Travel Chatbot for Recommendation as Per the User Preferences

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Abstract - *People often travel to new destinations to explore. In this case, they get the help of a traditional travel agent or online travel websites. These provide them the information about the destination which they want to travel. As the destinations are new to the user, they have no idea about the places to visit, hotel bookings, tourist attractions, or mode of transportation. The traditional travel agent and travel website fail to provide detailed information about these things to the user who is traveling. To overcome this flaw, we present a solution by using an AI-based travel chatbot. Through the study of various papers about artificial intelligence, we found that by using the data available on the internet and user reviews on various online platforms we can train the model and create a chatbot that can help its user to get detailed information about their travel destination. There is various algorithm which can be used to create the chatbot. By training the model using these algorithms we can find which algorithm is the most efficient and use it to create the chatbot. The chatbot would collect user preferences and model a collective user knowledge base and give recommendations to the user. The chatbot can provide accurate predictions based on previous user travel preferences.*

Key Words: **Chatbot, DNN (Deep Neural Network), Restricted Boltzmann Machine (RBM), Natural Language Processing (NLP), Machine Learning (ML), Neural Net (NN). artificial intelligence**, *deep learning, GUI*

1. INTRODUCTION

Tourism industries consists of travel agent and online sites on which tourist are dependent when they want to visit any new place. The travel agent often fails to provide a detailed information about the place which one wants to visit. When one visits a new place, they have no idea about the place. They have to rely on the information provided by the agent o the information they get on the online sites. If the user has any query, he/she has to physically go to the agent to get a solution. Thus, we propose an intelligent travel chatbot based on artificial intelligence to overcome the issues faced by tourists. The chatbot is designed to first take the required input from the user and then it predicts the accurate answer to the query of the user. The chatbot application consists of a GUI where the user can interact with the chatbot. The query is then sent to the semantic analyzer which takes keywords from the query. The keywords are further passed to workflow manager. The keywords are then passed to the context aware module which looks for the information related to the keyword in the existing knowledge base and external services. The information related to the keyword is then provided to the user using the GUI. The answer given to

the user is based on the user preferences, past travel history and the ratings given by the other users. Once all data is collected the query is sent to the request handler to analyze and appropriate response is sent back to the user.

2. LITERATURE SURVEY

Ashay Argal, Siddharth Gupta, Ajay Modi, Pratik Pandey, Simon Shim, Chang Choo [1] used amazon Alexa platform for communication with the user. HMM, SVM, RBM algorithm used and had a data of 3000 epoch. The error reduces as the epoch increases. Accuracy of 83.2% was achieved using RBM.

Neelkumar P. Patel, Devangi R. Parikh [2] created a chatbot for the university website which provides the information related to the query of the student. They used the concept of Artificial Intelligence and Machine Learning. PH Language was utilized for the development of Chatbot. The query is applied as an input to algorithm, which processes the message and displays the corresponding response to the user. The Project GUI is similar to a Messaging Application.

 Dharani M, Sucharitha E, Jyostna JVSL, Likitha R [3] used deep learning techniques like LSTM to build chatbot. The chatbot is trained on the bus dataset which comprises of intents, patterns, and response. The libraries used are NLTK, TensorFlow, Keras, tflearn. The Keras sequential API was used with SGD optimizer to train data of 200 epochs where they received an accuracy of 100%.

Petre Anghelescu, Stefan Vladimir Nicolaescu [4] used search engines and teaching techniques to create a chatbot. Chatbot searches for the query by user on search engines. The chatbot is trained to give short and logical answers which replicates human. This is done by manually entering the responses from which the chatbot is trained. The chatbot is then able to answer the query asked by the user which simulate a human dialogue.

3. METHODOLOGY

In the following section we shall see the existing methods for AI based chatbot.

In [1], for front end of the system amazon echo device and amazon echo mobile application is used. The system consists of various independent modules which work together to form the chatbot. Aws Lambda is used for hosting flight, hotel and car booking module. A custom server is used to host the backend server for the modules with database service running alongside. The server also hosts content-based recommendation and collaborative filtering modules. mangoDB is used to store user details preferences and

interests. A web app is used to provide the user to register and login into the application. MySQL is used to store the sensitive data like the credit card details and passwords of the user. All the data available for flight, hotel, car rental booking was gathered using data mining, web scraping and API scraping methods and stored in a database

In [2], a university chatbot is created by generating a database of the common queries faced by the students. The database consists of keywords as questions and multiple answer to the questions are generated. The chatbot provides the details such as the syllabus, events, admission procedure and fees, basic university details, class timetable, important circulars, etc. the chatbot accepts the message from the user. The message then is split into words. SQL is used to check for the keywords from the input in the database. If the result produces single row, then the answer is displayed to the user. If multiple rows are produced then then display options to the user with the help of "title" column in the table. If no result is produced then all the keywords in "Answer" columns are checked. If a match is found the user's question and found answer is stored into another table. So, if same question is asked, the chatbot can provide answer. Otherwise, it displays sorry message to user.

In [3], the query by the user is given to the chatbot asking for the bus number which the user wants to use to reach its destination. NLU is used to map the input given by the user. The chatbot consists the data that have the bus number along with their routes. NTLK library is used which used TOKENIZATION to break the sentence into words. These words are used as keywords for the chatbot which looks for the appropriate answer in the database and returns to the user.

In [4], the chatbot answers by searching on the World Wide Web using search engines like Google and Wikipedia and create a very good and short answer. Chatbot is realized as a website application based on search engines, custom learning, custom cascading style sheets and JavaScript for making conversations more real.

4. PROPOSED METHODOLOGY

Our proposed system aims on replicating a human travel agent as a chatbot which provides adequate and accurate travel information to the user which sometimes the online websites or travel agents are unable to provide. With the help of travel chatbot one can get information any time as they need. The chatbot is designed to first take all the necessary input from the user. The system then looks for the keywords in the response submitted by the user. The user query is answered by taking into consideration of user preferences, travel history and user ratings. If the user has a new account the data for preferences is not available. In such case the chatbots asks the user about their preferences and then this information is stored in the database.

If any data is missing in the query, then the chatbot is designed to ask the questions related to query until it gets the answer that matches the missing information.

Some features offered by chatbot are mentioned below:

- Hotel bookings
- Flight bookings
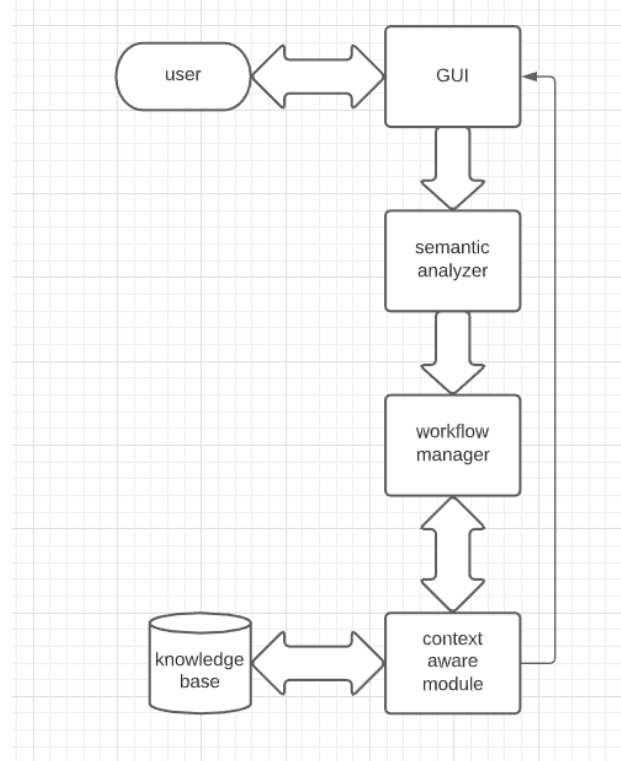- Tourist attractions
- Local transportation

Fig 1. Proposed system.

For this we are using various algorithm available. By training the model using the algorithms we will calculate the accuracy of each algorithm. The algorithm achieving the highest accuracy will be used to create the chatbot.

5. ADVANTAGES

For better information about a place a travel chatbot can be used by travelers. A travel chatbot helps in enhancing the user experience as it consists of a huge database which can be accessed by the user anytime for resolving their query. Chatbot simulates like a human travel agent so user can ask their query. Compared to traditional travel agent the travel chatbot has following advantages

1. Cost Effective

2. Better Customer Service

3. Saves Time

4. Access to Data

6. CONCLUSIONS

The main objective of the chatbot minimize the problems faced by travelers. Chatbots will have a great impact as it can be used to collect more knowledge about the user's preferences and simulate real world travel agent. Chatbot will use the data available on the internet and collective with user preferences can give accurate responses based on the query. Chatbot can simulate a human travel agent which enhances the user experiences. Most features available on the travel sites can be easily incorporated into the chatbot. With this chatbot a more accurate and personalized predictions can be created for user while communicating in natural language.

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