Travel Direction Recommendation Model Based on Photos of User Social Network Profile

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Abstract *:*Recommendation systems are used to recommend best travel plans to users, based on data available about user ,history and that particular location. The system is automatically mining user's and routes' travel topical preferences including the topical interest, cost, time and season .Matrix factorization is one of the most important part of travel Recommendation Systems. With tremendous growth of availability of online data through social media POI's, there is need of scalable Recommendation Systems to accommodate new data with consistent performance. Many researchers believe Deep Learning based Recommendation Systems can be potential for future recommendation systems. In this paper many Deep Learning based Recommendation Systems are studied to identify their advantages, limitations and scope for future work.
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***Index Terms*–Recommendation Systems, Deep Learning, Travel Recommendation, Matrix factorization**

I. Introduction

Recommendation systems are widely changing technology which allows users to overcome tremendous number of choices and allows marketing companies to know their user's preference and taste. Recommender Systems are used to predict user preference by understanding user's point of interest with the help of past data available about user on Facebook. Recommendation system recommends nearest travel locations from our current location according to our budget.

Collaborative filtering recommender system predict user preference with the help ratings from other users which have similar preference and taste as given user. Content -based recommender system predict user preference based on content of items user previously liked. Each of these recommendation systems have their own advantages and limitations

Deep learning is part of machine learning algorithms which use neural network with more than one hidden layer. With recent development deep learning have improved various application field like Computer Vision, Natural Language Processing, Speech recognition and Image Processing. Traditional recommendation system had scalability problem and performance issues. With deep learning achieving such a feat in many application fields, recommendation systems have also become potential application field of deep learning which is yet to be fully exploited.

II. Literature survey

Shuhui Jiang, et al[1] There are two main challenges for automatic travel recommendation. That are, recommended POIs should be personalized to user interest and It is important to recommend a sequential travel route rather than individual POI. The visiting time of POI mainly presented the open time through travelogues, and it was hard to get more precise distributions of visiting time only through travelogues. The current system only focused on POI sequence recommendation and did not include transportation and hotel information, which may further provide convenience for travel planning. We are planning to enlarge the dataset. We could do the recommendation for some non-famous cities. We plan to utilize more kinds of social media to provide more precise distributions of visiting time of POIs and the context aware recommendation.

Junge Shen, et al[2] The travel information is spread to different social media . They are consequently slows down the development of smart travel guide systems. Current commercial travel websites only tells about the tourists. The aim of travel guide system is to provide friendly assistance to users for intelligent travel. An important challenging problem for a smart tour guide is how to improve user experiences of landmarks using text matching. The landmarks are re-ranked based on the proposed heterogeneous travel information fusion scheme. The multi-topical latent features are mined which fuse the textual and visual information seamlessly. User ratings are employed as a measure of social popularity to get the final heterogeneous information fusion. Subjective and objective evaluations indicate the advantages of the proposed system. We can fuse heterogeneous information. Videos are also important source to represent the landmarks. They could be introduced for heterogeneous multimedia mining in the future version. The context information is also valuable to investigate to implement personalized ranking in a mobile.

Maarten Clements, et al [3] To provide the recommendations, the system needs to have an accurate way to find similarities between locations or people. We can propose to exploit the past visiting behavior of people to build a location similarity model .It can be used for personalized location predictions. The proposed method is more conservative but it gives stable recommendations in all experiments. Using these results we can assume that these weighting methods will also be more effective in a recommendation system. But only when the full user profile is used as training data. The popular locations are not most interesting places to recommend, because the user is already familiar with it.

HuijiGao, Jiliang Tang, et al[4] It can mine people's regularity by analyzing their location history. We can recommend users an efficient route according to real-time traffic condition before they go to work . They propose a novel data mining method TCBA which can mine user daily behavior based on location history. On behavior analysis of both location history and everyday regularity complement the insufficiency of the past studies is focused only on the aspect of mobility analysis or user behavior. We will apply TCBA on more real datasets and evaluate its performance under different conditions. We will also consider the matching constraint to mine user daily behavior closer to people's real life. The daily regularity can be analyzed based on location history, we will pay more attention to applying TCBA on location-based services.

Xueming QIAN, et al [5] Collaborative filtering based recommendation is the most well-known approach and is widely utilized in products, services ,and travel recommendations Author topic model-based collaborative filtering method for personalized travel recommendations is proposed by Quan. User's topic preference can be mined from the textual descriptions attached with their photos via author topic model. Through ATM, travel topics and a user's topic preference can be elicited simultaneously. In we will first deeply combine the tags and GPS coordinates to mine user travel preferences.

Lingchen, et al [6] PLSA topic model is used to mine the topic distribution of user travel histories. And then it builds the user-user similarity matrix based on the topic distribution. It is used to find top most N most similar users and mine the preference of user. We can extract the extra attributes of photographers like age and gender. We can not take offline experiments. We have to evaluate the recommendation comprehensively. Due to lack of quantity and quality the given system is not that much better in performance. Some memory based methods are efficient. They should maintain the large matrix.

Shuhui Jiang, et al [7]The system can automatically mine users travel preferences including the cost , Interest and season. They recommended POIs and travel sequences considering popularity and user travel p references. We are planning to enlarge the dataset. We can add some non famous cities and we can utilize more kind of social media to provide more precise distribution of visiting time of POIs .We will plan to utilize more kind of social media to provide more precise distribution of visiting time. Some POI recommendations suffer from data scarcity problem rather than other recommendation problems. We can not include ranking of POIs in the querying time. Most of the model based methods perform better in real time and more stable than memory stored methods.

Yang Ji, et al [8]From this we can mine the people's daily regularity by taking their location history into consideration. It is mostly used in commercial enterprises to find the users daily regularity. It will help us to provide services more conveniently and accurately. We can recommend best route to user according to real time traffic condition before they go to work or for some other meetings. Given system only gives the user daily behavior of user based on location history. But our system gives both location history and everyday regularity. We can use TCBA on more real datasets .We can evaluate performance according to different conditions. We can also take matching constraints to check user daily behavior .

III. Analysis

In this section, we have analyzed No. of matching strings of Facebook data for each preference in Levenshtein distance algorithm with respect to Aho-Corasick Algorithm

Sr.No	Query	No.of Matched in Aho-corasick	Levenshtein distance algorithm.
1	Historical	3	6
2	Religious	2	9
3	Garden	6	7
4	Entertainment	7	10
5	Meditation	15	17

Table 1 : Comparison of string matching Aho-corasick Algorithm with proposed Levenshtein distance algorithm.

IV .Future Scope and Research Area

We have suggested a personalized travel sequence recommendation system by learning topical package model from big multi-source social media POI's. We see many deep learning-based recommendations systems through

our literature review. Current recommendation systems face problems like scalability where these huge volume of incoming data needs to be accommodated in recommendation system, deep understanding of user-item interaction, cross domain recommendation where multiple domain help each other learn user preferences better and incorporation of new deep learning techniques like machine reasoning for better recommendation systems..

Many deep learning-based recommendations techniques are being proposed every year by researchers. Even though these techniques outperform traditional recommendation techniques, there are still challenges to overcome by these techniques. Even though deep learning is being used for recommendation system, it still has room for growth and machine learning advances recommendation systems will be affected too. That's the reason why deep learning-based recommendation systems have been good topic for research in recent years.

V. Conclusion

In this paper we discussed in brief about recommendation systems and deep learning and reviewed many deep learning-based recommendations systems. These techniques overcome limitations of traditional systems but still have many challenges to tackle. We discuss limitation and future scope for each of these systems. We hope our study paper help others understand current deep learning-based recommendation systems and direction for future research and work.

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