CSE508 - PROJECT PROPOSAL

Tourist Attractions Recommendation and Information System

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Problem Formulation

The problem explored is the creation of a repository of different places for tourist attractions in India and a mechanism which can aid in free text query or a query based on image encapsulated by a friendly and easy to understand user interface.

Reason For Project

Unearthing useful and validated information about any particular place or a number of places for having a relaxing, enjoyable vacation is a difficult and tedious thing. In our today's fast paced and work laden life, searching for the perfect place for holidays takes a bit of time, which people cannot afford. An information-rich repository coupled with a quick information extractor and a friendly interface required for discovering offbeat places for a relaxing vacation is the need of the hour. This problem has been explored in the project.

Related Works

In [1], a user's representation is made and his or her neighbors are created based on their preferences and previously visited places. Cosine similarity is used for similarity calculation along with memory based and model based collaborative filtering.

In [2], user groups are created with KNN and based on current situation, user group preference, conveyance facilitating its reach in present scenario recommendation is provided. Brief description and images of the destination are gathered from the external websites, filtered and then ranked before presenting to the user.

In [3], the user's travel and personal information is gathered and a deep neural network is used to provide recommendations. Next, IOT devices are used to obtain real time information which again modifies the recommendation.

In [4], recommendation for a user will be dependent upon his profile and past travel experiences. The places are recommended using an ensemble recommender based on collaborative filtering, content-based filtering and demographic filtering. Also a dataset catering to the attributes and rating of the places and user details is created.

In [5], the user's travel photos or any other travel based or activity based photos are taken which are considered as photo query, then it is given to a CNN based pretrained image classifier for low resource devices called as EfficientNet-Lite to extract features from it and associate one of the 40 label tags to it. Then recommendation of tourist attractions is made by measuring cosine similarity between the user input image and tourist destination images of Indonesia stored in the database.

In [6] the users are classified in 3 age groups and the tourist spot from the user input image is detected. A deep learning based architecture TSR-Net which uses two pretrained MobileNet models is used for tourist spot recommendation to the user in Dubai.

Novelty of Work

Our proposed recommendation system provides free text query as well classification of a destination category based on image classification. Here a dataset containing categories of the places and their images will be created. We are not personalizing things for a user. From the free text, keywords relating to the destination like category, location will be earthed and the relevant places will be shown, ranked by their public ratings. Image based classification will provide the user with a particular category of places, again ranked. Along with these, if the user searches for a particular place, then nearby places in the same state and places belonging to similar categories will also be presented in the user interface.

Techniques or algorithms used :

There are two steps in the process, namely the keyword extraction from the free text and another will be predicting the category/ type of tourist attractions based on an image provided.
Keyword Extraction: Keywords will be extracted from our free text query using transformer model(s), preferably keybert
DL Model: DL based approach to find the category of the place whose image is provided. Then places based on the category will be shown in ranked order based on public ratings. The other techniques that will be used include: Inverted Index Construction, Cosine Similarity
Sorting Algorithms will also be used.

Evaluation Approaches/Metric

User feedback, Number of searches and queries on a particular destination , Discounted Cumulative Gain, Precision,Recall, F-β measure. Any one or a combination of the mentioned metrics will be used for evaluation in our project.

Potential Contributions

A new dataset for different tourist spots in India - Pranshu Patel, Md. Tasir
Free text query Processing - Indraayudh, Antara
Image based search for a particular category - Indraayudh, Antara
User Interface Development - Amey Pawar, Arun Sen.

References :

1. User-based Collaborative Filtering for Tourist Attraction Recommendations
2. Recommendation System for Tourist Attraction Information Service
3. Deep learning and Internet of Things for tourist attraction recommendations in smart cities
4. A personalized hybrid tourism recommender system
5. Deep Learning-based Mobile Tourism Recommender System
6. Tourist Spot Recommendation from Images based on Age Group and Location for Dubai using Deep Transfer Learning