A Survey on Travel Package Recommendation

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ABSTRACT

A recommender system's goal is to generate meaningful recommendations to a set of users for products or items that might interest them. Suggestions for different types of goods on Amazon, or movies on Netflix etc, are actual examples of recommendation system. Recommendation system's design depends on the domain and also on the particular characteristics of the data which is available. Online travel package information for tourist is playing vital role nowadays. The travel package information which is available online enforces an increasing challenge for tourists who have to choose from a large number of available travel packages for fulfill their personalized needs. Indeed, this article explains a case study of utilizing online travel information for personalized travel package recommendation. Here, the main challenge is to tackle the unique characteristics of travel data, which differentiate travel packages from traditional items of others for recommendation purpose. For this, first examine the characteristics of the previously offered travel packages and develop a tourist-area-season topic (TAST) model. A hybrid approach is developed for travel package recommendation by taking the base of TAST model. A hybrid approach is generated according to the topic model representation so that to form lists for personalized travel package recommendation. Tourist-Relation-Area-Season-Topic (TRAST) model is used for finding out the hidden relationship between the tourists. TRAST model is used as an effective appraisal for travel group formation.

Key Words: *Travel package, recommender systems, hybrid, topic modeling, collaborative filtering*

INTRODUCTION

Recommendation system is a wide-ranging class of web applications which rivet predicating user response to selections. It is also subclass of information filtering system. This can be used for presenting news articles to online newspaper reader, based on a predication of reader's interest and offering buyers of online seller ideas about what they might like to buy based on their previous history of purchases and /or product searching history. Recommendation systems are one of the most common and easily understandable applications on big data. Recommender systems generally create a list of recommendations in one of three ways - through collaborative filtering or content-based filtering or hybrid of both filtering.

A. Collaborative Filtering:

Collaborative filtering approaches building a model from a user's previous behavior and also same decisions made by other users. When building a model from a user's behavior, a difference is frequently made between explicit and implicit forms. Implicit and explicit are the forms of data collection. Below are the some examples of explicit and implicit data collection. Explicit data collection is like 1) Requesting a user to rate of an item on a sliding scale. 2) Tell a user, to give rank of collection of items from favorite to least favorite. 3) Present two items in front of user and asking him/her to choose the better one of them. Examples of implicit data collection are 1) Monitoring the items that a user views in an online store. 2) Considering item/user viewing times. 3) Evaluating the user's social network and find out similar likes and dislikes.

B. Content-based Filtering:

Content-based filtering is a next general approach of designing recommender systems. In this type of recommendation system, it utilizes a series of discrete characteristics and also based on an explanation of the item and a profile of the user's preference.

C. Cocktail approach Filtering:

Cocktail approach is combination of collaborative filtering and content-based filtering. Current research has expressed that a cocktail filtering approach could be more effective than other two approaches in some cases. Tourism is most favored activity when people have free time. Lots of tourism facilities are provided by many organizations. The people or the tourist chooses his own travel package according to his personal interest. The travel companies focus on the interest of tourist so that to increase their market value and provide huge packages. So there is needed to make travel package more effective.

Personalized travel package has many challenges while designing and executing the recommended system. First, the travel data are less and scattered for example movies for recommendation because cost for a travel package are much more costly than watching a movie. Second, generally travel packages are location based so they are said to be spatial for example the package contains places which are geographically near and these packages differ season vise. Third, the old recommendation system depends on rating and the travel data may not contain such rating [13]. To overcome this challenges the hybrid approach is introduced. It analyzes different characteristics of exiting package. Then built up the tourist-area-season topic (TAST) model which represents packages. Hybrid approach has some extra features like season and pricing for recommending personal travel package [13].

1. LITERARATURE SURVEY

Actually, recommendations for tourists have been studied before [1], [3], [6], and the first operative tourism recommender system was introduced by Delgado and Davidson [1]. Recommendation system is a big and interesting research topic. Already a lot of work is done on recommendation system in industry as a developing approach. Recommender system has more number of applications that help the user to get a personal recommendation as well services. The example of this application is recommending electrical appliances, books, and etc. Also the recommendation system still needs improvements at current situation as to make it effective.

TAST model is the representation of tourists and travel package. To represent the packages and tourists by a topic model, like the methods in [14], [15], and [16] based on Bayesian networks. Hence the likeness between packages and tourists can be measured [1]. Personalized travel package recommendation's hybrid approach is depends on output of the TAST model and has also the ability to combine many limitations which are survive in real-world. This hybrid approach chase a hybrid recommendation strategy [17]. TRAST model formulates the relationships of tourists in every travel group and follows the technique which is used in [15].

2. SYSTEM OVREVIEW

In now a day's many travel companies provide online services. On the other hand, the fast growth of online travel information imposes an more challenges for tourists who have to choose from a large number of available travel packages for satisfying their personal needs. In addition to increase the profit, the travel companies have to learn the previous

choices from many tourists and serve more outstanding packages. For this reason, the requirement for intelligent travel services is expected to increase significantly.

A. The TAST model: At the time of forming the travel package many issues are to be focused like find out different travel places for particular the seasons for traveling and number of tourist, decide the landscape related to season and travel topic. At last the many other factors like price, accommodation etc. Therefore Topic model is the model in which to generate the travel package as a What-Who-When-Where problem (4W).In this, W stands for the travel topics, the target tourists, the seasons, and the corresponding landscape located areas, respectively. Package representation in this topic model style is called as the TAST model. A TAST model can represents content of packages and interests of tourists by topic model style. In topic model after representing the packages and tourists it will be easy to measure the similarities between them. Also there are many other advantages of the TAST model, for example, to learn the popular topics in each season and find the popular landscapes for each topic[1].

B. A Hybrid Approach: A hybrid recommendation is used for the recommending the package for personal travel which is depends on the TAST model. This recommendation represents the hybrid recommendation strategy [5]. By combing the different techniques, hybrid recommendation enhances the performance of the recommendation. Specifically, to use the output of the TAST model for find out the seasonal nearest neighbors for each tourist. Collaborative filtering is used to ranking the candidate packages. Also new packages are added by calculating the similarity between the previous generated candidate packages and to predict the possible price distribution of each tourist by using collaborative pricing.

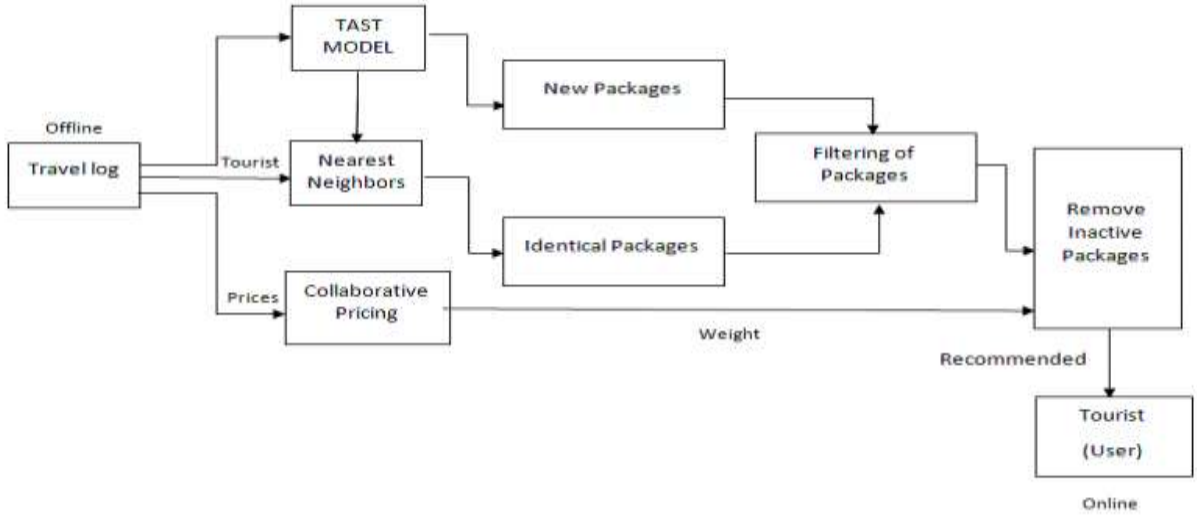

Fig. 1. Overview of Recommendation System

C. The TRAST Model: TAST model expresses the contents of travel packages and tourists. It does not focus on group for tourists. Therefore TRAST model is used to formulate the tourist relationship in each travel group by extending the TAST model. For example two users have taken same package but are in different group, it means that they have similar interest. Tourists present in same travel package may share similar Things like restaurants etc.

3. CONCLUSION :

First, there is need to illustrate the exceptional characteristics of the travel data. At the time of recommending the travel package different topics and related information is analyzed. Then develop the TAST model of topic model style which

outputs the topic and season recommendation. It describes the tourist's interest and the package more specifically. The output of the TAST model is used to build hybrid approach for modified recommendation for travel package. TAST model is expanded to TRAST model which make the tourists relationships in travel group.

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