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A Survey on Automated Trip Planning Using Efficient Keyword-Aware Representative Travel Route Framework

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ABSTRACT: The rapid climb of online travel information imposes an increasing challenge for tourists who need to choose between an outsized numbers of travel packages to satisfy their personalized requirements. On the opposite side, to urge more business and profit, the travel companies need to understand these preferences from different tourists and serve more attractive packages. Therefore, the demand for intelligent travel services, from both tourists and travel companies, is predicted to extend dramatically. Since recommender systems are successfully applied to reinforce the standard of service for patrons during a number of fields its natural direction to develop recommender systems for personalized travel package recommendation. Our approach isn't only personalized to user's travel interest but also ready to recommend a travel sequence instead of individual Points of Interest (POIs). Topical package space including representative tags, the distributions of cost, visiting time and visiting season of every topic, is mined to bridge the vocabulary gap between user travel preference and travel routes. We map both user's and routes' textual descriptions to the topical package space to urge user topical package model and route topical package model (i.e., topical interest, cost, time and season).

KEYWORDS: Travel recommendation, geo-tagged photos, social media, multimedia information retrieval, online interest.

I. INTRODUCTION

Tourism has become one of the world's largest industries. Furthermore, according to the forecast by the World Travel & Tourism council, the contribution of tourism to global GDP is expected to rise from 9.1% in 2011 to 9.6% by 2021. Indeed, with the advancement of time and the improvement of living standards, even an ordinary family can go on a vacation very comfortably on a small budget. As a trend, more and more travel companies, such as Expedia, provide online services. However, the rapid growth of online travel information imposes an increasing challenge for tourists who have to choose from a large number of travel packages to satisfy their personalized requirements. On the other side, to get more business and profit, the travel companies have to understand these preferences from different tourists and serve more attractive packages. Therefore, the demand for intelligent travel services, from both tourists and travel companies, is expected to increase dramatically. Since recommendersystems have been successfully applied to enhance the quality of service for customers in a number of fields.It is natural direction to develop recommender systems for personalized travel package recommendation.

II. RELATED WORK

Shuhui Jiang, XuemingQian , Tao Mei, Yun Fu,[1] proposed a customized travel succession proposal framework by taking a topical bundle model from large multi-source web based life: travelogs and network contributed photographs. The upsides of their work are 1) The framework naturally mined client's and courses movement topical inclinations including the topical intrigue, cost, time and season 2) They prescribed POIs as well as movement grouping,

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considering both the ubiquity and client's movement inclinations simultaneously. They mined and positioned acclaimed courses dependent on the similitude between client bundle and course bundle. And afterwards advanced the top positioned well known courses as per social comparable clients' movement records.

S. Jiang, X. Qian, J. Shen, Y. Fu, and T. Mei, [2] proposed an author point model-based community oriented sifting (ATCF) strategy for customized travel suggestions. Client's theme inclination can be mined from the printed depictions joined with his/her photographs by means of creator subject model (ATM). Through ATM, travel themes and a client's point inclination can be inspired all the while. In ATCF, POIs are positioned by comparative clients, who share comparative travel point inclinations, rather than crude GPS (geo-tag) information just like the instance of most past works. Dissimilar to area based collective sifting, even without GPS records, comparable clients can at present be mined precisely as indicated by the likeness of clients' point inclinations.

Q. Yuan, G. Cong, and A. Sun,[4] proposed time-mindful POI proposal, which thinks about the fleeting impact in client exercises. They have proposed the Geographical-Temporal impacts Aware Graph (GTAG) to show the registration practices of clients and a chartbased inclination proliferation calculation for POI suggestion on the GTAG. The proposed arrangements misuse both the geological and transient impacts in a coordinated way.

X. Qian, Y. Zhao, and J. Han , [5] proposed a salient region mining and representation based image location estimation approach. The saliency that explored from a group of visual words is far more discriminative than the individual visual words in image retrieval. Mean-shift based clustering approach is proposed to group visual words with a sizable number. The proposed visual word group mining based image search is robust to find similar images even with partial occlusion.

Hiroshi Kori, Shun Hattori, Taro Tezuka, and Katsumi Tanaka , [6] proposed a system to extract typical travel routes based on the blog entries of visitors and to present multimedia content relevant to these routes. They have extracted typical travel routes by using a sequential pattern mining method.

Y. Zheng, L. Zhang, X. Xie, and W. Ma,[7] proposed a HITS-based model to induce a client's movement experience and the enthusiasm of an area considering shared support connection between area intrigue and client travel understanding and client travel understanding just as area intrigue are locale related. Afterwards, they identified the traditional travel groupings in a predetermined district utilizing area interests and clients' movement encounters.

N. J. Yuan, Y. Zheng, X. Xie, Y. Wang, K. Zheng, and H. Xiong, [8] proposed a framework for discovering functional zones (e.g., educational areas, entertainment areas, and regions of historic interests) in a city using human trajectories, which imply socio-economic activities performed by citizens at different times and in various places. They have evaluated this framework with large-scale datasets including POIs, road networks, taxi trajectories and public transit data. According to extensive experimental results, the method using both location and mobility semantics outperforms the baselines solely using location or mobility semantics in terms of effectively finding functional zones.

X. Qian, H. Feng, G. Zhao, and T. Mei,[9] proposed a customized suggestion approach dependent on probabilistic framework factorization by joining informal community factors: individual intrigue, relational intrigue similitude, and relational impact. Specifically, the individual intrigue means client's uniqueness of rating things, particularly for the accomplished clients. And these components were melded to improve the exactness and materialness of recommender framework. The client relationship of informal community contains two elements: relational impact and relational intrigue comparability. They apply the surmised trust hover of Circle-based Recommendation (CircleCon) model to implement the factor of relational impact. For the relational intrigue likeness, they gather intrigue hover to improve the natural connection of client idle component.

Y. Ge, Q. Liu, H. Xiong, A. Tuzhilin, and J. Chen,[10] proposed two costaware latent factor models to recommend travel packages by considering both the travel cost and the tourist's interests. Specifically, they first designed a cPMF model, which models the tourist's cost with a 2-dimensional vector. Also, in this cPMF model, the tourist's interests

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and the travel cost are learnt by exploring travel tour data. Furthermore, in order to model the uncertainty in the travel cost, they further introduce a Gaussian prior into the cPMF model and develop the GcPMF model, where the Gaussian prior is used to express the uncertainty of the travel cost.

A. Cheng, Y. Chen, Y. Huang, W. Hsu, and H. Liao, [11] proposed a probabilistic customized travel proposal model which receives the naturally mined familiarities from the movement photograph logs and the consequently recognized individuals properties in the photograph substance. By data theoretic measures and examinations in eight significant urban communities, they affirm that individual qualities are powerful for digging socioeconomics for movement milestones and ways and it is supportive for customized travel proposal and course arranging. In the interim, individuals credits are symmetrical to the movement logs alone and can additionally yield increasingly palatable outcomes particularly in all the more testing suggestions.

Q. Liu, Y. Ge, Z. Li, E. Chen, and H. Xiong, [12] proposed the study of exploiting online travel information for personalized travel package recommendation. They first analysed the unique characteristics of travel packages and developed the Tourist-Area- Season Topic (TAST) model, a Bayesian network for travel package and tourist representation. The TAST model can discover the interests of the tourists and extract the spatial temporal correlations among landscapes. Then, they exploited the TAST model for developing a cocktail approach on personalized travel package recommendation. This cocktail approach follows a hybrid recommendation strategy and has the ability to combine several constraints which are inherent in personalized travel package recommendation.

Y. Lyu, C.-Y. Chow, R. Wang, and V. C. Lee, [13] proposed a new personalized POI recommendation framework based on multi-criteria decision making (MCDM). They designed the preference and estimation models for geographical, category and attribute criteria. Given a user and a set of candidate POIs, the method first arranges the candidate POIs in a preference preorder for each criterion, and then it iteratively combines the three pre-orders of the three criteria by computing dominated index and dominating index for each candidate, and recommends the top-N POIs for the user.

X. Wang, M. Yu, L. Zhang, R. Cai, and W. Ma, [14] proposed a framework named Argo which gives insightful publicizing made conceivable from clients photograph assortments. In light of the instinct that client produced photographs infer client premiums which are the key for gainful focused on promotions, the Argo framework endeavours to take in a client's profile from his mutual photographs and recommends pertinent advertisements in like manner. To get familiar with a client's enthusiasm, in a disconnected advance, a various leveled and productive point space is developed dependent on the ODP cosmology, which is utilized later on for spanning the jargon hole among promotions and photographs just as decreasing the impact of boisterous photograph labels. In the online stage, the procedure of Argo contains three stages: 1) Understanding the substance and semantics of a client's photographs and auto-labelling every photograph to enhance client submitted labels (such labels may not be accessible); 2) Learning the client premium given a lot of photographs dependent on the scholarly progressive subject space; and 3) Speaking to advertisements in the point space and coordinating their theme disseminations with the objective client premium; the top positioned promotions are yield as the proposed advertisements.

Q. Hao, R. Cai, X. Wang, J. Yang, Y. Pang, and L. Zhang, [15] proposed a system of producing area outlines as labels and pictures by mining user-generated travelogs. Given an area, its delegate labels are first mined from pertinent travelogs and afterwards used to recover web pictures. The labels and pictures are at long last displayed through a novel UI.

J. Hays, A. Efros et al., [16] proposed a basic calculation for evaluating a circulation over geographic areas from a solitary picture utilizing simply an information driven scene coordinating methodology. For this assignment, they use a dataset of more than 6 million GPS-labeled pictures from the Internet. It speaks to the assessed picture area as a likelihood circulation over the Earth's surface.

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III. EXISTING APPROACH

The travel and tourism industry is one of the most important and dynamic sectors in Business-to-consumer (B2C) e-Commerce. While observing today's e-tourism internet sites we observe that only some of the prevailing systems provide services that transcend a pure booking system's functionality. Recommender systems struggle to catch user needs and corporations have implemented different approaches to tackle this issue. Amazon.com, for example, immediately recognizes the user's identity and recommends a book, without posing for any user input. In contrast (similar to the 2 travel recommender systems mentioned earlier), www.activebuyersguide.com involves a user checking out a vacation during a multistage interaction. First, the location asks about the vacation's general characteristics (type of vacation, activities, accommodation, then forth). Second, it asks for details associated with these characteristics and then for tradeoffs between characteristics. Finally, it recommends the destination. Some Travel Recommendation Systems analyse Travelogues (blogs) to get trip related knowledge. It analyses keywords in blogs and rank landmarks for travellers. The most common drawback is often some keyword concerning some landmark during a city can be missed or travelogues are usually unstructured and contain much noise metadata. Collaborative filtering techniques work best when there exists a broad user community and every user has already rated a lot of things. As individual travel planning activities are typically much less frequent like, for instance, book purchases, and additionally the things themselves may have a much more complex structure, it's hard to determine reasonable user profiles.

Disadvantages of existing system:

- Route mining without considering users travel interest.
- General recommendation travel recommendation.
- Individual travel POIs Recommendation.

IV. CONCLUSION

The travel and tourism industry is one of the most important and dynamic sectors in Business-to-consumer (B2C) e-Commerce. While observing today's e-tourism internet sites we observe that only some of the prevailing systems provide services that transcend a pure booking system's functionality. In this paper, we've proposed a customized travel sequence recommendation system by learning regional package model from social media. The benefits of our system are: 1] The system automatically mined user's and routes' travel topical preferences including the regional interest, city, topical interest, cost, time and season. 2.] We recommended not only POIs but also travel sequence and considering user's travel preferences, activity, and online interest at an equivalent time. 3] Provides map of travel sequence. We mined places similar to the user package. The route map of the travel sequence is given. In future, we plan to enlarge the dataset, and include a few non-famous cities.

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