College Enquiry Chat bot using Python

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Abstract— This project is focusing on creating a chatbot to be used by students to get their queries responded easily from the college website. The College Enquiry Chatbot has the capacity to make friendly conversations; respond to the course and faculty details; answer the frequently asked questions; and give the timings, address, contacts, and events information of the. To build the chatbot, Most of the existing chatbots lack empathy and fail to accommodate anything outside of the script. In order to address these problems, the College Enquiry Chatbot extends the implementation of the chatbots by. Although sentimental analysis correctly recognizes the user's query as positive, negative and neutral, the system was partially successful in adding empathy to the chatbot. It is because the system requires more rigorous training data to handle all queries which are off-script. However, for such queries, active learning helps to improve the chatbot via performance since it correctly understands the user's questions, asks clarifying questions, and then retrains the system to give the response what the user intends to get. The future work includes training the chatbot with more varied data; increasing the scope of the chatbot by adding a speech recognition feature so that users can speak to get responses; and including integration with multiple channels such as phone call, SMS, and various social media platforms.

Keywords: Natural Language Processing (NLP), Natural Language Toolkit (NLTK), AI or Machine Learning Algorithms

I. INTRODUCTION

This project is focusing on creating a chatbot to be used by students to get their queries responded easily. A chatbot is a program which can do real conversations with textual and/or auditory methods. Using Artificial Intelligence (AI), chatbots can simulate human conversations. There are two categories of chatbots. One category is command based chatbots where chatbots rely on a database of replies and heuristics. The user must be very specific while asking the questions so that the bot can answer. Hence, these bots can answer limited set of questions and cannot perform function outside of the code. The other category is chatbots based on AI or machine learning algorithms, these bots can answer ambiguous questions which means the user do not have to be specific while asking questions.

Thus, these bots create replies for the user's queries using Natural Language Processing (NLP) Analyzing the request Identify Intents and Entities Building a Response

Figure 1 shows how a chatbot works. Whenever a user asks any query, the bot will first analyze the request, then identifies intents and entities, builds a response and sends it back to the user. For example, if a student wants to know the office hours of a faculty, then the intent will be office hours and entity will be name of the faculty in this case. Chatbots are motivated by the need of traditional websites to provide a chat facility where a bot is required to be able to chat with

user and solve queries. When live agent can handle only two to three operations at a time, chatbots can operate without an upper limit which really scales up the operations. Also, if any school or business is receiving lots of queries, having a chatbot on a website takes off the load from support team. Having a chatbot clearly improves the response rate compared to human support team. In addition, since millennials prefer live chats over a phone call, they find a chatbot, which provide a highly interactive marketing platform, very attractive. There can be some scenarios where a business or school receives same queries in a day for many times and support team must respond to each query repetitively. Lastly, the most important advantage of having a chatbot is that it is available 24/7. No matter what time it is, a user can get a query solved. All these advantages of a chatbot constitute the motivation to implement a College Enquiry Chatbot. Before implementing College Enquiry Chatbot, various existing chatbots were reviewed such as Amazon Shopping App, Alexa, Bank of America (Erica's bot) 3 and CNN news bot. In order to understand the requirement of a chatbot, consider an example of Amazon Shopping App. In this app, when a customer buys an item, he/she does not have any information about how to return the item. To get this information, the customer must call and wait to talk to customer representative for a long time. However, this whole process is tedious for a customer. Hence, Amazon created a chatbot to answer simple queries of customers. Similarly, the College Enquiry Chatbot is designed to help students to get their queries solved on a fingertip. downside I found while utilizing the previously mentioned chatbots is absence of personality and conversational flow.

II. PROPOSED SYSTEM

chatbot is a web Based software that is used to interact between a computer and a human in natural language like human's chat. Chatbots chat with the user in a conversation in place of a human and reply to the user. The goal of this report on chatbot was to resemble a human being in the way they interact, trying to make the user think he is chatting with another human being. The chat bot application helps the students to access the College related information from anywhere with internet connection. This system reduces work of college administration providing information to students and also reduces the workload on the staff to answer all the queries of the students. Chatbots are virtual users or virtual assistants for communicating via messaging or chat. They are programs which communicate with a user through messaging or chat interface. Chatbot is designed for college purpose where the students would not have to visit the campus personally instead everything like notices, results, timetable, assignments would be made available at the fingertip just with the help of mobile phone and internet connection through a login. Also, the faculty would not require to make constant announcement in the class about a particular notice;

rather things would get uploaded into the chatbots database by the admin.
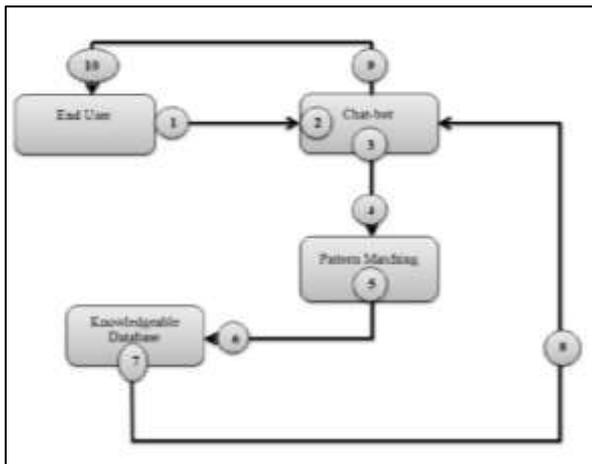

Fig. 1: System Architecture

III. ALGORITHMS

A. Natural language processing (NLP)

Chatbot can answer users queries in natural language which is made possible by using an artificial intelligence term natural language processing or NLP. Natural language processing gives machine the ability doing the given input, break it down, extract its meaning , determining appropriate action and answering user in there natural language. Natural language processing (NLP) has two subsets Natural language understanding (NLU) and natural language generation (NLG). NLU takes unstructured data as input and convert it into structured data so machine can understand and act upon it. NLU focuses on extracting the meaning from user input query. Natural language generation (NLG) simply converts the answer generated by chatbot in structured data to human understandable natural language. Natural language processing (NLP) does processing in 5 steps. The unstructured data is first passed for lexical analysis. The structure of words is analyzed and identified. The whole input text is divided into tokens. Then the tokens are passed to syntax analysis where tokens are analyzed for grammar and arranged in a way in which relationship among the word is easy to understand. Then the input is passed to semantic analysis. The meaning of words or tokens is extracted in this step. Object in task domain and mapping

B. Pattern Matching Algorithm

Pattern matching is one of the most used algorithms in chatbots Pattern Matching Algorithm contains questions and answers stored into a database. Questions are named as patterns whereas answers are named as templates. The answer for the particular question consists of Artificial Intelligence Mark-up Language (AIML) tags. Patterns and templates are stored in the form of a tree. Questions are on the branches and answers are at the nodes so whenever the question is asked by the user first that question is searched for an answer word by word, then it fetches the particular answer from the node. This type of structure is used in the ALICE chatbots. The advantage of this algorithm is that users can easily get answers to the questions it's already store.And thus it is widely used because of its complexity . This algorithm stores

only particular types of questions and thus if any question other than the stored is asked by the user it would not be able to give an answer. And thus, it lacks self learning capability
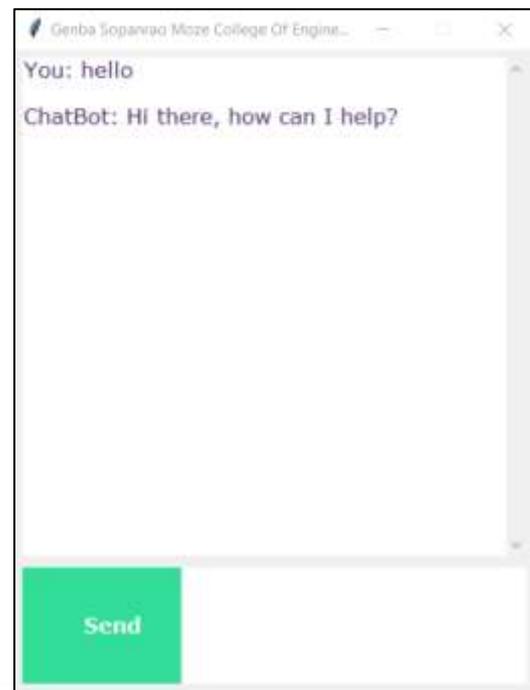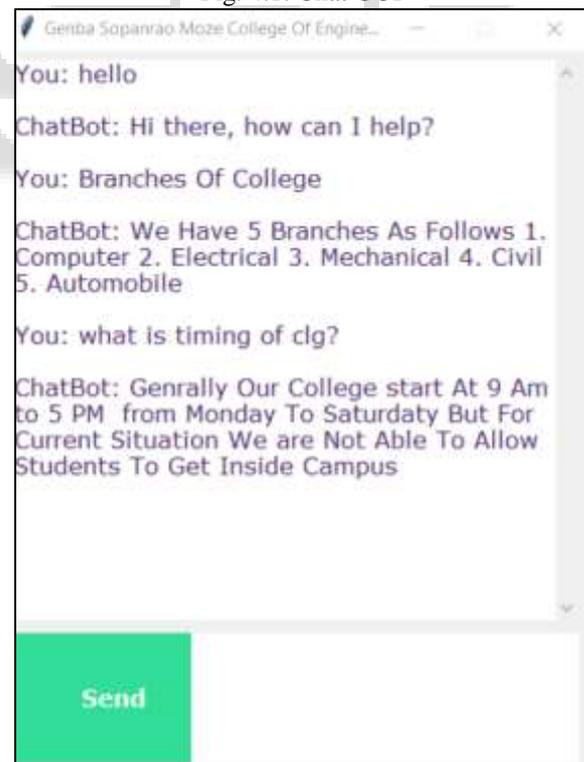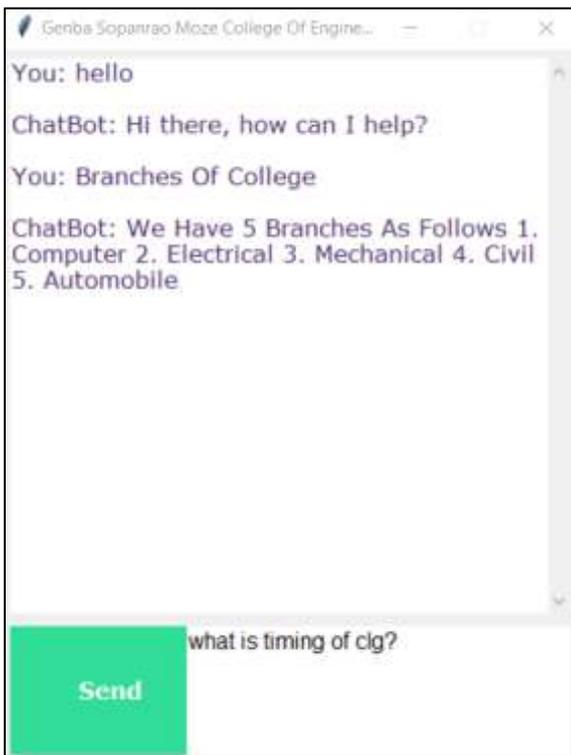
IV. RESULTS

Fig. 4.1: Chat GUI
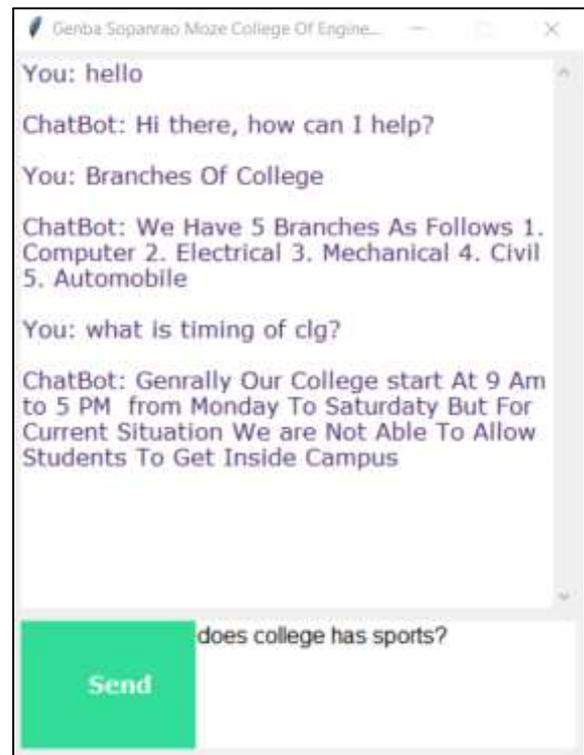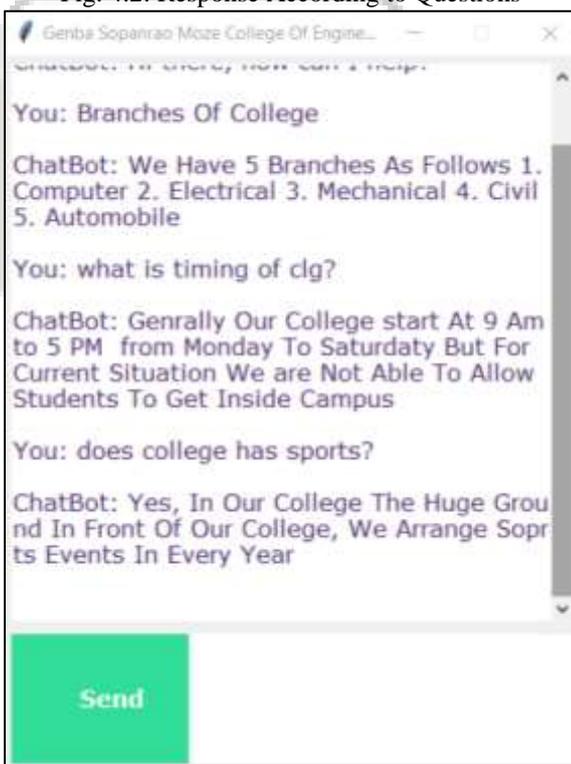
Fig. 4.2: Response According to Questions

Fig. 4.3: Response According to related Questions

V. APPLICATIONS

1) User does not have to go personally to college office for the enquiry.
2) This application enables the students to be updated with college cultural activities.
3) This application saves time for the student as well as teaching and non teaching staffs.
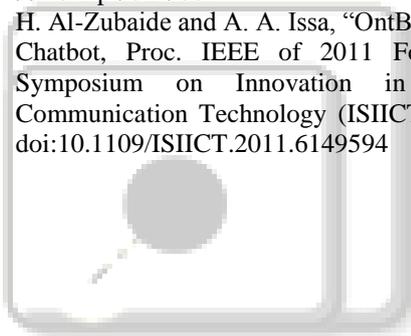
VI. CONCLUSION

The main objectives of the project were to develop an algorithm that will be identify the answers associated with user submitted queries. A database is developed to store all related data's and to develop an internet interface. The web interface developed had one parts, and that is for the administrator. A background research happened, including a summary of the conversation procedure and any relevant chat bots available. A database system was designed, that stores information regarding questions, answers, keywords, logs and feedback message.

VII. FUTURE SCOPE

There are limitations to what has been currently achieved with chatbots. The limitations of data processing and retrieval are hindering chatbots to reach their full potential. It is not that we lack the computational processing power to do so. However, there is a limitation on "How" we do it. One of the biggest examples is the retail customer market. Retail customers are primarily interested in interacting with humans because of the nature of their needs. They don't want bots to process their needs and respond accordingly.

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