

Travel Assistant Chatbot System

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Abstract: The Artificial intelligence Chatbots have gained increasing importance for research and practice with lots of apps available today including Bixy, Google assistant. In this paper, we present the underlying methods and technologies behind a Chatbot for tourism that allows people textually communicate with the purpose of planning trips, and asking for interesting sights worth being visit and it displays the weather forecast of the particular region or sight you visit.

Keywords: Enter key words or phrases in alphabetical order, separated by commas.

1. Introduction

The most common complaint that users have with apps is that each one of them focuses on a different searches like one app provides information on tourist attractions in a particular city, another app provides real-time weather updates. In our project, Travel chatbots offer a cleaner alternative by using existing platforms like browsers or messenger apps that almost everyone has on their phone and make it possible for users to receive notifications without downloading separate apps for each of the services during their trip.

2. User requirements

Essential feature of the system is that Travel chatbot must be able to handle complex conversation with the users regarding their travel queries. Also, it is important to create and maintain a knowledge base with the help of machine learning and AI algorithms to provide accurate service to the user requests. The knowledge base should provide accurate replies for the user requests; thus, it must be trained properly to predict the reply. A database would be required to store and manage the knowledge base and store user information. Also, it is essential to deploy an Application server which will communicate with the chatbot and database to service user requests. Chatbot, Application server, Knowledge Base, Machine learning Algorithms(Training), Travel datasets, weather dataset, database, Cloud Hosting, Web Client are the essential requirements.

3. Chatbot architecture

In our system, chatbot takes input in the form of text or speech through chatbot application analyses that input using Natural Language Processing techniques to find out what the user is trying to say or ask and responds accordingly. Our system

consists of three main modules: 1) A knowledge base which is the heart of the chatbot, 2) A speech recognition engine as an interface between users and machine, and an interpreter program. We have created a knowledge base using deep learning and bundled it with Machine learning and AI algorithms to provide an intelligent travel chatbot. It is built using Dialogflow, open weather map, Kaggle dataset, python, google cloud platform. The query given by user will be understood by Message processing and then Intent classification module identifies the intent of user text. Typically, it is selection of one out of a number of predefined intents, though more sophisticated chatbots can identify multiple intents from one message. Intent classification uses the context information, such as intents of previous message history. Entity recognition module extracts structured bits of information from the user text. For example, weather intent can extract the weather report from the open weather map api. The user request is processed by the candidate response generator by doing all the domain-specific calculations. It uses different algorithms like external APIs, or even ask a human to help with response generation. The output of these calculations is a list of response candidates. According to domain-specific logic all these responses should be correct. The response generator must use the context as well as entities and intent extracted from the last user message.

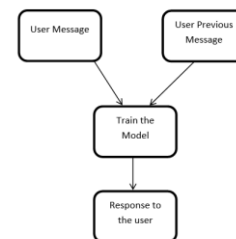


Fig. 1. Chatbot architecture

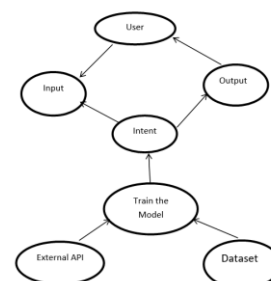


Fig. 2. Dialog flow chatbot model

4. Proposed system

Sometimes the tourist websites or travel agents are unable to provide the adequate and accurate travel information to the user and in such context the intelligent travel chatbot is a key. The travel chatbot is built to take all the necessary inputs from the user to predict the relevant and accurate answer to the user query. The system first identifies the missing information and ask the user to collect this missing information to make the original query which needs to be answered. The original query is answered by taking into consideration the user preferences, the past travel history and the user ratings collectively. Suppose there are one or more missing data in the user's query; in such case, the chatbot is designed to ask the question until the answer fulfills the required missing information. After all the information is fulfilled the query is sent as request to the request handler to analyze what the user is saying and activate the correct algorithm to find the appropriate response.

A. Travel guide

When you are travelling to a new place or city is the biggest confusion everyone faces. No more! This travel assistant chatbot helps you with the location attractions, things to do, fun facts and a lot more. Travel assistant chatbot can guide you to find the best local recommendation for food and attraction.

B. Weather report

In this system when user searches the location, Chatbot displays the accurate weather report. Typically, it also shows the humidity, temperature and also wind speed. So user can get the proper weather report and also plan the trip according to it.

C. Hotel recommendation

Travel assistant chatbot also recommend the users to book the nearby hotels and it shows the exact location of the nearby hotels. It uses the google map to display the Hotel locations. User can get the hotel numbers so user calls the hotel manager and book the room for accommodation.

5. Datasets

For our training dataset we created 100 users noting down their preferences for tourist places and location, hotel recommendation and weather report at the particular location. A sample user object looks like follows:

A. Tourist places dataset

We are using the Kaggle world maps and cities and tourist guide dataset for predicting the tourist places like mountain ranges, most attractive places, most visited places by the people. We trained the bot using the above dataset example Tourist guide.csv file.

B. Format

```
“place_recommended” {  
location: “Ooty”,  
distance_from_current_location:”300km”,
```

```
direction: “use_googlemap_api”,  
}  
“place_recommended” {  
location: “Delhi”,  
distance_from_current_location:”1500km”,  
direction: “use_googlemap_api”,  
}
```

C. Weather training dataset

```
Rain: 0%  
Humidity: 14%  
Pressure: 1012mb  
Cloud: 0%  
Temperature: 26@C;  
Visibility:8km
```

```
Rain: 4%  
Humidity: 10%  
Pressure: 950mb  
Cloud: 2%  
Temperature: 30@C;  
Visibility:9km
```

D. Hotel recommendation dataset

```
"hotel"  
{  
“hotel_name”:”New Island Hotel”,  
"hotel_star_rating": "4.5",  
"hotel_location": "Moonar",  
"hotel_price": "400"  
},  
"hotel"  
{  
“hotel_name”: “Dhabha”,  
"hotel_star_rating": "4",  
"hotel_location": "Moonar",  
"hotel_price": "350"  
},
```

6. Conclusion

Travel assistant chatbots will have a significant features and it is beneficial because of gaining more personal knowledge about user's preference. This application will have an impact on a large number of users and will arouse the real-world travel agents. Our system can become a hub of all travel related user queries and shows how a collaborative recommendation system can be applied to service in the travel plans like hotel location, weather report etc. to produce more personalized and accurate search predictions for a user while stimulating an intelligent conversation in natural language.

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