ITINERARY RECOMMENDATION SYSTEM BASED ON CONTENT-BASED AND COLLABORATIVE FILTERING

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Abstract : Growth in technology has led to generation of vast amount of data and information on the internet. Due to this information overload, it is likely that a reduction in decision quality will occur. As a solution, the Itinerary Recommendation System enables ease for the people who find it difficult to plan a vacation. This system sets up the user with some interesting itineraries based on his/her preferences. This is achieved by a combination of two methods viz. Content-based filtering and Collaborative filtering. By eliminating the places that the user is not likely to visit, we obtain the Point of Interests (POIs) that are favored by the users. The system will be provided to the user in the form of a Website. With the help of some clicks and spending a few minutes on the website, one can plan an ideal vacation with utmost ease and efficiency.

***Keywords* - Recommendation System, Content-based filtering, Collaborative filtering**

I. INTRODUCTION

Life in today's world has become so fast and hectic. People are getting more inclined towards their work life furthermore they hardly get any time for themselves. To set their mind free every individual deserves a good vacation. But planning a trip for vacation is also a challenging task which arises with a lot of questions like when to go? Where to go?, Where to stay?, How to go? Etc. Even after answering all these questions there is a probability that you won't get your planned itinerary.

Evolution in technology has made almost everything surrounding us digital. From performing large transactions to buying inexpensive things, everything is on the internet. Yet the current method of planning vacations is too time consuming and requires you to visit the tours & travel agencies. Even if a person tries to plan his/her own trip there is a chance of missing out on some interesting places. In addition, for every single place searched on the internet, we get hundreds of mixed reviews which can lead to confusion and hamper the decision making process. In order to make this task in-hand faster and more reliable, our system proposes to generate itineraries and provide them to the users online.

The Itinerary Recommendation System is a Web Application that can be accessed from any machine having an active internet connection. Users of this website have to answer some simple questions such as the number of days, mode of their transportation and the state of their choice. Based on their choices the website will recommend some itineraries out of which the user can select the one he/she desires. Each itinerary will give a pictorial representation of sequence of places that depicts the order in which they are to be visited.

The paper is organized as follows: Section II represents the work available in literature on related topics. Section III represents an in-depth explanation of the proposed system. Finally, Section IV draws the conclusion and future works related to the project.

II. REVIEW OF LITERATURE

[1] considers PoIs-based recommendations mining patterns of tourists' historical movement trajectories, the pattern of PoI sequences (a trail), similarity of the PoIs over the ones in a trail, etc. With those pattern, distances between a new PoI and historical PoIs can be calculated, the PoIs with shorter distance or high similarity can be selected as the candidate places.

[2] proposes a modified approach on the basis of content matching and association rule mining. The user need to give a sentence as a query, and the system will extract the number of travel days, places the person want to go(called Positive Demand), places the person doesn't want to go (called Negative Demand) from the query by natural language processing. And the remaining part of the sentence (called Implicit Demand) is a text description of the attractions he or she want to visit.

In [3] the authors analyzed a given geo-spatial region and recommended the most interesting locations according to the tree-based hierarchical graph (TBGH) built on user's GPS information. In this paper, based on multiple users' GPS trajectories, the authors aim to mine the interesting locations and classical travel sequences in a given geospatial region. The system first models multiple individuals' location histories with a tree based hierarchical graph (TBHG) and then, based on the TBHG, a Hypertext

Induced Topic Search (HITS) - based inference model is used. Lastly, the classical travel sequences among locations considering the interests of these locations and users' travel experience is mined.

[4] aims to suggest interesting points of interest to the tourists according to their profile. Suggestions are given on the basis of collaboration and context analysis. This work defines a context aware recommender system aimed at suggesting pertinent points of interests(POIs) to tourists. In particular, the approach is strongly based on synergy between soft computing and data mining techniques. Soft computing techniques are mainly applied in order to support activities of unsupervised users and POIs classification. While data mining techniques are exploited in order to extract rules to associate user profile and context feature with eligible set of recommendable POIs.

[5] Proposes a tourism recommendation system based on user's preference and POIs by calculating the degree of similarity between them. The Ontology based system makes uses of Spreading Activation (SA) strategy to improve the overall performance.

III. PROPOSED SYSTEM

The proposed Itinerary Recommendation System is an online web application based on content-based and collaborative filtering. Content-based filtering, also referred to as cognitive filtering, recommends POI based on a comparison between the type of POI and user preference. Collaborative filtering, also referred to as social filtering, filters information by using the recommendations of other people. It is based on the idea that people who agreed in their evaluation of certain items in the past are likely to agree again in the future.

The assess the effectiveness of the proposed system, we use a dataset called POI Dataset that stores all the details of locations. POI Dataset was built by scraping multiple websites. The dataset consist of latitude, longitude, time to visit, ratings, reviews, average cost, etc. Each location in the dataset is categorized. The category of each POI is represented as a set of terms like beach, adventure, monumental, nature. The same set of categories is provided to the user on the web application. The dataset of POI is reduced based on this filtering method. After reducing the dataset, the next step is to apply Collaborative filtering method. This method reduces the dataset based on the reviews provided by users. The locations with negative reviews are filtered out and the ones with positive reviews are retained. The filtered dataset is the list of best locations that the user is most likely to visit. Finally the list is arranged based on the mode of transportation specified by the user. Moreover, the order in which the places are to be visited is displayed on the Google Maps API. The Google Maps API also provides the user with the facility of Street View which gives a 360 degree view of any place on the map.

IV. CONCLUSION

With online Itinerary Recommendation System, the users can easily plan their vacations. Wide range of users can use the system if they have access to internet and basic knowledge of surfing the browser. Unlike traditional methods, the system is available to users 24 hours a day. Dynamic nature of the system makes it even more efficient.

Based on the result of the proposed system, it can be concluded that the system is based on user's needs and is completely user-centered. The system will also encourage people to plan trips which will increase the tourism and also generate revenue for the state. Thus, an automated recommender system is presented with different functionalities. The scope of the system is justifiable because any individual, rich or poor, with any designation can use the proposed system with utmost ease.

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