IJARCCE

ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 5, Issue 3, March 2016

A Review on Cocktail Approach for Travel Package Recommendation

Mohit Bisen[1], Mayur Sontakke[2], Shirish Singnapure[3]

Department of Computer Engineering, MIET, Bhandara (MS), India[1, 2]

Assistant Professor, Department of Computer Engineering, MIET, Bhandara (MS), India[3]

Abstract: One of the important applications in modern computing is to provide better travel services for tourists. This paper provides a study of utilizing online travel information for the personalized travel package recommendation. Many recommender systems lack an organized framework to dynamically incorporate multiple types of additional context information existing in the tourism domain, such as the travel area, season, and price of the travel packages. First we analyze the properties of the previous travel packages and develop a TAST (tourist-area-season-topic) model. This TAST model helps to represent different travel packages and different topic distributions of tourist, taking out of topic is specified on both the tourists and the natural characteristics of the landscapes. According to the topic model representation, a cocktail approach is incepted so that to form lists for personalized travel package recommendation. The TAST model is expanded to the tourist-relation-area-season topic (TRAST) model for collecting the relationships among the tourists for all travel groups. Then analyze both the TAST and TRAST models, and cocktail recommendation approach on the current travel package information TAST model works better than the old recommendation system by adding tourist's relationships as TAST model can effectively catches the unique properties of travel data and cocktail approach, an effective estimation for travel group formation can be done using TRAST model.

Keywords: TRAST model, K-means clustering, Authentication, Collaborative filtering, Searching Techniques.

I. INTRODUCTION

Now days, there is trend of online services. In those online services there is travelling information services are emerged rapidly. Generally tourist chooses the travel packages according to his interest. And also according to their needs tourist chooses travel packages. So for satisfying tourist needs, travel companies have to understand tourist preferences. If company understands tourist interest and preferences, company must increases profit. For that purpose they need intelligent travel services, these are nothing but the recommender system. This recommender system recommends different travel packages for tourist. This travel packages fulfils the tourist conditions and their needs.

Recommender system for tourists have been studied in [1],[3],[6],[7]. For instance, the works in [1],[6] mainly focused on development of mobile tourist guide. Mobile recommender system, which is developed by Averjanova et al. Can provide users with some personalized recommendations [3]. The detail works of above things are exploratory in nature, due to that working; the problem of leveraging unique features to distinguish travel package recommendations remains open. For designing and implementing an effective recommender system for travel package recommendation, there are technical and domain challenges must be inherent. First, suppose movies for recommendations. The cost for travel is more expensive than watching a movie. Watching more than one movie in each month is normal thing for costumer, while they may only travel one or two times in one year. Second, travel package has intrinsic complex spatiotemporal relationships. Example, travel package consist of many landscapes/attractions, these are geographically collocated together[24,28,26]. Hence, the attractions which are present in travel packages have spatio-temporal autocorrelations. Third challenge is usually rely on user ratings, which are traditional recommender system. As when the user searching packages on website they found many results, so the most visited packages can be displayed them whenever they handling the tourism website. This can be done with the help of giving stable value to the most searching tour package items.

We addressed the above mentioned challenges in this paper, with the help of cocktail approach for travel package recommendation. The travel package recommendation system contains models, which helps to recommend the personalized travel package. In cocktail approach, first we analyse the key characteristics of travel packages. After analysing the time and travel destinations are divided into different seasons and areas. Later we develop a Tourist-Area-Season-Topic (TAST) model, which represent travel packages according to the different topic distributions. It can also represent the tourists by topic distributions. The topic distribution is nothing but the topic extraction is conditioned on both the tourists, and intrinsic features (i.e., location, travel season) of the landscapes. For gaining the latent relationship between the tourists in each travel group we extend the TAST model to the Tourist-Relation-Area-Season-Topic (TRAST) model. As a result, the TAST model can effectively capture the unique characteristics of travel data. Due to the above

results, we found that cocktail approach is more effective than the traditional recommendation techniques.

II. RELATED WORK

1) "Personalized Travel Package Recommendation"

by Qi Liu, Yong Ge, Zhongmou Li, Enhong Chen, Hui Xiong , [School of Computer Science and Technology, University of Science and Technology of China], 2011.
In this paper, tourist requirements, needs and preferences will be satisfied. For that purpose they use recommender system, which recommends the travel packages to the tourist according to their preferences. For designing and implementing such type of recommender system they address the technical and domain challenges. For that purpose they create the TAST model. TAST model represents the travel package and tourists by different topic distribution. With the help of this TAST model travel package recommendation must be personalized.

2) "A Cocktail Approach for Travel Package Recommendation"

by Meena Kusuma, Chelloju Raju, [ChristJjyothi Institute of Science and Technology Warangal, T.S., India],2015.
This paper provides a study of exploiting online travel information for personalized travel package recommendation. In this different travel packages will be distinguished from traditional items for recommendation. Here also authors first analyse the characteristics of existing travel packages and then develops the TAST model. TAST model can represent the travel packages and tourists by different topic distributions. On the basis of this topic model representation they propose the cocktail approach. Cocktail approach is used to generate the lists for personalized travel package recommendation. But for capturing latent relationships among the tourists in each travel group, authors extended TAST model to the TRAST model. Finally they evaluate a cocktail recommendation approach on real world travel package data.

3) "Travel Package Recommendation Using Cocktail Approach" by Ms Nandarani G. Kadam, Ms. Sarika Solanke, [Deogiri College of Engineering and Management Aurangabad, India], 2015.
As we have seen in recent papers that TAST model is commonly used, that is why TAST model represents the travel packages and tourists by topic distributions. In this project,here also the TAST model is used along with their extended version TRAST model. But in this project the existing system can be improvised with help of collaborative filtering and nearest neighbour system. In collaborative filtering, tourists past transactions are analysed in order to establish the connections between user and products. Due to this, the recommender system provides users with personalized suggestions for product or services. Nearest neighbour is the method which is used to find the similarity in topic of all the users. So it creates the group of similar users and find nearest neighbour.
After finding the nearest neighbour they predict the relationship among them using the TRAST model.

4) "A Cocktail Approach for Travel Package recommendation"

by Qi Liu, Enhong Chen, Hui Xiong, senior member, IEEE, Yong Ge, Zhongmou Li and Xiang Wu, 2014.
Recently this publisher publishes "Personalized Travel Package Recommendation" paper, in which they uses TAST model for personalize the recommendation. But in this paper they improvise all contents in personalized travel package recommendation and they create cocktail approach for travel package recommendation. For improvisation they propose topic modelling and collaborative filtering in the new recommendation system. For cocktail approach, seasonal collaborative filtering for tourists will be mentioned in the proposed system. Along with this they include TRAST model which captures the latent relationship among the tourists in each group. In this they majorly work on TRAST model along with the TAST model. And it results the recommendation system will be most probable than the existing system.

III.PROPOSED METHOD

In this paper, we have aim to make cocktail approach for travel package recommendations for the tourists. Hence the tourists and the items are the existing packages. We exploit a real world travel data provided by the travelling agencies for building a recommender system. Hence we develop the Tourist-Area-Season-Topic (TAST) model, which represent the travel packages and tourists according to the different topic distributions. In this model the extraction of the topics is conditioned on both the tourists and the intrinsic features like locations travel seasons of the landscapes. On the basis of the TAST model, we develop the cocktail approach for personalized travel package recommendation. It can be possible by considering some additional factors like seasonal behaviors of tourists, the prices of travel packages and the cold start problems of the new packages. Along with the TAST model we propose the Tourist Relation-Area Season-Topic (TRAST) model. The TRAST model is used for gaining the latent relationship among the tourists in each group. In this project we use two different systems that is collaborative filtering and the nearest neighbor.

A) Collaborative filtering:

Collaborative filtering [2] is used to extract the interest of the tourists from the record. Record contains tourist profile, hobbies, interests and other things which are useful for the recommendation. For developing this model we consider one travel website along with the real time data. As we mentioned that we first of all records tourist profile, with the help of this record we can compute the similarity between each tourist by their topic distribution similarity. Users with personalized suggestions for products or services can be provided by the recommender system. This system is dependent on the collaborative system (CF) [4], where past transactions are analysed in order to establish the connections between users and products. In this project we introduce some innovations to both cocktail approach and personalized recommendation. The flow analysis is as follows.

IJARCCE

ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 5, Issue 3, March 2016

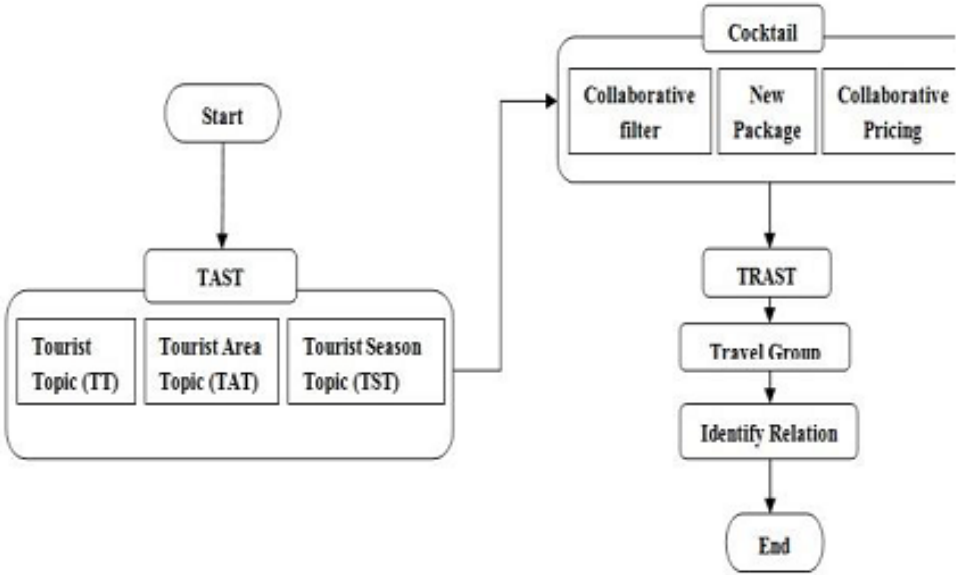

Fig. Flow analysis of the recommendation

B) Nearest neighbour:
This is used to find the similarity in the topic of all the users [5]. Here it creates the group similar users and find the nearest neighbour. After obtaining the similarities in between packages we can predict the relationship among them by using the TRAST model. Creation of group i.e., clustering validation set long challenge in the clustering literature.

This can be possible with the help of clustering algorithms. Measures of the clustering validations have been developed for evaluating the performance of clustering algorithm. These measures provide inconsistent information about the clustering performance and the suitable measures remains unknown. So we make complete work by giving an organized study of 16 external validation measures for K-means clustering [8]. For that purpose we first introduce the importance of measure normalization in the evaluation of clustering performance.

IV. MODULES OF PROPOSED SYSTEM

1) Authentication:
The first module is authentication module. In this module, tourist first of all logged in into the website. If they don't have authentication to access the website, they cannot be log in to the website. For gaining the authentication tourist have to be registered with the website. After registration we give them one time password (OTP). With the help of this password. Tourist can make their own profile on the website. In this way we provide security to the website from the intruders.

2) Search:
In this module, tourist search packages according to their interests. After searching travel packages, they select and add them into their profile. In this module we uses collaborative filtering, due that recently seen packages and other updated new packages will be displayed them on the website.

3) TAST model:
After searching and selecting the travel package, TAST model working will be started. TAST model represents the travel package and tourists according to the different topic distributions. The topic must be noticed on the basis of the selected travel packages. Also the seasonal interest of the tourist is measured in this TAST model. In this model collaborative model will again used. The collaborative filtering works on the created packages and it removes the unwanted packages. After that the clustering evaluation of the packages can be takes place. And then the package creation will be started.

4) Package Creation:
After clustering evaluation of package, clustering can be proceed with the help of K-means clustering. Here the TRAST model working started, in which it represents the latent relationship among the tourists in each travel group. Also the nearest neighbour system is working under this model. As the created packages by tourist will be analysed and then the nearest package which is affordable to the tourist can be selected. After that the selected package will be recommended to the tourist.

V. CONCLUSION AND FUTURE WORK

For all upcoming evolutional systems like e-commerce sites cocktail model performs better and other model like Cocktail-/TTER have the second best preference. Cocktail is nothing but the combination of all same functioning things. In cocktail model platform there is the combination of all models. If we compare all models cocktail model gives best result. The cocktail model is works on the tourist profile and the travel package logs. The TAST model is used for detecting the seasonal interest, topics and other interest of the tourist. So the output of this TAST model is given as input to the cocktail model. After that the collaborative filtering performing on those packages and removes unwanted packages.

DOI 10.17148/IJARCCE.2016.53190

When we implement the paper we get the correct results. So we think cocktail approach contain accommodation parameter.

REFERENCES

[1] G. D. Abowd, C. G. Atkeson, J. Hong, and et al. Cyberguide: A mobile context-aware tour guide. Wireless Networks, 3(5), pp. 421– 433, 1997.

[2] R. Pan et al., "One-Class Collaborative Filtering," Proc. IEEE Eighth Int'l Conf. Data Mining (ICDM '08), pp. 502-511, 2008.

[3] O. Averjanova, F. Ricci, and Q. N. Nguyen. Map-based interaction with a conversational mobile recommender system.In UBICOMM'08, pp. 212–218, 2008.

[4] Q. Liu, E. Chen, H. Xiong, C. Ding, and J. Chen, "Enhancing Collaborative Filtering by User Interests Expansion via Personalized Ranking," IEEE Trans. Systems, Man, and Cybernetics, Part B: Cybernetics, vol. 42, no. 1, pp. 218-233, Feb. 2012.

[5] B. D. Carolis, N. Novielli, V.L. Plantamura, and E. Gentile, "Generating Comparative Descriptions of Places of Interest in the Tourism Domain," Proc. Third ACM Conf. Recommender Systems (RecSys '09), pp. 277-280, 2009.

[6] F. Cena, L. Console, and et al. Integrating heterogeneous adaptation techniques to build a flexible and usable mobile tourist guide. AI Communications, 19(4), pp. 369–384, 2006.

[7] J. Wu, H. Xiong and J. Chen, &ldquo,Adapting the Right Measures for K-Means Clustering,&rdquo,Proc. 15th ACM SIGKDD Int',l Conf. Knowledge Discovery and Data Mining, pp. 877-886, 2009.

[8] C. Ding, R. Jin, T. Li and H.D. Simon. A learning framework using Green's function and kernel regularization with application to recommender system. In ACM SIGKDD'07, pp. 260–269, 2007.

[9] U. M. Fayyad and K. B. Irani. Multi-interval discretization of continuous-valued attributes for classification learning. In IJCAI, pp. 1022–1027, 1993.

[10] F. Fouss, A. Pirotte, J.-M. Renders, etc. Random-walk computation of similarities between nodes of a graph with application to collaborative recommendation. IEEE TKDE, 19(3), pp. 355–369, 2007.

[11] Y. Ge, H. Xiong, A. Tuzhilin, and Q. Liu. Collaborative filtering with collective training. In ACM RecSys'11, 2011.

[12] Y. Ge, Q. Liu, H. Xiong, A. Tuzhilin, and J. Chen. Costaware travel tour recommendation. In ACM SIGKDD'11, pp. 983–991, 2011.

[13] Y. Ge, H. Xiong, A. Tuzhilin, etc. An energy-efficient mobile recommender system. In ACM SIGKDD'10, pp. 899–908, 2010.

[14] M. Gori, and A. Pucci. Itemrank: A random-walk based scoring algorithm for recommender engines. In IJCAI'07, pp. 2766–2771, 2007.

[15] T.L. Griffiths and M. Steyvers. Finding scientific topics. In PNAS'04 vol.101, pp. 5228–5235. 2004.

[16] Q. Hao, R. Cai, C. Wang, etc. Equip tourists with knowledge mined from travelogues. In WWW'10, pp. 401–410, 2010.

[17] Y. Koren, R. Bell and C. Volinsky. Matrix Factorization Techniques for Recommender Systems. In IEEE Computer, vol.42(8), pp. 30–37, 2009.

[18] Y. Koren. Factorization meets the neighborhood: a multifaceted collaborative filtering model. In ACM SIGKDD'08, pp. 426– 434, 2008.

[19] N.N. Liu, Q. Yang. EigenRank: a ranking-oriented approach to collaborative filtering. In ACM SIGIR'08, pp. 83–90, 2008.

[20] A. Mccallum, X. Wang, and A. Corrada-Emmanuel. Topic and role discovery in social networks with experiments on enron and academic email. JAIR 30,pp. 249–272, 2007.

[21] Jayant Rajurkar, Lalit dole, " A Decision Support System for Predicting Student Performance", International Journal of Innovative Research in Computer and Communication Engineering(IJIRCCE). Vol. 2, Issue 12, December 2014, Pages-7232-37.

[22] P. Resnick, N. Iacovou, M. Suchak, P. Bergstrom and J. Riedl. GroupLens: an open architecture for collaborative filtering of netnews. In ACM CSCW'94, pp. 175–186, 1994.

[23] Jayant Rajurkar, T.K.Khan," Efficient Query Processing and Optimization in SQL using Compressed Bitmap Indexing for Set Predicates", IEEE Sponsored 9th International Conference on Intelligent Systems and Control (ISCO) Page No.619-623.DOI.10.1109/ISCO.2015.7282354.

[24] M. Rosen-Zvi, T. Griffiths, M. Steyvers and P. Smyth. The authortopic model for authors and documents. In UAI'04, pp. 487–494, 2004.

[25] Jayant Rajurkar,T.K.Khan,**"** Review on Efficient Query processing for Set Predicates of Dynamically Formed Group"**,** International Journal of Advanced Research in Computer Science and Software Engineering(IJARCSSE),Volume 4, Issue 9, ISSN: 2277 128X, pp. 640–643, September 2014.

[26] B. Sarwar, G. Karypis, J. Konstan, and J. Riedl. Application of dimensionality reduction in recommender systems-a case study. In ACM WebKDD Workshop, pp. 82–90, 2000

[27] X. Wu, J. Li, S. Neo. Personalized multimedia web summarizer for tourist. In WWW'08, pp. 1025–1026, 2008.

[28] M. Xie,L. V. S. Lakshmanan, P. T. Wood. Breaking out of the box of recommendations: from items to packages. In ACM RecSys'10, pp. 151–158, 2010.

[29] H. Yin, X. Lu, C. Wang, N. Yu, L. Zhang. Photo2Trip: An Interactive
Trip Planning System Based on Geo-Tagged Photos. In ACM MM'10, pp. 1579–1582, 2010.

[30] J. Yuan, Y. Zheng, C. Zhang, etc. T-drive: driving directions based on taxi trajectories. In ACM SIGSPATIAL GIS'10, pp. 99–108, 2010