

Recommendation System Based on Tourist Attraction

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Abstract - A user-based tourist attraction recommender system is developed in this paper. The recommender system is constructed as an online application which is capable of generating a personalized list of preference attractions for the tourist. Modern technologies of classical recommender system, such as collaborative filtering are considered to be effectively adopted in the tourism domain. On the basis of collaborative filtering principle, the recommendation process of tourist attractions divided into three steps, representation of user (tourist) information, generation of neighbor users (tourists) and the generation of attraction recommendations. In order to calculate the similarities between each user, the Cosine method is adopted during the process of the generation of neighbors. And then the recommendations of attractions are generated according to the visiting history of the user's neighbors. In order to demonstrate the calculation process of the system, a case is demonstrated in detail.

Key words: recommender system, Tourism industry, Location-based service, collaborative filtering.

1. INTRODUCTION

Tourists can find tourism information on blogs, forums, websites of points of interest etc. However, information overflow can occur on the internet as there is still a lack of focus on the use of recommender technology in the tourism field. During a trip, tourists need to be able to obtain tour information in a timely manner whenever there are any changes in their planned trip. Recommendation of tour information is vital for users, for the recommendation system to succeed; it must be able to provide tourism information based on the user's preferences and current location. There is also increasing demand for more information on local area attractions, such as local food, shopping spots, places of interest and so on during the tour. The goal of this research is to propose a suitable recommendation method for use in a Recommendation System Based on Tourist Attraction to provide personalized tourism information to its users. The objectives of this study are:

- To propose a framework for a Location-based Traveler Recommender System.
- System will find out recommendation list of city wise tourist places and hotels using data mining techniques
- Logged in users profile analysis and profile wise collaborative filtering
- Specified city wise tourist places re-ranking depending upon their ratings and reviews
- User will select particular place to view its details
- Selected place wise hotels re-ranking depending upon hotels ratings and reviews
- Result delivery with hotels and place details.

2. DATA MINING TECHNIQUES

2.1 Users Profile wise collaborative filtering

Collaborative filtering (CF) provides a way to do recommendation on the web. Collaborative filtering creates a database of preferences for items by users. In the design of the user preference data set, different attributes are considered to describe the various degrees of detail of user's profile. User based collaborative filtering is a method of recommendations from a dataset, to a user based on similarity between the interest profile of a user and those of other users. In other words, it can be explained as a method to predict the ratings for a product by a target user with the help of other similar user's rating behavior and buying behavior. Basically CF recommendation system finds the aggregation of nearest neighbor. Suppose there are many users who are nearest similar to target user these users will be considered as nearest neighbors.

- At the time of registration, user will specify all the details about their liking.

- Users travel/search history wise collaborative filtering.
- When user searches any tourist spot, system will track his click through data.

Tourist places ratings and reviews based collaborative filtering

- Users will rate tourist places on various objectives
- Users will specify reviews about visited places and hotels, which will be used to find out the ranking of particular place and hotels.

2.2 Collaborative Filtering Recommendation

A collaborative filtering recommender system displays recommendations based on the preferences of similar users. The results are based on the feedback from users who are similar to the target user instead of on the target user's own past preferences. The accuracy of a collaborative filtering method depends on the number of items which can be associated with certain users. There are many tourism systems using collaborative filtering; one of them is the Multichannel Adaptive Information Systems (MAIS) project. Techniques used in collaborative filtering include memory-based collaborative filtering and model-based collaborative filtering. Memory-based collaborative filtering, also called user-based collaborative filtering, uses statistical techniques to find users surrounding or near the target user, and forecast results according to those users who have similar preferences. This algorithm is based on users' voting (or rating) patterns and the correlations between them. There are scalability problems with this method. The model-based collaborative filtering technique is widely used as it is scalable with huge databases. Its algorithm uses clustering techniques to cluster users into highly similar groups and makes recommendations based on the group into which the target user is clustered. This method solves the scalability problem as the recommendation process seeks the user rating only from the clustered group instead of from the whole database. In addition, new items or information added to the database are neglected by the recommender system as there is no initial rating for the item. These scalability, accuracy and "cold start" problems of a collaborative filtering recommender system are issues to be concerned about, especially in a mobile application. Figure 1 shows the architecture of a collaborative filtering recommender system used in tourism.

It uses the neighbourhood estimator compared with a target user profile to produce recommendations. The recommender system gathers rating data from a ratings database and user profile data from a user database. These data are used to estimate the neighbourhood which shares the most similar characteristic with the target user.

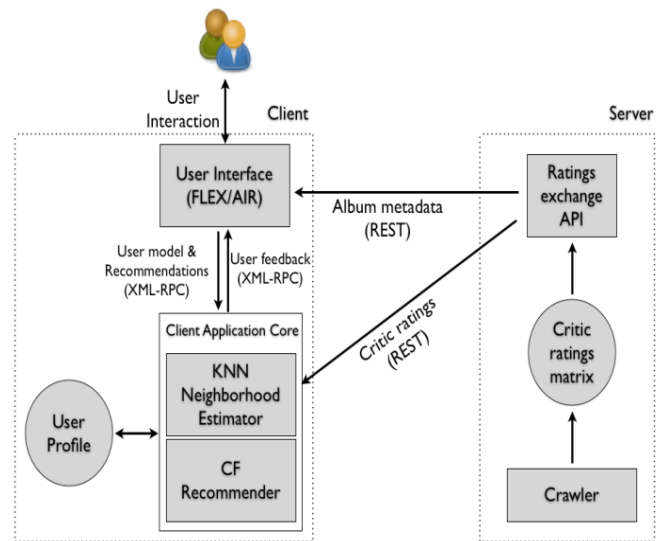


Fig 1: Collaborative Filtering Recommendation Architecture

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2.3 Data mining algorithm

The data collected from different applications require proper mechanism of extracting knowledge/information from large repositories for better decision making. Knowledge discovery in databases (KDD), often called data mining, aims at the discovery of useful information from large collections of data. Data mining (sometimes called data or knowledge discovery) is the process of analyzing data from different perspectives and collecting it into useful information. Data mining software is one of a number of analytical tools for analyzing data. It allows users to analyze data from many different dimensions or angles, categorize it, and summarize the relationships identified. Technically, data mining is the process of finding correlations or patterns among dozens of fields in large relational databases. The development of Information Technology has generated large amount of databases and huge data in various areas. The research in databases and information technology has given rise to an approach to store and manipulate this precious data for further decision making. Data mining is a process of extraction of useful information and patterns from huge data. It is also called as knowledge discovery process, knowledge mining from data, knowledge extraction or data/pattern analysis.

Data mining is a logical process that is used to search through large amount of data in order to find useful data. The

goal of this technique is to recommendations of attractions are generated according to the visiting history and from users profile. Once these patterns are found they can further be used to make certain decisions for development desired place.



Fig 2: Working of recommendation system

In Figure 2 the working of our study is define that include the steps registration/login process of user that's required for the priority of user to recommend the place according to user profile. If the two or more user has the same profiles then suggest the places by the frequent user profile. The user also can find the places by city wise, and can re-ranking that tourist place. Also the system give the nearest hotels suggestions than can also re-rank from their experience. History is save in the database for the suggest places. This all information is provided with the all details of places and hotels. So there are the some algorithms by using this user get their recommended place.

2.3.1 Pattern Matching

Pattern matching is the act of checking a given sequence of tokens for the presence of the constituents of some pattern. In contrast to pattern recognition, the match usually has to be exact. The patterns generally have the form of either sequences or tree structures. Uses of pattern matching include outputting the locations of a pattern within a token sequence. In this the project develops a methodology to find a suitable pattern to the user by filtering the information according to their pattern of profile and by tracking the frequent search of user.

2.3.2 Clustering

Clustering is a descriptive task rather than predictive. The goal is to find a finite number of unknown categories in

data set. An application is the subdivision of the customers in a database into several homogeneous subcategories to better understand their behavior. "Closely related to clustering is the task of probability density estimation which consists of techniques for estimating from data the joint multivariate probability density function of all of the variables or fields in the database."

2.3.3 Association Rule Mining

Association rules are one of the major techniques of data mining. Association rule mining finding frequent patterns, associations, correlations, or causal structures among sets of items or objects in transaction databases, relational databases, and other information repositories. The volume of data is increasing dramatically as the data generated by day-to-day activities. Therefore, mining association rules from massive amount of data in the database is interested for many industries which can help in many business decision making processes, such as cross-marketing, Basket data analysis, and promotion assortment. The techniques for discovering association rules from the data have traditionally focused on identifying relationships between items telling some aspect of human behavior, usually buying behavior for determining items that customers buy together. All rules of this type describe a particular local pattern. The group of association rules can be easily interpreted and communicated.

A lot of studies have been done in the area of association rules mining. First introduced the association rules mining in many studies have been conducted to address various conceptual, implementation, and application issues relating to the association rules mining task.

3. LITERATURE REVIEW AND RELATED WORK

In previous system Tourism web sites we can observe that only some of the existing systems provide services that go beyond a pure booking system's functionality. The most popular approach of recommender systems which have seen wide used is collaborative filtering method. Collaborative filtering models are based on collecting and calculations a large amount of information on users' historical behaviors, activities or preferences and predicting what users will prefer based on their similarity to other users. A critical advantage of the collaborative filtering approach is that it really doesn't rely on machine analyzable content and therefore it is capable of accurately recommending complex items such as movies without requiring an "understanding" of the item itself. As to the topic of travel information recommendation, the first attractive issue is the attraction recommendation.

4. ANALYSIS OF PROBLEM

In previous system there are many works which is manually done by tourist and they are not got the proper

information. Tourist visited the various links but they are not got their destination Also about the environment or weather, transportation tools, civilization. In Previous did not recommend the tourist, which attractions are better to attend, and identify, which information about attraction is better to be shown to the tourist. And also recommendation system not use which help to chooses an Internet source that provides description of the interested attraction based on other tourist's ratings. The presented recommendation system for tourist Such as position, to offer greater services to the user.

5. PROPOSED WORK AND OBJECTIVES

5.1 Proposed work

The starting point of collaborative filtering is: Suppose that users with similar interests should favorite to the same items as each other. So, as long as the maintenance of a database on the user's preference, the neighbor users with similar interests can be calculated by analyzing the stored preference, and then it can be recommended to the user based on the neighbor users' interest. On the basis of collaborative filtering principle, the recommendation process of tourist attractions can be divided into three steps.

- i. The representation of user (tourist) information. The visiting history of attractions by tourist need to be analyzed and modeled.
- ii. The generation of neighbor users (tourists). The similarity of tourists can be computed according to the visiting history data and the collaborative filtering algorithm presented by us. A neighbor tourist list can be calculated on the basis of known similarities.
- iii. The generation of attraction recommendations. Top- N attractions will recommend to the tourist according to the visiting history of his neighbors.

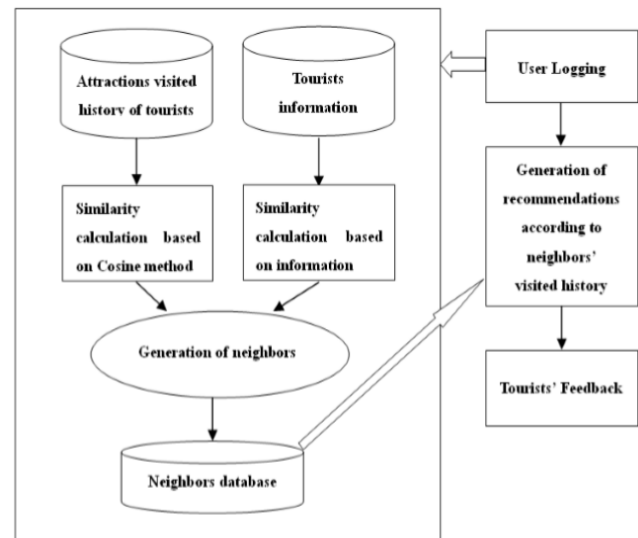


Fig - 3: Process of Attraction Recommendations

5.2 Objective

Recommender systems have grown as an area of both research and practice. A personal tourist attractions recommender system is considered as the effective way for tourist to tourist attractions search. The recommender system compares the collected data to similar and dissimilar data collected from others and calculates a list of recommended attractions for the tourist. Collaborative filtering is considered to be memory-based and model based collaborative filtering. By using this recommendation system tourist can easily searches their favourite destination and tourist requirements are fulfilled.

5.2.1 Data flow Diagram

This is stage of the project when the theoretical design is turned out in working system. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective. The framework involves careful planning, investigation of existing system and its constraints on implementation, designing of methods to achieve goal. In the first step users have to register with information like name, password type to visit the place. Then with the help of user id and password user can login. After this, user will searches the required place or just follow recommended places. Then he can enter the feedback and reviews about the place and hotels over there. Later, the system will generate the output by tracking the user input and generate according to pattern later places. After this operation, user may logout.

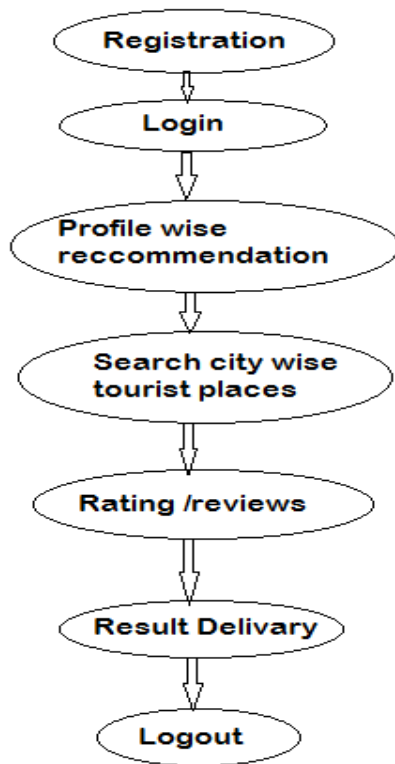


Fig - 4: Data Flow Diagram

6. CONCLUSIONS

This Recommendation System Based on Tourist Attraction website provides recommendation to the tourists to find suitable tourist places the system provides the information about location nearest hotels, and find distance between my locations to destination. By using three data mining algorithms like pattern matching, clustering and association by using collaborative filtering data mining techniques. By using this user finds there recommended places with the help of users preferences, neighbor users , user profile etc. and rank tourist places it helps to another tourists to find there tourist places.

7. FUTURE SCOPE

In future this application can be expanded to provide more accurate results by providing recommendations based on climate or time of the day.

After going through the surveying, it can be gathered that there is a huge scope of application development in mobile domain. Following the same notion, we can also develop application that can tackle following issues:

- Location positioning technologies
- Query processing

- Cache management
- Location Track
- Weather recommendation
- Social media upload

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