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Chatbot for College Management System

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Abstract: ***Nowadays, Artificial Intelligence is being used extensively in a wide range of sectors, from product production to customer service in public relations. Artificial Intelligence (AI) chat bots play a vital role in helping solve their problems in any aspects. So, we implemented a virtual assistant based on AI that can deal with any query related to College Management System. A chatbot uses information stored in its database to recognize phrases and make decisions on its own in response to a query. The college inquiry chat-bot is built using the Rasa NLU framework that analyzes user's queries by understanding user's text message. The response principle is matching the input sentence from a user. The college management system involves public user portal and student/staff portal. It keeps track records of all the information regarding students and the college. In the public portal, the user may use the chat-bot to ask any college-related questions without having to physically visit the campus. The Bot analyses the query and responds with a graphical user interface that makes it appear as though a real person is conversing with the user. The system's accuracy is estimated to be 95% and the time it takes to create responses corresponds to the number of lines of response.***

I. INTRODUCTION

The main objective of this project is to create a chat-bot for the college. This chat-bot is designed in such a way that it satisfies any kind of queries asked by the users regarding the college and college related activities. We will be using Rasa NLU framework to create the chat-bot. Fig.1 Shows that Natural Language Processing (NLP) Engine Components. The chat-bot can be accessed for both the internet and the intranet portal in which the user can ask about any college related information to the chat-bot.[6]

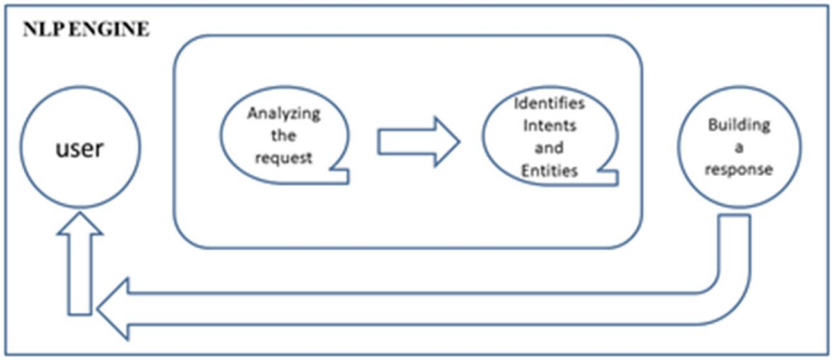


Fig.1 NLP Engine

A chatbot (also known as a talkbot) is a computer software that uses artificial intelligence techniques such as Natural Language Processing (NLP) and Audio Analysis to simulate human interactions, both text and spoken language. Artificial
Intelligence makes this chat bot look like a human conversation, which helps to provide a user friendly interface between the human and the machine.[5]

The system stores all the information related to college and students. When the user asks a query, the chat-bot analyses the request and identify the Intents and Entity of the query and it searches for the answer related to that particular query asked by the user and it fetches all that data from the system and build a response related to the query and sent it to the user. This system can be fast, accurate, consistent, reliable, and flexible enough so that it can incorporate any future enhancements. To make it more convenient for the user we have enabled speech recognition through which a user can ask their queries. Every user such as student, parent, staff, and administrator are able to get the information of the college and each student/faculty must be able to view their details from their specific login.

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The Chat-bot is designed for the college management system which is a web-based application that can be accessed as a college website by common users and also a student/faculty intranet portal. This Chat-bot provides a user-friendly interface that makes communication easy between the user and the system. This bot can adapt itself according to the user's query and offers fully customizable functions that can amend depending on the user's requirements. This chat-bot is flexible enough to assist all the users across every device and OS as they use a variety of mediums like desktop, smartphone, or tablets to access the web application. This chat-bot can understand the context by recognizing the user's message or voice and offer solutions ensuring that it can communicate with the user effectively on their level. This chat-bot offers an in-depth analysis of the user information, queries, and responses that can provide services as per the user's needs and expectations.

II. LITERATURE REVIEW

Polignano et al. proposed that Health Assistant Bot is a virtual assistant that can chat with patients to comprehend their symptomatology, recommend specialists, and screen medicines and wellbeing boundaries. In a brief, the bot allows the customer to construct a health profile, describe symptoms, find experts, or just learn about a treatment plan by utilising natural language conversations. Exceptionally, their procedure exploits AI methods to deal with the clients' side effects and to consequently surmise his/her illnesses. Then, the data received is utilized by recommendation algorithm to recognize the closest specialist who can best treat the client's condition, thinking about the local area information. In the exploratory meeting, this HealthAssistantBot was assessed with both an offline and online assessment. In the first case, this evaluated the presence of interior parts, while in the second one it completed an investigation including 102 subjects who connected with the conversational specialist in a day-by-day use situation. Results are empowering and showed the viability of the system in supporting the patients in dealing with their wellbeing. The main limitation of this bot is the absence of descriptive details of symptoms and diseases and the probability that a disease can cause one or more specific symptoms is not reported. As a result, the lack of descriptive data makes automated illness symptom prediction extremely difficult and error-prone.[1]

Patelet al. has introduced AI and web-based human-like interactive university chat-bot (UNIBOT) that focuses on client cooperation and can be accessible from anywhere at any time. The Chat-bot can be handily connected with any college or school site with not many basic language transformations. It gives different data identified with University and students related data. The Chat-bot can be utilized by any individual who can get to the University website. The task utilizes the idea of Artificial Intelligence and Machine Learning. PHP Language is used for the advancement of Chat-bot. Users can ask University-related inquiries, at that point the query is applied as an input to the Bot, which processes the request and shows the comparing response to the user. The GUI is like a Messaging Application. This reduces work for the Students who visit colleges or universities to gather different data like Tuition expenses, Term Schedule and so forth during their admission process or according to their everyday needs. The critique is that UNIBOT is only meant to offer a limited quantity of university information. To enhance the chat-bot, Natural Language Processing (NLP) can be integrated.[2]

Srivastavaet al. proposed that Automatized clinical chat-bots are conversationally built considering innovation with having the capacity to diminish endeavours to medical service costs and improve access to clinical benefits and information. This bot was constructed to engage patients in the discussion for their clinical queries and issues to give an individualized diagnosis dependent on their analyzed appearance and profile. It can recognize manifestations from users with a standard exactness of 65%. Utilizing these separate analyzed side effects, the right manifestations were related to a review of 65% and an exactness of 71%. Finally, the chat-bot restored the expected diagnosis for further more operations. This verifies that a clinical chat-bot can give a fairly exact finding to patients with straightforward manifestation examination and a conversational methodology and recommends that a powerful communication language bot could be suitable. Also, the general adequacy of this bot demonstrates that more continuous robotized clinical items may thrive to serve a greater job in medical care. The limitation is that this Medibot is developed using Rank-based algorithm which can be replaced by some alternative algorithm in-order to improve the performance and taking it up to the next level.[3]

Dharani et al. introduced an Interactive Transport Enquiry Chat-bot for Public transportation which can be utilized effectively by a huge number of individuals everywhere in the world. People will in general go to many places and on specific occasions, they may feel lost in another spot. This Bot acts as the rescue agent as of now. A Chat-bot is regularly depicted as perhaps the most encouraging instrument for communication among people and machines utilizing Artificial Intelligence. It is a product application that is utilized to lead an online discussion through text by utilizing Natural language processing (NLP) and Deep learning procedures. It furnishes direct contact with a live human specialist as GUI.

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By answering a few questions, this AI Chat-bot confirms the user's present position and eventual destination. It inspects the user's query and extracts the required information from the database. The Deep learning methods that are utilized in this Chat-bot are liable for understanding the user's queries precisely to evade any misguided judgments. When the user's aim has been perceived, the Chat-bot gives the most relevant response to the user's query. At that point, the user gets all the data about the transport names along with their numbers so the individual can venture out securely to the ideal area. This Bot is implemented using the Keras package and the Tkinter graphical user interface. The limitation is that the effectiveness of this application can be improved by providing voice chat.[4]

III. PROPOSED SYSTEM

Rasa is a platform that allows users to create customised AI chatbots using Python and natural language understanding (NLU), as seen in Figure 2. Rasa is a platform for creating artificial intelligence chatbots that understand natural language (NLU). The user may additionally customise the model by training it and adding new actions. Rasa NLU is an open-source natural language processing technology that determines the purpose of the user, extracts the entity from the bot in the form of structured data, and assists the chatbot in understanding what the user is saying. [9]

According to the Fig.2 , The Proposed System consists of two phases

1) Public User Portal
2) Student/Staff Portal

The public portal is the phase where the User can ask the any college-related queries to the chat-bot in the college website without physically being available to the college for inquiry. The questions can be like college timing, department details, transport facility, placement details, events etc. The Bot uses Rasa NLU to analyse the user's question, extracting the intents and entities from the query, requesting data from the database, fetching the information, and responding to the user using an effective Graphical User Interface as if it were a real person. The college website can accessed by anyone from anywhere and they can post any queries regarding the college to the chat-bot.[10][11][12]

In the college website there is another feature named as the Student/Staff Portal where the students and staffs of the college have a specific login. The students can login using their username and password to view their attendance details, marks and timetable. Likewise, the staffs can login using their username and password to update the student’s information such as attendance, marks, timetable and they can also generate reports.[13]

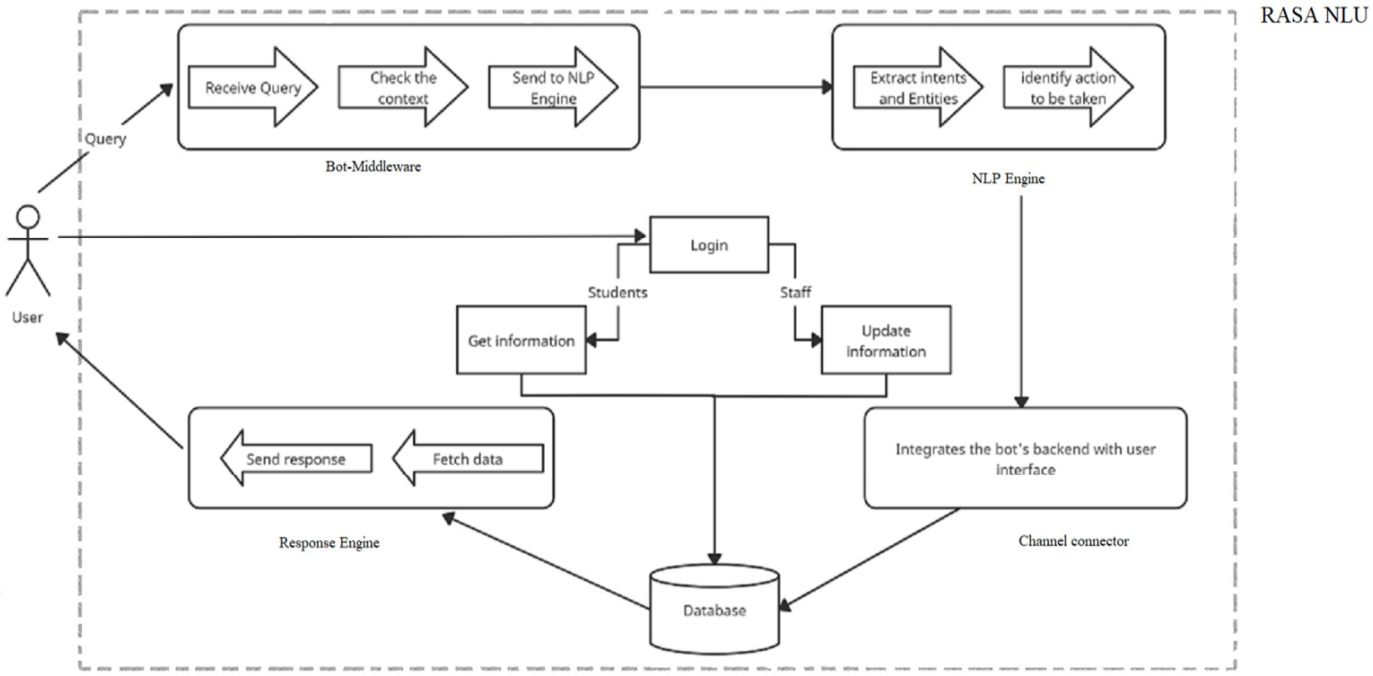


Fig.2 Proposed System Architecture

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IV. RESULTS

The results were tested based on the speed and accuracy of the responses by the chatbot and the time taken by the intranet portal to respond to the requirements of the user. According to the analysis, it was found that the time taken for the response is based on the number of lines in the response given by the chatbot. As the number of lines of response increases, the time taken for the response also increases according to the representation of perfomance of the chatbot [Fig.3].The accuracy of the system is measured to be 95% and this system can be taken for future enhancements.

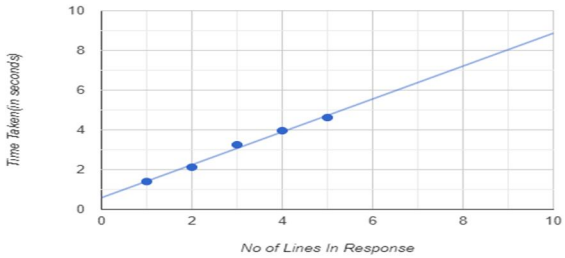


Fig.3 Performance of Chatbot

V. CONCLUSION

Nowadays, chat-bots with artificial intelligence are dramatically changing business. They can reach out to a large audience and be more effective than humans. We proposed a College Management System which has both public internet portal and student/staff intranet portal. A Chat-bot was created in the public portal which is useful for the users to know the college information easily by chat. The student/staff portal was built in such a way that it is easy for the students to view their information as well as the staffs to update the student's information like marks, attendance etc. Hence, our website is demonstrated to be a user-friendly interface which is edible for further enhancements in the future.[7]

VI. FUTURE ENHANCEMENTS

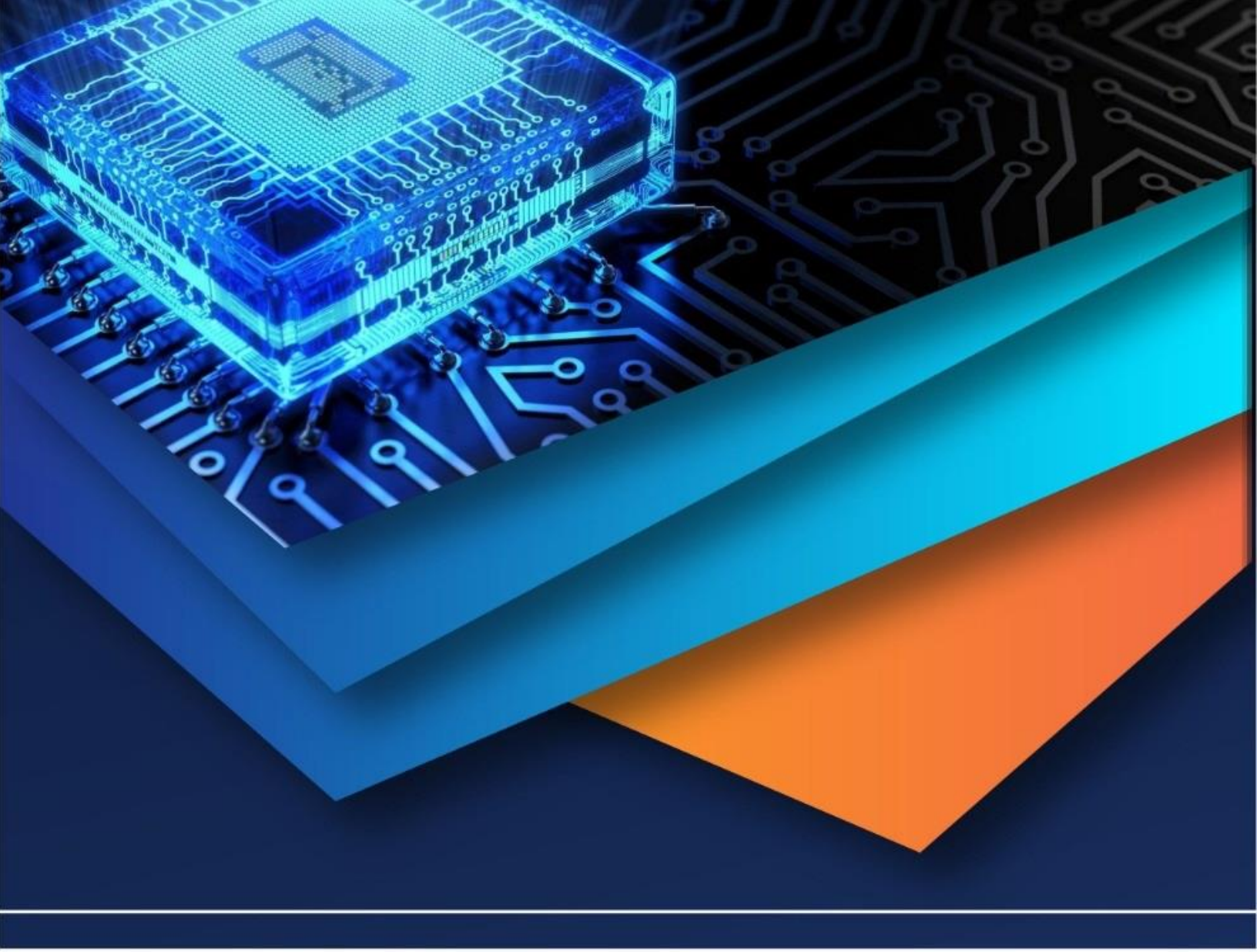
To improve the current functionalities of the Chat-bot for College Management System in the future, the scope of the chat bot can be increased by

A. Testing it on a live website.
B. Integration with multiple channels such as phone calls and SMS.
C. Enabling different languages in the chat-bot according to user's preference.
D. Integrating the chat-bot with android application for more easier access.[8]

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