Contemporary Engineering Sciences, Vol. 8, 2015, no. 10, 401 - 407
HIKARI Ltd, www.m-hikari.com
http://dx.doi.org/10.12988/ces.2015.5230

Recommendation and Ranking of Travel Package to Tourist

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Abstract

In a recent years Tourism and Travel stores offering a huge quantity of services and traveling information by online. Additionally, this huge volume of information smoothly accessed by electronic devices, like phone, computer with the availability of internet connection. When tourists are visiting any cities, most of them aimed to explore the interesting fact or things about the places and events etc. in spite of the fruitful progress there are still several opportunities remaining to discover. Firstly, we investigate the properties of the travel package and expand TAST (Tourist-Area-Season topic) model. Thereafter, we expand the Tourist-Area-Season topic (TAST) model for confining the relationship over the every group of the tourist. This research work expressing an outline for the recommender system and describing the latest production of recommendation techniques that are generally divided in the three phase: Collaborative, Hybrid recommendation and Content-based approaches. Finally, we appraise the Tourist-Area-Season topic (TAST) model with the cocktail recommendation approach on the real-world travel package data.

Keywords: Travel package, cocktail, topic modeling, recommender systems, collaborative pricing, ranking

1. Introduction

The tourist or visitors always facing problem while they searching or trying to

plan their trip by the online travel organization. The additional difficulty is due to the lacking of the choices based on the categories like Children, old people, Teenagers, couples and season based etc [3]. When a visitors moving to the cities they trying to explore some interesting fact, ideas, knowledge about that places, objects and events. Some times they can't make their plan in very details "so they are trying to take information in the changing circumstances" and when selecting any region they intend to choose an area that has more potential characteristics [5].

Nowadays, so many travel organizations are providing online facility to choose or make their trip. These opportunities are providing them a wide range of option to filling their needs. Additionally, the travel organizations serving them more attractive and different package to the different categories of the tourist for making more profit [1].

The recommender system has been applied to make the efficient system in this field. The recommender system is helping the tourist to get more information about the area, region etc, and in same way it helps the travel agencies to provide the more information to the tourist [4]. A recommender system can be eminent from an information recovery scheme by the semantics of its user relation [2]. Some of the useful techniques have been proposed for the recommender system:

Collaborative, Knowledge-based, and Content-based [4].

2. Related Work

The base of the recommender system can be used again for wide functionality in the existing field. Recommender system was previously used in the forecasting, information retrieval system and more. In the mid of 1990s where researchers were focusing on the problems that rely on the structure [3]. In the formulation, the recommender reduce problem for estimating the rating of the specific items [2]. The user space was very high or large. The hybrid recommender system is de scribe here any recommender system which combines with the several methods for producing the output. The earliest survey representing that same type of the methods couldn't be hybridized. Some function for identifying the different hybrid types. (Weighted ,Switching, Mixed, Feature Combination, Feature Augmentation, Cascade, Meta-level [4].)

In 2011, the KDD Cup was arising from the recommender system. It is an important feature to help the users for their needed information by identifying their behavior. There are two task that is 1) Rating prediction problem, 2) New problem in recommender system [6].

In a Real-life application, a user rates or buys any item among their interest. Adopting this facility is difficult for the recommender system. The iExpand models presents a method for probability allocation over interests, and every interest is a probability allocation of the objects. The model supposes that the item rating by the user can be neglect [7].

3. Proposed Work

3.1 Overview

In our proposed work, we introducing the basic ideas and then expand the recommendation for this study. The basic concept of our proposed work is to identify the location and preferences including the duration of time, and destination type.

We are proposing numerous methods for improving the application quantity for helping the tourist. We are mainly proposing the Tourist-Area-Season-Topic (TAST) which explore on both side tourist and inherent features of the Area and Landscape. The Cocktail method has been proposed on the basis of the Tourist-Area-Season-Topic (TAST) model that develops the personalized package of traveling.

We propose the Tourist-Relation-Area-Season Topic (TRAST) model, which helps the tourist to understand the reasons why tourists form a travel group. This goes beyond actualized package recommendations and is helpful for capturing the latent relationships among the tourists in each travel group.

3.2 Architecture

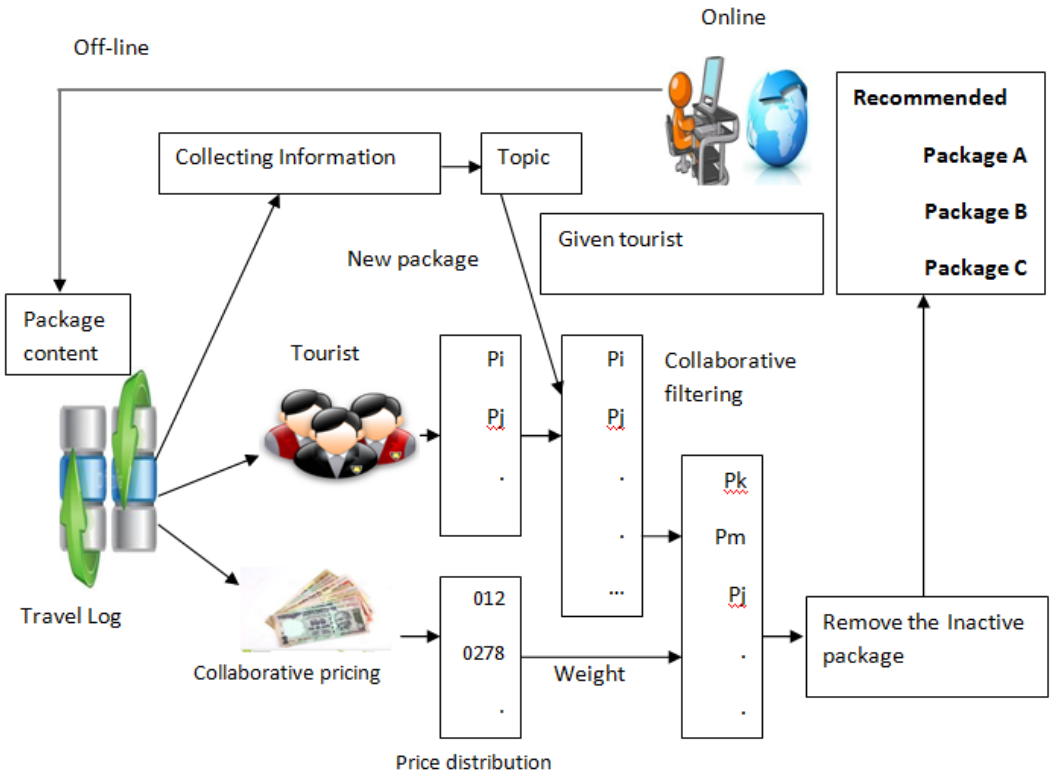

Fig.1. System Architecture

3.3 The TAST Model

In this part of the project, we are showing that how to symbolize the topic for tourist and the packages. We realize that the traveling organization have some issues because of that they are not successfully implementing their views to the visitors. So coming over those problems, first we decide to declare the set of tourist target, area, and season. Secondly, one or multiple topics will be selected for the tourist by category of the tourist interest and seasons.

1. Executing content-based and collaborative methods individually and merging their calculations,
2. Integrating some content-based properties into a collaborative methods,
3. Integrating some collaborative properties into a content-based methods, and
4. Assembling a universal combining model is that integrate both collaborative and content-based properties.

3.4 The TRAST Model

In this section, we extend the current TAST model and propose a novel tourist-relation-area-season topic model to formulate the tourist relationships in a travel group. In the TAST model, we do not consider the information of the travel group. However, each package has usually used by many groups of tourists and he tourists belong to different travel groups. Thus, if two or three tourists have taken the same package but in different travel groups, we can only say these two or three tourists have the same travel interest, but we cannot decide that they share the same travel profile. In the future, they may also want to travel together. In addition, they may be family and always travel together during the holiday season.

3.5 Algorithm

K means clustering algorithm:

```
[maxRow, maxCol]=size(m);
if maxRow<=k,
y=[m, 1:maxRow];
else
% initial value of centroid
for i=1:k
c(i,:)=m(i,:);
end
temp=zeros(maxRow,1); % initialize as zero vector
while 1,
d=DistMatrix(m,c); % calculate objcets-centroid distances
[z,g]=min(d,[],2); % find group matrix g
if g==temp,
break; % stop the iteration
else
temp=g; % copy group matrix to temporary variable
end
for i=1:k
```

```
c(i,:)=mean(m(find(g==i),:));
end
end
y=[m,g];
end
```

3.5.1 Algorithm Steps

STEP 1: The data set containing the tow variables score on every seven individuals.

STEP 2: Two clusters is getting grouped for the data set. For finding a sensible partition, make the two values of A & B apart. (By using Euclidean Distance measure).

STEP 3: The rest of the individuals are identified in the series and assigned to the nearest cluster by following the Euclidean distance. Every time a new object is getting add in this making available to recalculate.

STEP 4: The partition has been change which was done in initial step and two another cluster have some special properties.

STEP 5: Compare each individual's distance to it's own cluster mean and to that of the opposite cluster.

4. Result and Discussion

In this section we are discussing about the performance evaluation and advantage of the proposed work. The proposed cocktail recommendation method works suitably for suggesting the visitors to plan their trip by utilizing our enhanced travel package. We expressing the domain depended work tourists are users, travel packages are items and areas, seasons are characteristics of items and etc. We selected five distinct recommendation algorithms for doing compare that are LBSVD, BSVD, TTER, LUCF, and Cocktail explored by the Tourist-Area-Season topic (TAST) model and their relationship explored by the Tourist-relation-area-season topic (TRAST) model. We could observe that the Cocktail is still performing very well in compare to other techniques and additionally the relationship can be helpful for recommending the every tourist to plan their trip among their own choice based on the condition.

4.1 Tourist interest in Country

Fig.3 Estimated tourist Crowd in several Country

4.2 Mathematical Notations

Table.1. Mathematical Notation

Notation	Description
U = {U1, U2, U3, …….. Un}	The set of Tourists
S = {S1, S2, S3, …… Sn}	The set of Seasons
P = {P1, P2, P3, …… Pn}	The set of Packages
T = {T1, T2, T3, …… Tn}	The set of Topics
A = {A1, A2, A3, …… An}	The set of different Area

5. Conclusion and Future Enhancement

We proposed a research on the adaptive travel package recommendation. Firstly we identify the unique properties of the traveling system and present a Tourist-Area-Season topic (TAST) model. This model can easily recommend the tourist among their interest and explore the corresponding area or landscape. Thereafter we oppressed the Tourist-Area-Season topic (TAST) model for mounting the Cocktail technique on personalized travel package recommendation. The Cocktail have the capability to combine the numerous existing constraints from the real world. Additionally, we expanded the Tourist-Area-Season topic (TAST) model with the tourist-relation-area-season topic (TRAST) model that can handle relationship over traveling organization and tourist. An experimental research was conduct on the real-world traveling resource and found that the Tourist-Area-Season topic (TAST) can handle the unique properties form travel packages, and the cocktail can head over the better result in traveling area. Tourist-relation-area-season topic (TRAST) will be affected for the traveling organization for providing the automatic information to the visitors.

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Received: February 18, 2015; Published: March 25, 2015