Chatbot using NLP

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Abstract- A chatbot is a application which is mainly used to provide text-based or text-to-speech online chat conversations in place of live human chat operators. The chatbot aims to establish connection between and a machine and a human. The machine incorporates data so that it can recognize the sentences and come to a conclusion in response to an inquiry. The response principle is the matching of the user's input phrase. The current technological effort involves establishing a chatbot-based system for college inquiries that uses Natural Language Processing to send natural language to a server. In this project, we're creating a chatbot that can answer users' questions about the college. The user will be able to ask the chatbot different questions about the college, including inquiries about the infrastructure and courses. The user will able to ask various questions to the chatbot about the college, the questions may be concerned with the infrastructure and courses.

Keywords- Chatbot, Text, Text-To-Speech, NLP.

I. INTRODUCTION

A chatbot attempts to have a conversation with both people and computers. The computer has knowledge built into it to recognize sentences and can decide for itself how to respond to a query. A conversational agent known as a chatbot converses with users in everyday language. There are many uses for chatbots, including customer service, contact centres, etc. increasing use of personal computers necessitates chatbots. Typically, chatbots offer a text-based user interface that enables users to submit instructions, receive texts, and respond using text-to-speech. A wider audience can safely use chatbot technology when it is connected with well-known web services.

There are two different types of chatbots. One form of chatbots is command-based ones, which rely on a database of responses. The other group includes chatbots built using AI or machine learning techniques. These bots employ Natural Language Processing to create answers to customer inquiries (NLP).

A chatbot is an artificial intelligence (AI) computer that mimics human conversations, including content and language use, using artificial intelligence techniques including image and video processing, and voice analysis. For user inquiries, a chatbot for the college purpose is developed. This chatbot system is an online application that responds to a user's segmented questions. Users only need to select the category for their inquiry before posing their query to the bot that will record it. The user can then obtain the appropriate answers to their questions.

II. LITERATURE SURVEY

Naing Naing Khin[1] In this paper, utilizing the Sequence to Sequence model with Attention Mechanism based on RNN encoder decoder model, we investigate the modes of communication through neural network chatbots. This chatbot is designed to answer frequently asked questions regarding universities and topics linked to higher education. The creation of a chatbot will be challenging if pattern matching or rule-based approaches are used. The results produced by neural network models are encouraging and can be employed in question-and-answer (FAQ) systems. The text, image, and speech recognition sequences are predicted using the Sequence-to-Sequence model. The inputs and outputs have varying sizes and categories can be solved using this technique

Lukas Tommy[2] The chatbot can make it easier to get information by conversing on chatbot applications and adapting the size of its interface to the user's device. Prototype models, object-oriented techniques, and UML are the tools used for modelling, methods, and software development, respectively (Unified Modeling Language). The developed chatbot uses entity extraction and NLP (natural language processing) algorithms in order to answer effectively to student inquiries. Students can now simply, swiftly, and efficiently access academic content at ISB Atma Luhur without needing to zoom in and out thanks to the built chatbot. The development of chatbots for customer service and as a distance learning tool is now underway. The use of a chatbot application makes getting information more convenient.

Shaziya Banu[3] Due to its round-the-clock client support, it is crucial nowadays. A linguistic machine learning algorithm (NLP) is used by a chatbot in a web application to forecast the appropriate answers to user inquiries. For predicting human enquiries, LUIS (Language Understanding Intelligent Service) uses artificial intelligence to process

natural language. In order to anticipate user enquiries, a chatbot is created using LUIS in this study. Luis finds the intents and entities to address user inquiries based on the highest prediction score. This paper explains a high-performing, rapid, precise, and secure web app chatbot. Automated LUIS training is carried out using LUIS APIs, and the endpoint of the chatbot is made public. With the use of strengthened authentication, the chatbot is guarded from illegal access.

Ajinkya Huddar [4] Due to its round-the-clock client support, it is crucial nowadays. A linguistic machine learning algorithm (NLP) is used by a chatbot in a web application to forecast the appropriate answers to user inquiries. For predicting human enquiries, LUIS (Language Understanding Intelligent Service) uses artificial intelligence to process natural language. In order to anticipate user enquiries, a chatbot is created using LUIS in this study. Luis finds the intents and entities to address user inquiries based on the highest prediction score. This paper discusses a web app chatbot that is quick, precise, secure, and high performing.

Manasi Ghadge [5] In this essay, we've spoken about using chatbots in educational settings. It is important that kids are educated in a supportive environment while contemplating any type of institution, including schools and universities. This implies that the infrastructure should captivate each requirement that the instructors or students in that environment deem essential or necessary. The current approach suggests that all the work is done manually and is therefore prone to error. A web-predicted system that will monitor the infrastructure allocation taking these aspects into account in order to reduce errors. As a result, the technology will help to cut down on both the time and the labour required by the time table coordinator.

III. SYSTEM ARCHITECTURE

The system architecture of a system, which is a conceptual design, determines the framework and responses of the system. Its structural qualities are logically supported by an architecture description. It outlines its constituent parts offers a blueprint for the development of systems and products that will cooperate to implement the whole system. The procedure of specifying the architecture, parts, modules, interfaces, and data for a system to meet prearranged requirements is known as system design Fig.1 [6-10].
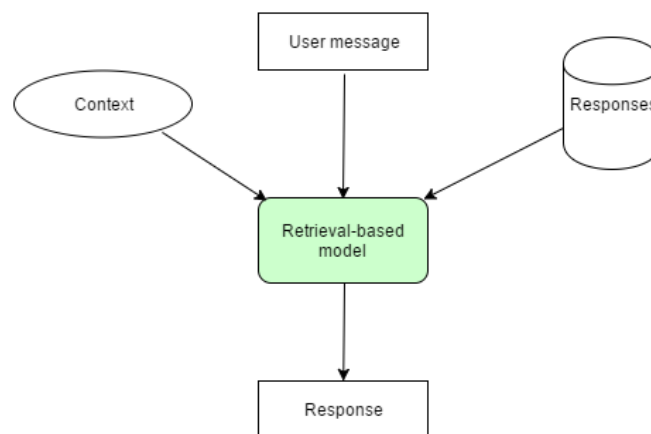

Fig 1. System Architecture

Dataflow Diagram
The classic visual representation of a data flow diagram shows the path that information takes using a system (DFD). A tidy and understandable DFD can vividly display the right amount of system demand. It displays how information arrives and departures from the system, what modifies the data, and where information is kept shows Fig.2 [11].
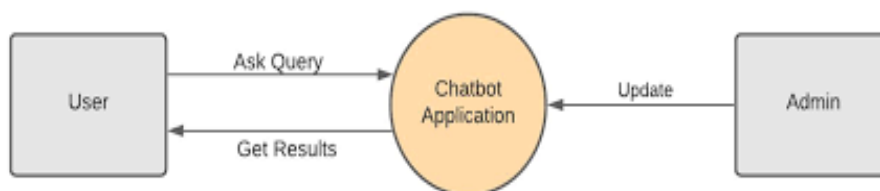

Fig 2. Dataflow diagram

Usecase Diagram
The dynamic behaviour of a system is represented by a use case diagram. To encapsulate the system's functionality, it includes use cases, actors, and their interactions. It reproduces the responsibilities, functions, and actions required by a

system or application subsystem. It demonstrates the basic operations of a system and defines user interactions shows Fig 3 [12].
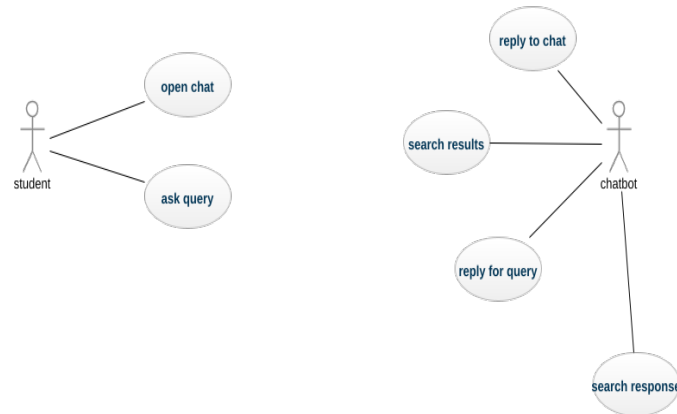

Fig 3. Usecase Diagram

Sequence Diagram

The sequence diagram, which is also known as an event diagram, shows how messages move through the system. By depicting communication between them as a chronologically methodical chain of events, it suggests that any two lifelines were active at the time of communication [13-17]. The message flow is represented by a vertical speckled line that runs the length of the page in UML, whereas the lifeline is signified by a vertical bar. Both branches and iterations are addressed shows Fig 4.
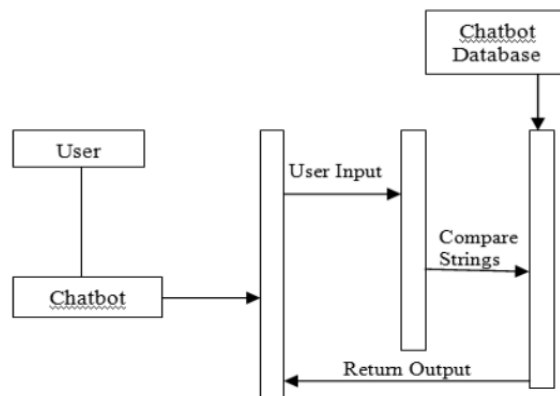

Fig 4. Sequence Diagram

IV. IMPLEMENTATION

Natural Language Processing (NLP)

A branch of linguistics, computer science, and artificial intelligence called "Natural Language Processing" which investigates with an emphasis on how to instruct computers to process and evaluate huge amounts of natural language data, this study examines how computers and human language interact. The ultimate objective is to develop a system that can "understand" the content of documents, including the nuances of language used in various circumstances. The system can classify and arrange the documents by itself once the information and insights have been precisely extracted from the documents. These AI-powered chatbots improve user experience by utilizing a constituent of AI known as natural language processing (NLP). These NLP chatbots, which are also known as virtual mediators or intelligent virtual assistants, support human mediators by handling time-consuming and repetitive contacts [18].

Text-To-Speech

A chatbot is a piece of software that is utilized to carry on an online chat conversation utilizing text or text-to-speech rather than providing direct contact with a live human agent. In essence, a chatbot is a piece of software or a virtual assistant that facilitates conversation between humans and technology. Deep learning's powerful Natural Language Processing (NLP) speech to text technology enables robots to read and understand human language with the intent to behave and respond as humans would [19].

Virtual assistants are the most common examples of conversationally proficient AI. The virtual assistants Siri, Alexa, Cortana, and Google Assistant have made it into our homes via our smartphones. .Assistant have found their way out of our phones and into our homes [20].

Python

Python is a general-purpose, interpreted programming language. In 1991, Python was initially publicly available and was created by Guido van Rossum. Programmers can develop clean, intelligible code for both small and large projects with the aid of its object-oriented methodology and language features. Python has garbage collection and dynamic typing. Structured programming, object-oriented programming, procedural programming, and functional programming are just a few of the examples it supports. Because of its widespread standard library, Python is frequently referred to as a "batteries included" language. There are Python interpreters available for a wide range of different operating systems. Python is simple to use and learn. It is an easy-to-use high-level programming language for programmers.

V. RESULTS AND DISCUSSIONS

A chatbot system has been put in place to help users with their academic needs. A knowledge-based chatbot uses simulation or response generation. Once a user starts submitting questions to the chatbot's Graphical User Interface. The query is used to search the database. If the answer is present in the database, it is exhibited to the user. The suggested Chatbot is a safe bot for business applications that assists users in clearing up portal-related questions and provides answers shows Fig.5 to Fig.9.
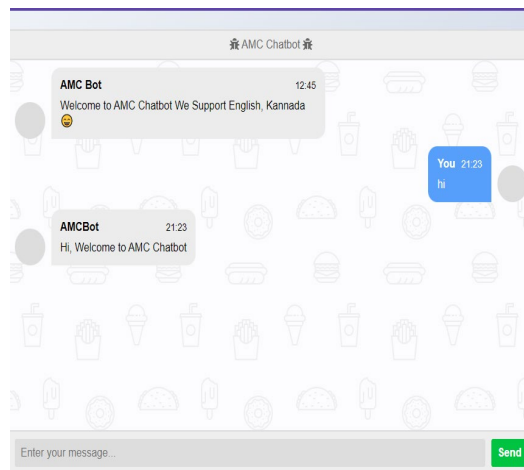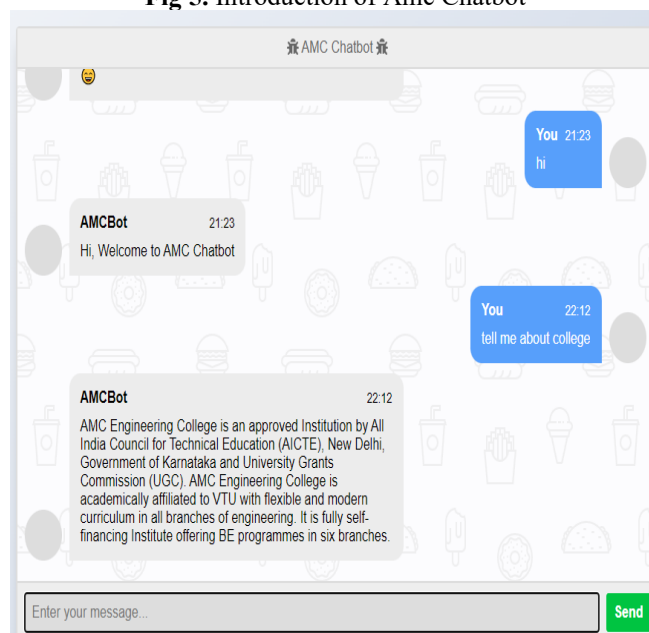

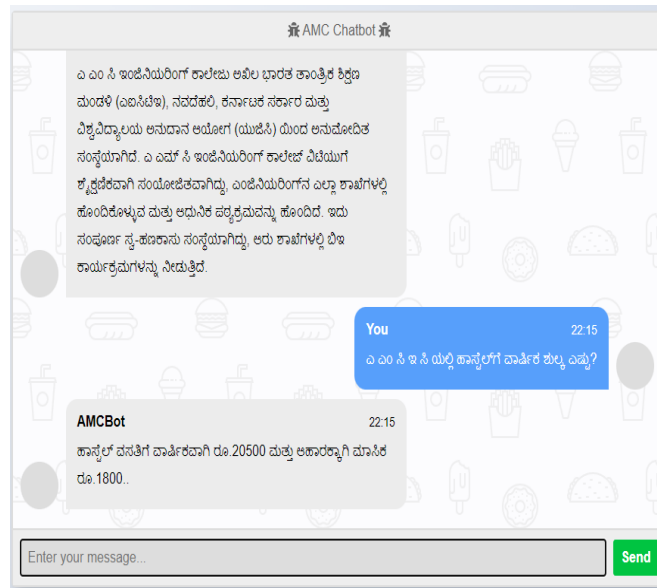**Fig 5.** Introduction of Amc Chatbot

Fig 6. Answering of Amcbot

Fig 7. Chatbot in Kannada

Fig 8. Output For Text to Speech

Fig 9. Output for the Question Regarding Fees

V. CONCLUSION

The system's objective is to assist students in staying informed about their college activities. We can create a chatbot that can translate between human and machine speech and responds to user inquiries. The project's primary goal is to lighten the workload of the college's office employees and speed up the processing of user requests. The purpose of this project is to generate a chatbot that students may utilize to rapidly find information on the college website. To sum up, the College Chatbot is useful for directing students to the most reliable and current information sources.

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