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TITLE: PERSONALIZED ITINERARY RECOMMENDATION SYSTEM**ABSTRACT****Scope:**

Personalized itinerary recommendation system recommends a travel destination to a user with the help of minimal information from the user. The system focuses on the problem of a cold user i.e. a new user with no previous interaction with the system. The system has no information on the new/cold user. The recommendation system uses previous set of data obtained from previous travelers to key destinations and their experience with the said place. The user interacts with a chatbot interface to provide the system with required information.

Another key function of the system is to generate an array of itineraries for the recommended destination. The itinerary is generated based on the information available about the destination, user's information, from the chatbot interface, such as the budget, trip duration and traveller information. The itinerary will be generated with all the aforementioned information which is applied against a generated model that outputs an itinerary which is most convenient to the user. The itinerary is generated taking external factors such as the crowd density, season of travel, the costs associated with the activities available at the recommended destination into consideration to provide the most accurate, convenient and well-suited itinerary for the user .

Technology stack:

- Dialogflow:

Dialogflow will be primarily be used to provide a chatbot interface for the user to interact with the system. The chatbot interface provides a more human-like interaction with the system.

- Firebase:

Firebase is being used to store data required in the form of json files. The data will be used by the chatbot, data models and to store user information. It will also

be used to host and communicate with the chatbot.

- TensorFlow:

TensorFlow will be used to train and test the relevant data models to recommend both the destination as well as the itinerary. It's the technology of choice since a TensorFlow kit is available on Firebase.

- Jupyter Notebook:

The Jupyter Notebook web application will host the code training and testing the data models to recommend both the destination as well as the itinerary.

Benefits for the environment:

Travel recommendation system can provide many benefits to the environment. Instead of physically going to the travel agencies for the recommendation, the users can simply interact with the personalised itinerary recommendation system through a chatbot. Moreover, the travel agencies provide information to the users through brochures or pamphlets, resulting in a huge amount of paper wastage. Instead, the users can find the information regarding all the places through this online system. This reduces the use of paper and hence reduces the cutting down of trees, which directly benefits the environment.

Benefits for society:

Travel and tourism is considered as the biggest and most renowned industry in the world. Tourism has the potential to increase public appreciation of the environment and to spread awareness of environmental problems. The personalised itinerary recommendation system has the effect of guiding users in a personalised way to interesting places in a large space of possible options. Because of the easy interaction that the system provides to the user through a chatbot, it attracts more and more users to use this system thereby attracting them to different places. Certain users may even leave a full review of the places that they have visited which in turn benefits the other users. This helps to increase tourism and brings people into closer contact with nature and the environment. Moreover, Tourism is the fastest growing economic sector in terms of foreign exchange earnings and job creation. It has become one of the most important sources of employment. It also provides financial support for the conservation of the ecosystem and natural resources management making the destination more reliable and desirable to visitors.

Applications:

A lot of online travel websites in the market do not recommend a place of user's interest dynamically. Rather, they expect the user to enter the destination of their own choice. In this case, the user is burdened with the task of searching for a destination, even though he/she has no particular place in mind.

Personalized itinerary recommendation system helps overcome this problem and recommends travel destination to the user. As an added perk, the system also generates multiple

itineraries to choose from. This system utilizes an intuitive chatbot interface which improves the quality of user experience. By integrating this system into major travel websites, we can improve the overall user interaction and experience. Integration of this system will reduce the user's burden of going through the hassle of finding a travel destination and preparing an itinerary for the trip.