Recommender System Based on User's Preference Transition

Harshada Bharude[1], Ankeeta Girap[2], Pratik Patil[3], Prof.Nidhi R.Sharma[4]
[1, 2, 3, 4] Dept of Computer Engineering
[1, 2, 3, 4] Mumbai University

Abstract- *Recommender systems have become an important tool for users to identify interesting items and also for businesses to promote their products to the right users. With development in social networks, travellers have begun to seek recommendations and advise from websites like Trip Advisor. While travellers are willing to share their opinions on social networks, which provides an opportunity for hospitality businesses to learn their customers' preferences. Given these preferences data, recent advances in machine learning research has made it possible to build automatic recommender systems that can generate hotel recommendations tailored for each traveller.*

Keywords- Recommender Systems, Collaborative Filtering, Hotel Recommendation.

I. INTRODUCTION

Recommendation Systems aim to suggest items like hotels, books, movies, tourism attractions, etc. that are potentially to be liked by users. To identify the appropriate items, recommendation systems use various sources of information like the content of the items and the historical ratings given by the users. These systems were originally designed for users with insufficient personal experience or with limited knowledge on the items. However, with the rapid expansion of Web and e-commerce, overwhelming number of items is offered, and every user can be benefited from recommender systems. Chen and Chuang well-studied the topic Hotel recommendation in a hospitality research (2016). Many of the travellers receive similar recommendations through static methods, like newspapers and television. Due to the advancements in internet hotel recommendation has acquired an interactive form, where travellers can now read recommendations and reviews shared by other travellers on social network, such as Twitter, Trip Advisor. However, in all of these recommendation scenarios, travellers receive the same recommendation without personalization. For example, a traveller with limited budget may still be recommended with an expensive hotel because of its high average rating. Considering there are thousands of hotels in a popular destination, it is impractical for travellers to find out the hotel they really need by simply sorting the hotels via a criterion.

Consequently, personalized hotel recommendation is needed to identify a small set of hotels what are potentially to be liked by travellers. Over the last decade there have been rapid advances in RecSys, from both academia and industry (Bennett and Lanning, 2007) numerous recommendation techniques have been proposed to achieve personalized recommendation.

This paper aims in identifying issues presented in hotel recommendation and review its techniques in the context of hospitality.

II. IDENTIFY,RESEARCHANDCOLLECT IDEA

For this project, we have studied three published papers, which are similar to our field. The three papers which we have studied are:

[1] Amer-Yahia, S., Roy, S. B., Chawlat, A., Das, G., & Yu, C. (2009). Group recommendation: Semantics and efficiency. Proceedings of the VLDB Endowment, 2(1), 754-765.
[2] Brun, A., Hamad, A., Buffet, O., & Boyer, A. (2010, September). Towards preference relations in recommender systems. In Preference Learning (PL 2010) ECML/PKDD 2010 Workshop.
[3] A personalized hotel selection engine. In Proceedings of the third European Semantic Web Conference.
[4] Bennett, J., & Lanning, S. (2007, August). The Netflix prize. In Proceedings of KDD cup and workshop (Vol. 2007, p. 35).
[5] A personalized hotel selection engine. In Proceedings of the third European Semantic Web Conference.

We carefully studied the given paper. From the first paper "Group recommendation: Semantics and efficiency. Proceedings of the VLDB Endowment" we saw that they studied the problem of group recommendation. Single user recommendation has received significant attention in the past due to its extensive use in Amazon and Netflix. How to recommend to a group of users who may or may not share similar tastes, however, is still an open problem. The need for group recommendation arises in many scenarios: a movie for

friends to watch together, a travel destination for a family to spend a holiday break, and a good restaurant for colleagues to have a working lunch. In this paper, we analyse the desiderata of group recommendation and propose a formal semantics that accounts for both item relevance to a group and disagreements among group members.

In the second paper, we studied that,In Collaborative filtering-based recommender systems exploit user preferences about items to provide them with recommendations. These preferences are generally ratings. However, choosing a rating is no easy task for any user; the rating scale is usually reduced and the rating values given by the users may be influenced by many factors. The ratings are thus not completely trustworthy. This paper is a first attempt at studying the expression of preferences in collaborative filtering under the form of preference relations instead of ratings. When using preference relations, users are asked to compare pairs of resources. We propose new measures to compute recommendations using preference relations. First experiments have been conducted on a state-of-the-art corpus of the recommender systems domain and show that this new approach compares with, and in some cases improves the classical one.In the third paper, "A personalized hotel selection engine. In Proceedings of the third European Semantic Web Conference"in this paper, the framework provides methods for modelling domain specific expert knowledge and integration of diverse heterogeneous data sources. Semantic technologies enable business customer to formalize their requirements and to combine those requirements with aggregated hotel information like location or features, thus achieving a selection of the hotels ranked according to the customer's requirements.

III. WRITEDOWNYOURSTUDIESAND FINDINGS

We have compared the case studies to determine what are merits and demerits of each paper and how can it be beneficial to us.

Sr.	Papers	Merits	Demerits
1.	Group recommendation: Semantics and efficiency. Proceedings of the VLDB Endowment	studies the problem of group recommendation	No emphasis on the strategies that would be used to implement it
2.	The Netflixprizes. In Proceedings of KDD cup and workshop (Vol. 2007, p. 35).	to develop systems that could beat the accuracy of its recommendation system	Netflix recommendations are not accurate in all conditions
3.	A personalized hotel selection engine. In Proceedings of the third European Semantic Web Conference.	It includes an method to efficiently search hotels	Limitations in location based search

Thus, we can make a web portal where we would provide e-counselling to all the engineering students and also information about the latest technologies in the market.

- Our model will be trained well to accurately give the desired output of career choice to the person.
- Our model will be regularly modified to make sure our data is not outdated.

IV. CONCLUSION

This work has mostly been focused on the data analytics methods used in the project.At first, we reviewed the research papers and applications that are nowadays used in similar perspective as ours. There are different applications and sites through which 'Career Guidance' is achieved. The method we came up with gave efficient and effective result as we are using data analytics to analyse each case individually and considering all demographics. We are going to focus on

implementation part which uses decision tree classifier. During analysis of the project, we faced difficulty in data collection and validation, which have been described in our methodology section. Finally, the results of the implementation of the decision tree algorithm have been successful. The application is now able to suggest career choices to students, professional and even unemployed based on data analysis.

V. ACKNOWLEDGMENT

Having endured the experience, there were many who helped us in our project and we very much like to thank them all.

We are deeply indebted to our beloved Principal Dr. M. Z. Shaikh and Our Head of Department (HOD) Dr. D. R. Ingle, for giving us this valuable opportunity to do this project and we express our hearty thanks to them for their assistance without which it would have been difficult in finishing this report synopsis successfully.

We also thank our Project Coordinator, Prof. Rahul Patil and our Project Guide *Prof.NidhiR.Sharma*. for helping and advising us during the work and who gave us this opportunity to work on this project on "Recommender System based on User's Preference Transition" which also helped us in doing a lot of Research and we came to know about so many new things we are really thankful to all of them.

It is great pleasure to acknowledge the help and suggestion, which we received from the department of computer engineering. We wish to express our profound thanks to all those who helped us in finding information about report. Much moral support and encouragement has provided on numerous occasions by our whole family.

REFERENCES

[1] Amer-Yahia, S., Roy, S. B., Chawlat, A., Das, G., & Yu, C. (2009). Group recommendation: Semantics and efficiency. Proceedings of the VLDB Endowment, 2(1), 754-765.

[2] Bennett, J., & Lanning, S. (2007, August). The netflix prize. In Proceedings of KDD cup and workshop (Vol. 2007, p. 35).

[3] A personalized hotel selection engine. In Proceedings of the third European Semantic Web Conference.

[4] Garcia, I., Sebastia, L., Onaindia, E., & Guzman, C. (2009, September). A group recommender system for tourist activities. In International Conference on Electronic Commerce and Web Technologies (pp. 26-37). Springer Berlin Heidelberg.