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AI and Web-Based Human-Like Interactive University Chatbot (UNIBOT)

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***Abstract*—Most of the time, Students have to visit universities or colleges to collect various information like Tution fees, Term Schedule, etc. during their admission process or as per their daily needs. This process is very tedious and time consuming, also it requires manpower in providing required information to visitors. Hence, to overcome the problems a chatbot can be developed. The project is about interaction between users and chatbot which can be accessed from anywhere anytime. The chatbot can be easily attached with any university or college website with few simple language conversions. Chatbot provides various information related to university or college and also students-related information. The chatbot can be used by anyone who can access the university's website. The project uses the concept of Artificial Intelligence and Machine Learning. PHP Language is utilized for the development of Chatbot. User can ask university-related questions, then 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.**

Keywords*—*Artificial Intelligence; Chatbot; Human-like interactive; Machine Learning; University Chatbot

I. Introduction

The project deals with user's request in form of question-based message and processes it to deliver a desired response in form of message. It solves the process of visiting colleges and gathering related information as per the needs, as it is time consuming. Also, the user can communicate to admin office with telephone number provided but doesn't receive a positive feedback. The project is a web-based chatbot. Graphical User Interface (GUI) is much similar to messaging application, which provides a friendly environment to the user as they are much aware of operating messaging applications. The user types a question and on performing submit, the message is preprocessed and the most relevant information from the database is provided as a response in similar way of messaging. Developing a chatbot solves the problems that can arouse in gathering required information. It can be accessed from anywhere at anytime. In various websites, users are not able to find the required information on website which in turn end up closing the websites, which can be fulfilled by using chatbot. Presently, there are various chatbots available like ALICE bot which uses AIML(Artificial Intelligence Mark-up Language) and program Eliza. Such chatbot performs pattern matching which requires particular patterns to be matched [1] [2]. Hence, a chatbot named "UNIBOT" is developed. It delivers efficient and relevant response to the user corresponding to their entered message. The interface is effectively interactive. The time of response is minimal. It requires less memory and database hits are very less. Majority of the time, the provided reply satisfies the user's requirement. The algorithm defined in this paper can also be used as back-end to develop android chatbot applications like [10] [11] or in health care areas [12] for faster and efficient response.

II. Proposed System

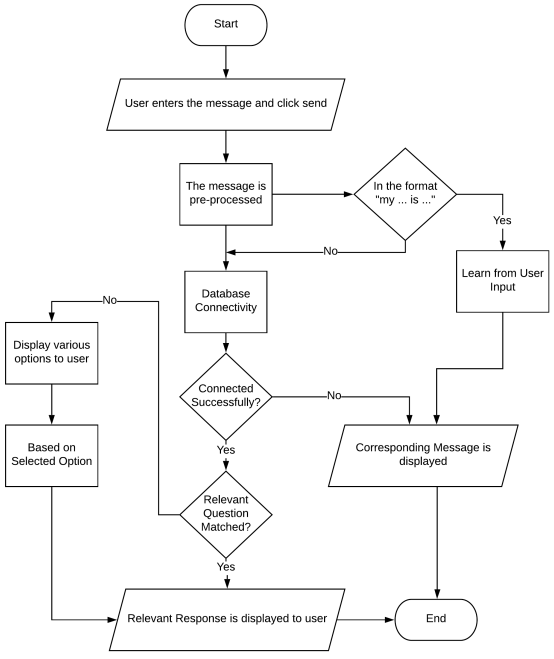


Fig. 1: Flowchart

The flowchart of the system displays how the Unibot performs. Initially, the user message is preprocessed and con-

nectivity to database is obtained. Then, based upon conditions satisfied the Unibot process flows and provide response to user. PHP language is used as a back-end to achieve the represented scenario.

III. Design of Unibot

The chatbot is also known as "UNIBOT" i.e "University Chatbot", The design is shown in Figure 2. Graphical User Interface (GUI) is an important component of any system. The front-end is developed using HTML, CSS and jQuery. Ajax is used to call and get response from PHP file, whereas, jQuery is used to display the messages to the user.

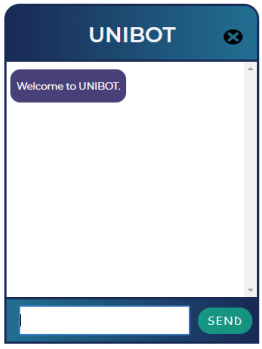


Fig. 2: Design of Unibot

IV. Implementation Process

The implementation of Unibot was performed by the following:

A. Database Design

The database is the most important part of any system. The table is created as below and the data is entered in such a way that if a question has more than one answers, then they are stored in Answer_2 and Answer_3 fields. Also, the Question only contains keywords rather than particular natural language question as shown in Table I. Unibot provides details such as departmental syllabus, events, admission procedure and fees, basic university details, class timetable, important circulars, etc [3].

TABLE I: Question and Answer table

QA_ID	Title	Question	Answer_1	Answer_2	Answer_3
1		hello	Heyy	Hey there.	How may I help you?
2		bye	Good Bye.	See you again.	Happy to help you.
3	Yearly Fees	spce fees college yearly	Rs. 60,000 per year		

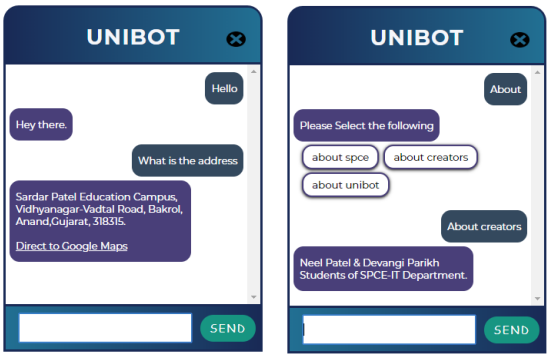
B. Algorithm Implemented

A totally new algorithm is developed & implemented in Unibot. It is very efficient, requires less memory and has minimal database hits. The algorithm is as follows:

1. Accept the message from the user.
2. Now, perform the following to the accepted message:
   - Firstly, check each word whether it is spelled correctly or not. If not, show suggestions to the user as shown in Fig. 4 and perform operation based upon selected option.
     - If Yes is selected, perform the following operation using the suggested string.
     - Otherwise, perform the operations using the user's previous string.
   - Split the message into words.
   - Execute an SQL using Regular Expression to check the words are available in the database.
   - Store the words present in the database into an array called "important_words".
   - Execute SQL query using the above array words.
   - If the result of above step produces single row then display the answer to the user.
   - If multiple rows are produced, then display options to the user with the help of "title" column in the table.
   - If no result is produce, then check all the keywords in "Answer" columns. Do the following:
     - If a match is found, store the user's question and found answer into another table. So, if same question is asked, the chatbot can provide answer.
     - Otherwise, display sorry message to user.
   - Based on options selected or another message entered, Go to step 2.

V. Sample Results

Static chatbots only involves comparing of strings, whereas Unibot uses dynamic approach like preprocessing the message before searching for a response [4] [5].

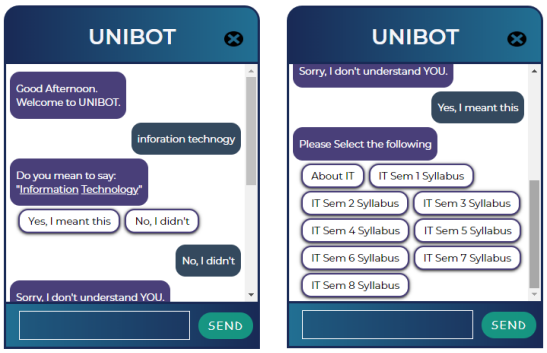


(a) Message Received (b) Options Displayed

Fig. 3: Variant responses

The user enters the message in the text field and submit it. The message is instantly displayed in the chat window

with the help of jQuery. The user's question is preprocessed through which irrelevant words are neglected, then connection with database is performed to search for the most relevant information. The response is shown in the chat window in the form of message received as in messaging application on mobile devices. Majority of chatbots provides default answer when no match is found [6] [7]. Whereas, Unibot displays related options as shown in Fig. 3b.



(a) When NO is selected (b) When YES is selected

Fig. 4: Suggestions

Analysis of [8] aided to think about providing suggestions to user. If the user misspells words in the message submitted, the chatbot also provides suggestions to the user as shown in Fig. 4. Based on options selected, corresponding response is displayed.

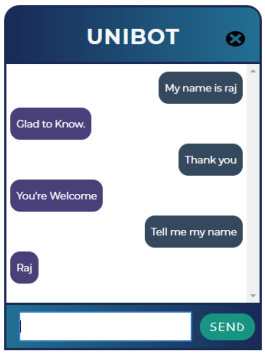


Fig. 5: User's details

Unibot also can save user's details, if the user write query in the format "my..is..". This details are saved in local storage of user's computer using jQuery [9]. Hence, it will remain until user deletes all it's caches. Whenever user ask about his/her details, Unibot provides correct answer as shown in Fig. 5

VI. Conclusion

A chatbot is the best tool which provides quick way to interact with the users. It is very helpful to the users as it allows to enter questions in natural language and desired information is obtained easily to the user. In this paper, details about design, algorithm used and implementation of the Unibot is presented. The user doesn't need to gather information by visiting websites or colleges.

VII. Future Scope

The project can be integrated with any university or college website. Along with educational information, the chatbot can be extended by providing other relevant information. It will be helpful to students as well as other visitors. Thus, the chatbot can provide a wide range of information as per developer's configuration. Natural Language Processing (NLP) can also be integrated to enhance the chatbot.

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