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Web Based College Chatbot - SDABot

Suyash Awasthi¹, Anupriya Purwar², Dhananjay Batra³, Prof. Prakash Devale⁴

^{1, 2, 3}Department of Information Technology Bharati Vidyapeeth(Deemed to be)University College of Engineering, Pune, Maharashtra - 411043.

⁴Department of Information Technology, Bharati Vidyapeeth(Deemed to be)University College of Engineering, Pune, Maharashtra - 411043.

Abstract: *Previously, before the existence of chatbots and websites, for eliciting information like syllabus, fees related details, assessment or exam schedule, or tasks like fees payment, students had to be physically present at the respective place in college. This is a time consuming process. With technological advancement, necessary information is available on the college's website. However, the process of acquiring information from the website turns out to be tedious when the end user is not able to find the information and therefore leaves the website. To do away with such problems chatbot can be developed to help visitors have a more human-like conversational experience thus easing access for users to required information. The SDA bot can be deployed on the web and integrated with the college's website. To resolve their queries any end user can use this chatbot to acquire information related to college or student related information. This project is specifically designed to solve end users' queries and give instant responses to them.*

Keywords: *Chatbot, Machine Learning, College Chatbot, Query*

I. INTRODUCTION

The project created here is a web based application that uses search based algorithms in order to generate its responses. It takes a text based input from the end user, processes it using the search based algorithm and delivers an appropriate response to the query. There are various aspects which help the chatbot to select the appropriate response such as the similarity of the input statement given by the end user to known statements in chatbot's knowledge. Therefore the chatbot will give a response based on the knowledge database that is present at that instance of time. The chatbot is based on the concept of Machine Learning.

Since the chatbot is implemented as a web application it has a well designed and friendly user interface which is quite easy to understand and interact with. Its interface is similar to a chatbox window to make the user experience better since end users are quite familiar with messaging based applications. Therefore this chatbot will help users acquire required information instantly without having to spend a long time navigating through the website to look for information. There are chatbots which are based on the concepts of pattern matching and searching algorithms. ELIZA and A.L.I.C.E work on this concept. Jabberwacky used the concept of contextual pattern matching. All these chatbots use in some way the concept of pattern matching. This requires certain patterns to be matched as per the query provided by the user. Based on this SDA bot is being developed. It instantly delivers the required response to the end user based on the question or input statement. Along with an interactive interface and lightweight application, the responses given are also quick.

II. PROPOSED SOLUTION

A. ListTrainer

To train our SDA bot ListTrainer package from chatterbot library has been used. A chatterbot instance will be created to train the chatbot. To train the SDA bot, a training data file would be fed into the ListTrainer Module. This file will contain a list of predefined data that will be used by the ListTrainer to train the Chatbot on data or information that is expected to change over time. This is required since the website might get updated and information might change, certain information is made available on new links while some information gets updated periodically. A way is required to train the chatbot from time to time regarding the updated data.

B. LogicAdapter

The SDA bot would be using various LogicAdapters. The SQL Storage adapter would be responsible for creating a sqlite database which would be used by the SDA bot to store the queries and store new learned data periodically, to answer the user's queries. A timelogic adapter has been added which would enable it to return a query regarding time. A default response has been added if no answer to a particular query is available.

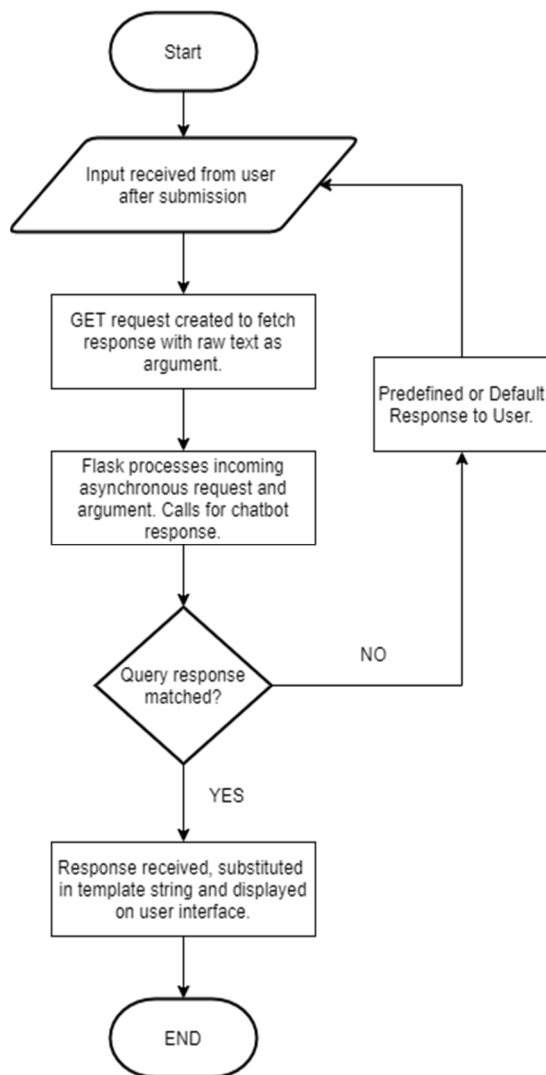
C. Request Handling

Flask would be responsible for integrating the HTML, CSS components which would be used to design the User Interface for the SDA bot. The route decorator is being used to create a GET HTTP request and pass the user input. Flask receives and processes the GET request and passes the raw user input data to chatbot for fetching the response. The response received back would be displayed in the chat box in the user interface using template strings by appending them in the corresponding HTML code.

D. Implementation

To run the SDA bot we would be requiring a flask server which would be responsible to deploy the project on a local host server. The HTML code along with the CSS styling properties would be rendered and displayed as the user interface. A sqlite database would be created to store the learned data. Some training will be given to the chatbot through ListTrainer from a training data file. The SDA bot would train itself and return the user specific queries from the knowledge that has been gathered and has been stored in the database. The user would be greeted with an introduction message on running the SDA bot. The user would then enter the query and click on the send button. The SDA bot would search for keywords from the database. It would return the best and accurate response through its algorithms by searching for multiple keywords from the string entered by the user. In case if no answer is available the chatbot would return a default response.

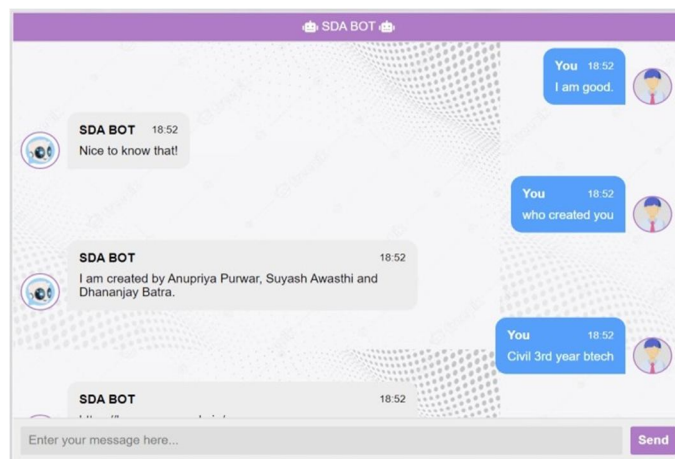
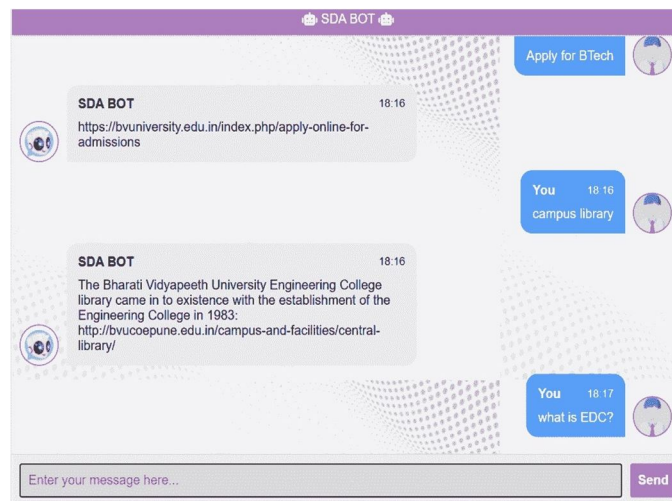
Flowchart

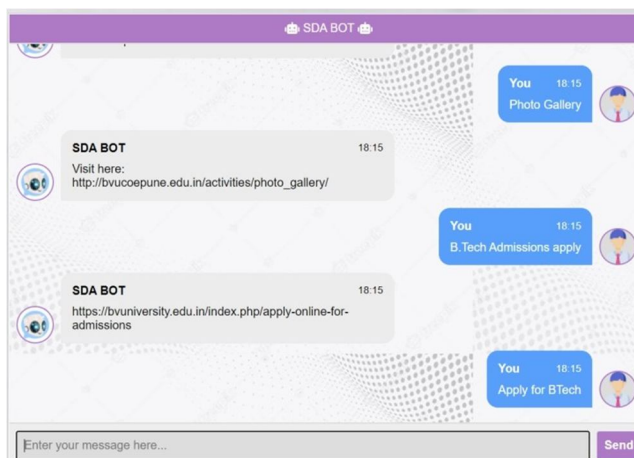


III. ALGORITHM

- A. SDA bot will accept the message from the user.
- B. It would split the message into specific words.
- C. Firstly it will search for the initial keyword from the sqlite database where it has previously stored all the knowledge that it got trained with.
- D. All the new information it has learned will get stored in the sqlite database in the meantime.
- E. If the search keyword is found but multiple answers are possible, then the chatbot would search for the remaining keywords one by one from the query asked by the user. It will increasingly match keywords from the input statement until a unique response is matched.
- F. Following which through its algorithm it will determine whichever is the best and accurate response and return the answer to the user.
- G. The chatbot will learn every time while it is answering questions. Whenever a user asks a question, it would train itself from the previous conversation to produce the new response
- H. For example, if a user gives a statement A as a query to the chatbot and based on its algorithm the chatbot gives Statement B as its response, then when the user gives the next statement that is Statement C it would also learn if there is a correlation between Statement B and Statement C.
- I. If there is no match found then it would give a default message as a response.

IV. WORKING EXAMPLES





V. ADVANTAGES AND APPLICATIONS

SDA bot will reduce the time-consuming process like searching, navigating, and scrolling on the website. SDA bot will not only help the end users to get the required information regarding the college but also solve their queries instantly or in a small amount of time. It will also provide 24/7 service and availability.

SDA bot can be easily integrated with any college website and also provide easy access for the users. It has various applications i.e., instant assistance to visitors. Also, users can get their problems answered and it will provide instant as well as accurate responses. Not only department wise assistance but also semester wise assistance to end users.

VI. CONCLUSION

As in this corona pandemic, new students as well as old students or their parents cannot visit college physically. So, SDA bot will be very helpful for them in providing general solutions to common and frequently asked queries. Chatbot is very popular and the best tool for providing details and a quick way to interact with the users and students. It is very helpful for the students or any other end user as it allows them to enter questions in natural language as text input and the desired information is provided to them. Rather than waiting for long hours to look for answers or to resolve queries, this SDA bot can instantly resolve the majority of the queries.

VII. FUTURE SCOPE

After interacting with lots of users in the future by taking different questions and receiving their feedback, the respective updates can be made in the chatbot and it can be enhanced. One major enhancement would be the introduction of a speech recognition functionality for the ease of the users. With the help of this speech recognition functionality the SDA bot will be able to process voice based user input and give a respective voice based response. This project can be deployed on the web and integrated with college websites with high availability.

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