Travel Planner Based on User Preferences

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1 PROBLEM STATEMENT

The objective of our project is to generate an intelligent travel plan for the user, that will include tourist locations based on user's city of choice, travel preferences, number of days and reviews of other tourists; and it will also provide him/her with an optimized schedule of visiting those places.For city and places mapping we are going to use Indian Places Reviews[1] data-set available on Kaggle, this data-set with city and corresponding places in city also include reviews by different user,Figure-2 shows Sample Data-set. With the help of NLP task we will map user preferences with reviews and then further process choices of places with k-mean clustering algorithm.

2 MOTIVATION

Tourists often consult with travel agencies or travel websites on the internet, while planning their trips. However, most of these sources provide recommendations based on old, static data. Our idea is to utilize the user's preferences and reviews of other tourists who recently visited those places, to make a curated list of tourist hotspots that fit the user's choice.

Also, travel agencies and websites usually provide a fixed schedule of the static travel plans to the user, but our schedule dynamically adapts to the travel preferences of the user, including the number of days he/she has planned the trip for; and this schedule also optimizes the time and distance parameters, and is not restricted to some static choices unlike in the former scenario.

3 LITERATURE REVIEW

3.1 Recommendation System Based on Tourist Attraction [P.A. Manjare et al., 2016][2]:

The research paper built a recommender system to list out city-wise tourist places and nearby hotels. Data Mining techniques were applied. Also, a Collaborative filtering technique was used to recommend tourist locations, based on user profiles.

3.2 Mining Social Media to Create Personalized Recommendations for Tourists' visit [Popesco Adrian et al., 2011][3]:

In this paper, the author used geotagged photos and data from Wikipedia articles. The personalization model has been designed

from the user's tagging experience and also the experiences of similar users. Landmarks' popularity along with the above criteria have been carefully considered to generate recommendations based on the modified KNN algorithm.

3.3 A Travel Recommender System for Combining Multiple Travel Regions to a Composite Trip [Daniel Herzog and Wolfgang Worndl, 2014][4]:

This paper considers the travel recommendation task as an approximated Knapsack problem, where profit involves parameters like location ratings, activities etc. and the knapsack weight involves parameters like time and money. Then the tourist locations are suggested based on optimizing the Knapsack by getting the highest profit value.

3.4 From Photos to Travel Itinerary: A Tourism Recommender System for Smart Tourism Destination [Mickael Figueredo et al., 2018][5]:

This research paper built a module that can suggest tourist places on the basis of social media photos and recommends a set of tourist destinations using Convolution Neural Networks and Fuzzy logic on the tourists' visited locations.

3.5 User-based Collaborative Filtering for Tourist Attraction Recommendations [Zhiyang Jia et al., 2015][6]:

This paper analyzes the travel history of users and generates neighbors based on similarity with other users, using the collaborative filtering method. Based on this, whenever users login, tourist places are recommended based on the updated visit history of his/her neighbors.

3.6 ATIPS: Automatic Travel Itinerary Planning System for Domestic Areas [Yi-Ming Chang and Meng-Tze Tsai, 2016][7]:

In this paper Authors design a framework that takes departure and destination address as input and then framework generate nearby tourist spots, it uses "Travel scheduling algorithm" and "Tourist spot selection algorithm" with some greedy approaches to select tourist spot and then generate travel plan matching the preferences.

3.7 How Airbnb Tells You Will Enjoy Sunset Sailing in Barcelona? Recommendation in a Two-Sided Travel Marketplace [Liang Wu, Mihajlo Grbovic, 2020 Airbnb][8]

In this paper Authors proposes solution of host and guest side recommendation system through automatically knowledge graph building using web search trends based on location and user profiles, and recommend places with limited data availability ,Their approaches outperform traditional offline recommendation methods

4 PLAN OF WORK

- The user enters the city he/she wishes to visit and a description of his travel preferences in a word-limited text field.

- NLP-based text preprocessing such as stopword removal, stemming, lemmatization etc. are implemented on user's preferences, to churn out a list of tokens.

- Travel locations pertaining to the city preferred by the user, are selected from the dataset.

- Selected travel locations are further filtered based on a score, which is computed on a matching heuristic between the list of tokens that we had extracted from the user's preferences and the reviews of the travel locations put up by tourists, in the dataset.

- K-means clustering is performed on the travel locations, with K = no. of days and distance between places in the city and across the city, for this purpose we will fetch distance between places using Google Place API Travel locations in each cluster are to be visited on a particular day.

- Finally, for generating the schedule of visit, we perform shortest distance path computation between the centroids of the clusters.

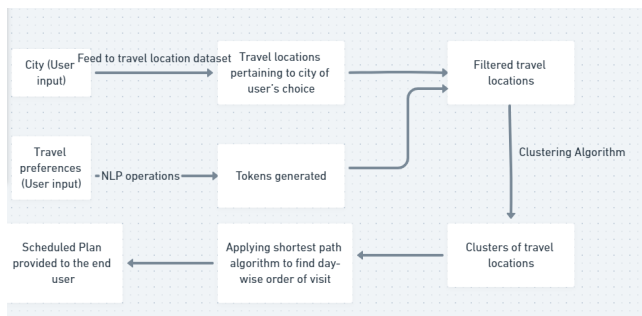- Figure 1 shows overall Architecture of our project.

5 FIGURES

Figure 1: Workflow Diagram

S.No	City	Places	Review
1	Aamby Valley City	19 Degree North	'aamby valley beautiful place clear blue skies fresh green grass family visited aamby valley celebrate mother birthday mom splendid time thanks pinky bharadwaj handling booking bombay'
2	New Delhi	Chhatarpur Temple	'known shree adya katyani shaktipeeth mandir km chhatarpur metro station big beautiful temple needs lot time completely explore place temple huge parking lot accommodate large'

Figure 2: Sample Data-Set

6 REFERENCES

[1] https://www.kaggle.com/shravanijadhav23/indian-places-reviews/data
[2] RecommendationSystemBasedonTouristAttraction
[3] https://www.researchgate.net/publication/221449162_Mining_social_media_to_create_personalized_recommendations_for_tourist_visits
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