

Chatbot Application for Tourism using Natural Language Tool Kit

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Abstract: Chatbot is widely popular now-a-days which is designed to increase the interaction and conversation with human users, mainly over the internet and it is catching speed as an application of computer program. Traditionally, it works as getting a question by the user and answered by a software program. The user can enter the query via text. If the user enters the query which is not presented in the data base, the chat bot uses the google search and gives the relevant answers to the user. When the user enters the query, the bot uses the pattern matching compares and relates the words in the question with the words in the data base. From the user input, the words in the sentence will be scored to get the similarity. The highest score obtained will be printed as output. NLP (Natural Language Processing) method is used in order to understand the human language by the computer.

Keywords: Chatbot, Pattern Matching, NLP, Google search

1. Introduction

The chatbot is used to conduct the conversation which allows the people to access to information via messaging application. The conversation can be done via text, speech or even interact with a chat bot using graphical interfaces. Each platform has its own specific features which is used to determine the possible ways in which the chatbot can interact with the user. Currently there are two different types of chatbots. They are: Rule based chatbot: These types of chatbots mostly work on interactive FAQ (frequently asked questions). They are programmed to identify and recognize the key terms and patterns from the user query from which they can respond with pre-set answers in the database. AI chatbot: These kind of chatbots acts as an artificial brain, using the techniques like natural language processing from NLTK (natural language toolkit). This kind of chatbot not only understands from the query, but also context, intents, emotions and continuously gets updated as it learnt from the conversation with user. Simple functional chatbots works on the pre-written keywords in the program that they understand. Each of these commands or keywords will be written by the programmer separately using the regular expressions or some other forms of string analysis. Aditya Deshpande et al [1] explained about the evolution of the chatbots from an elementary model to an advances artificial intelligent system. Also describes how chatbot perfectly rival a human dialogue, it should analyze the input given by user using NLP and formulate correct response. David Corser et al [2] enlightened about how a travel bot advising system based on the information extracted from the social media like Facebook, twitter, Instagram etc. and linked data. The tweets or posts published by the users on the social media platform known to provide travel information for the location, including bus operators and transport authorities. Dahiya.M et al [3] illuminated about the artificial intelligent chatbot and how to create the dialog box, modules description, and the working of pattern matching that compares the user query and matches the keywords with the data base. Ebtesam H. Almansor et al [4] explicates about the survey on intelligent chatbots which works more efficiently than the rule based chatbots. These chat bots uses the deep learning which helps to learn intents, emotions etc from the user query. 4 Jwala.K et al [4] explained about the differences between the chatbot build by using NLP and Deep learning. Also discussed about the metrics for increasing the enactment of chat bots which helps in future enhancements. Ramachandran et al [6] discussed about the user adoption of chatbots. The users are much more adopted to the chatbots than ever before in recent times. It is because of the features of the chatbot like customer support, its conversation. Sameera A. et al [7] explained about the fundamental technique AIML. The purpose of AIML is to streamline the job of informal modelling, in relation to a 'stimulus-response' process. Sasa Arsovski et al[8] enlightened about the resemblances and variances in the execution of chat bot and analyzes the source languages used in the designing of chatbot AIML and chat script. S.J.Du Preez et al[9] enlightened about how messages are configured to XML and summarized. The main components used in this chatbot are client, server, and content attainment. The server used in this bot is a Simple object access protocol (SOAP). Zia Babar et al [10] described the retrieval-based chat bot and generative chatbots.

Rule based chatbot gives the answers for the queries which are present in the data base where as generative bots uses deep learning and learn from the user questions.

2. Proposed System

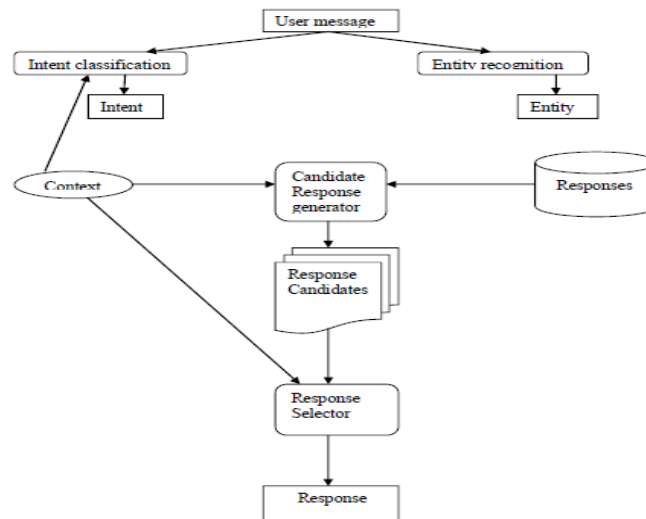


Figure 2.1: Architecture Diagram

Figure 2.1 shows the architecture of Chatbot application. The proposed system of chat bot is more efficient than the existing rule based chat bot. The users enters the message, Intent Classification will intent the message and also recognizes the entity. Based on the query, candidate response generator will respond and give related response. In existing system it can only answers for the queries that are in data base. But in this proposed system, even if the questions are not present in database the chat bot uses the google search and give the answers to the questions. A chatbot system allows communication among computer and users through natural language. The travelers during their tourism faces a lot of problems for the queries and details as they don't know anything regarding the place. In such cases this travel bot is very useful to the travelers. In comparison to the other service channels such as tourist guides, chatbot enables a very cost and time effective way to address concerns. The chatbots can instantly gives the responses to the customers without making them to wait for long time. Most of the messaging platforms are using the chat bot now a days which increases the interaction between user and the system.

3. Implementation

3.1 Data Collection

Figure 3.1 represents the data collection. All the data should be collected and stored in the data base i.e., text file. When the user enters the query the chat bot uses the pattern matching to watch the key word with the data base.

Figure 3.1 Data Collection

```

C:\Users\Malek Trivers\AppData\Local\Programs\Python\Python37-32\text.txt (3.7.0)
File Edit Format Run Options Window Help
Good morning, how are you?
- I am doing well, how about you?
- I'm also good.
- That's good to hear.
- Yes it is.
- Hello
- Hi
- How are you doing?
- I am doing well.
- That is good to hear.
- Yes it is.
- Can I help you with anything?
- Yes, I have a question.
- What is your question?
- What are the most famous places in Hyderabad?
- charminar, golconda, hilla mandir, salarjung museum, sarooji film city are most famous places in hyderabad
- Thank you anyway.
- No problem
- How are you doing?
- I am doing well, how about you?
- I am also good.
- That's good.
- Can you tell me in which year does the charminar was built?
- In the year of 1591.
- Who built the charminar?
- Shamsuddin qutub khana.
- Tell me about your wife.
- What do you want to know?
- Are you a robot?
- Yes I am.
- What is it like?
- What is it that you want to know?
- How do you work?
- Its complicated.
- Complex is better than complicated.
- Simple is better than complex.
- In the face of ambiguity, refuse the temptation to guess.
- The answer seems obvious when you know the truth of the matter.
  
```

3.2 Training the Chatbot

Figure 3.2 represents the training the chat bot. The chat bot is trained using the intents, entities, emotions etc. Most of the intents are trained using the greeting inputs and greeting responses. Chat bot using Python requires some prerequisite modules to be installed. The modules are NLTK, sklearn, random, numpy etc. From Nltk module the NLP is imported which is used by the chatbot to understand the human language. Chat bot takes some steps to convert the user query into the structured data. The processing steps are: Normalization: The program processes the text to find common spelling mistakes or typographical errors that might user wants to convey. Tokenization: It divides the string of sentences into words and words into tokens and lemmatize preprocess the tokens. The greeting

inputs and outputs are given in the program. User enters the query. Using the keyword and pattern matching compares the strings from the data base and suitable output will be given by the bot during the conversation. If the query is not present in the data base then the bot uses the google search and finds the answer for the query and displays the relevant answer. Next the server app will be build that will the API for Chat bot queries.

```

pairs = [
    {
        r'hello name is (.*)',
        ['Hello hi, How are you! Today I', ]
    },
    {
        r'what is your name?',
        ['My name is Chatty and I'm a chatbot ?', ]
    },
    {
        r'how are you?',
        ['I'm doing good\how about you?', ]
    },
    {
        r'sorry (.*)',
        ['Its alright', 'Its OK, never mind', ]
    },
    {
        r'i'm (.*) doing good',
        ['Nice to hear that', 'Alright :)', ]
    },
    {
        r'hi|hey|hello',
        ['Hello', 'May there', ]
    },
    {
        r'(.*) age?',

```

Figure 3.2 Training the Chatbot

3.3 Chabot Design

Chat bot design: Figure 4.8 represents the chat bot design. The output page which converse with the user is designed using html. The user has to enter the text in the text box and should click the submit button in order to give the input query.

Figure 3.3: Chatbot design

Figure 3.4 Conversation between user and bot

4. Conclusion

Travel chatbots are advantageous all round. Chatbots perform at a very high standard and provide consistent and rapid replies to users compared to that of outdated procedures. Travelers are constantly increasing their information needs. These chatbots serve to help the customers by providing the relevant and beneficial answers to travel queries. Chatbots are fully operational systems that can support user service understandings and reply time. The current implementation allows more tools to be easily integrated to provide better results. The future scope of chatbots could include many benefits for enterprises, but they need to be gently nudged in the right direction for business to reap these benefit.

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