in travel recommendations.

4. PROBLEMS IN THE EXISTING SYSTEM

In existing system only static travel plans are recommended. It do not support personalized POI Recommendations. In this system category information is undefined. Only static datasets for POI are available, it do not support dynamic travel plans.

5. PROPOSED WORK

We propose a personalized travel sequence plans recommendations when a user is about to visit a new place. In contrast to existing location based collaborative filtering methods, we learn users' travel preferences from the text descriptions associated with their shared photos on social media, instead of from GPS trajectories or check-in records. In addition, users' similarities are measured with author topic model instead of location co-occurrence.

Places are classified based on the geotag information, Number of Persons on the photo and can be later used with POI recommendation. In personalized travel recommendation system, we utilize users' topic preferences as the law for collaborative filtering instead of location co-occurrences. Dynamic travel plans are recommended to the user based on POI.

5.1. MODULES:

5.1.1. SOCIAL NETWORKING WEBSITE:

In first module, creating a social networking profile that is specifically concentrated on users pictures. User will register their details and server stores user information in a database. Users will upload their pictures into the social networking site. While uploading, user provides tags for the picture, GeoTagging information and access privilege. User share photos in Social Networking Website.

5.1.2. DATA COLLECTION AND PROCESSING:

In second module, Admin collects photos by giving tags from Flickr Website. Admin download public photos from this website. Now Preprocessing will be done. GeoTagging will be applied to all downloaded public photos. GeoTagging applied using Exif API. User can view their drive where all uploaded pictures by the user listed in this drive.

5.1.3. TRAVEL RECOMMENDATION WEBSITE:

In this module, We are creating a Travel Recommendation Website for recommending locations to the user. Admin will get permission from Social Website to access public photos with tags. After permission granted by the Social Website, Admin will perform preprocessing to the public photos. During preprocessing stage: location, date and time and tags of photos will be retrieved.These photos information is stored into database.

5.1.4. PERSONALIZED ITINERARY PLAN:

In this module, we will recommend travel destinations for the user based on user input. User specifies their Point of Interest and requirements for getting Travel Recommendations. User input will be current location, place to visit, duration, type and purpose of visit and budget cost. Based on user personalized POI, Server generate a personalized travel plan.

6. CONCLUSION

Big data based web application offers several advantage over other web application method such as security, reliability, efficiency. As we browse through travel plans, the Recommendation system offer recommendations of travel plans we might be interested in. Regardless of the perspective — business or consumer, Recommendation systems have been immensely beneficial and big data is the driving force behind Recommendation systems. A typical Recommendation system cannot do its job without sufficient data and big data supplies plenty of user data such as browsing history and feedback for the Recommendation systems to provide relevant and effective recommendations. In a nutshell, even the most advanced Recommenders cannot be effective without big data.

This system allow users to select places of their interest. The proposed work gives the best solution to the users who are interested in dynamic iterative plans . The proposed system is reliable and fault tolerant when compared to the existing recommendation systems predicts the interest and recommends iterative plans. Thus the personalized travel plans are generated for the user based on POI travel recommendations of the user using personalized travel sequence Recommendation on Multi-Source Big Social Media.

7. FUTURE WORKS:

Our future work focuses on several aspect, Recommender systems are being dumped by large data sets day by day of the users data available on the web. Thus we can recommend dynamic plan with images and create technologies that can help us shift through all available information to find which is more valuable to us. As more and more information is being created and collected, and analytic capabilities continue to advance.

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