Review Paper on Chatbot For College

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Abstract- *In today's digital age, the integration of chatbots in educational institutions have become increasingly practiced, providing a promising solution to resolve student and parent's queries. This paper presents the design and development of a chatbot for college communities, aiming to offer timely assistance, information, and guidance to student throughout their academic journey. The chatbot is designed and developed with natural language processing capabilities to understand and respond to different inquiries related to course detail, academic resources, campus events and administrative procedures. This paper discusses the benefits, challenges, and future directions of implementing chatbot in college emphasizing the importance of technological innovation in enhancing student experiences and outcomes.*

Keywords- Chatbot, NLP, NLTK, JSON

I. INTRODUCTION

A chatbot is a computer program or an artificial intelligence system designed to simulate conversation with human users, typically through text-based interfaces such as messaging applications, websites, or mobile apps. Chatbots are programmed to understand natural language inputs from users and respond in a conversational manner, providing information, answering questions, or assisting with tasks.

Introducing a chatbot for college can revolutionize the way students and faculty interact with campus resources and services. Imagine having a virtual assistant available 24/7 to answer inquiries, offers academic details, offer campus events, and even assist with administrative tasks.

With its natural language processing capabilities, the chatbot can understand and respond to inquiries in real-time, providing accurate and timely information. If students need to find about course requirements or campus resources or campus events the chatbot is there to help.

Moreover, the chatbot can streamline administrative processes by handling tasks like course registration, scheduling appointments and providing access to important documents and forms. This not only saves time for students and staff but also reduces the workload on administrative personnel.

Furthermore, chatbots have the potential to revolutionize the way colleges engage with their students and faculty members. By facilitating seamless communication channels, chatbots can bridge the gap between students and academic advisors, streamline feedback processes, and foster a sense of community within the campus environment.

II. LITERATURE REVIEW

Authors Yurio Windiatmoo, Ridho Rahmadi, Ahmad Fathan Hidayatullah [1] implemented a chatbot based on deep learning which could be integrated with Facebook Messenger to answer university-related queries. The evaluation results of the model gave nearly perfect scores of precisions, recall, and FI with fast response time. However, the chatbot had not been used operationally on campus and thus its effectiveness and ease of use for users could not be measured yet. The authors in [6] proposed a chatbot called Eliza. In 1966, Eliza was developed, who appeared ready to deceive consumers into believing they were conversing with a real person. It was created to mimic a therapist who would ask open-ended inquiries and even follow up with additional questions. It is regarded as the first conversational agent in personal computer history. It operates as a consultant by rephrasing the client's arguments and recommending them as conversation starters.

Authors Koundinya Hrushikesh, Ajay Krishna Palakurthi, Vaishnavi Putnala, Ashok Kumar [2] implemented an online chatbot system for visitors to the college website based on the AIML language which is a type of XML that enables the user to get academic information. The chatbot utilized WordNet calculation and grammatical form labelling to distinguish the feeling of the words. The main limitation of WordNet is that it does not provide a clear distinction criterion between atomic and non-atomic lexical units due to which the chatbot is unable to recognize more words. Another AI-based chatbot is proposed by the authors in [8] named Erasmus. This chatbot answers questions about university information. It was designed as an end-to-end system in which their cloud services were used, starting from

API, AI (Dialog flow), Mlab (MongoDB cloud), and

IBM Bluemix (webhook API). This chatbot took quite a long latency to respond to the users as it uses too many cloud services. It achieved an average satisfaction of 60 percent.

A study that includes an overview of Chatbot design strategies is presented in [6], as well as a comparison of different design techniques from nine carefully selected studies based on the primary methods utilized. The study addresses the techniques' parallels and contrasts, focusing on the Loebner Prize-winning Chatbots. They also employed NLP and Natural Language Toolkit (NLTK). Authors Neelkumar P. Patel, Devangi R. Parikh, Darshan A. Patel, Ronak R. Patel developed an interactive university chatbot with a GUI similar to a conventional messaging application that could answer text-based queries with minimal response time and very few database hits. On the downside the chatbot worked well only if the user framed the query using predefined keywords, it provided default answers when synonyms of keywords were used.

The authors in [7] proposed a technique called ALICE (Artificial Linguistic Internet Computer Entity). It is an award-winning open-source regular language artificial intelligence visit robot that responds to queries using AIML (Artificial Intelligence Mark-Up Language). It is motivated by ELIZA and an open-source chatbot created by Dr. Wallace, which depends on normal language understanding and example coordination. It has won the Loebner prize multiple times. Authors S. Kumari, Z. Naikwadi, A. Akole, P. Darshankar [4] implemented a voice and text-based chatbot which could answer admission-related queries. In addition to the previously implemented works, this chatbot allowed the users to express their satisfaction with the provided answers by pressing the like or dislike buttons. This data was stored at the backend which served as a guideline for the Administrator to improve the answers framed. However, it could not understand the user's query if there were any glitches in input due to human spoken language, like grammar error or a context error.

III. IDEA/ METHODOLOGY

A college chatbot that assists students with various aspects of campus life, including course-related inquiries, campus resources, event information and administrative tasks.

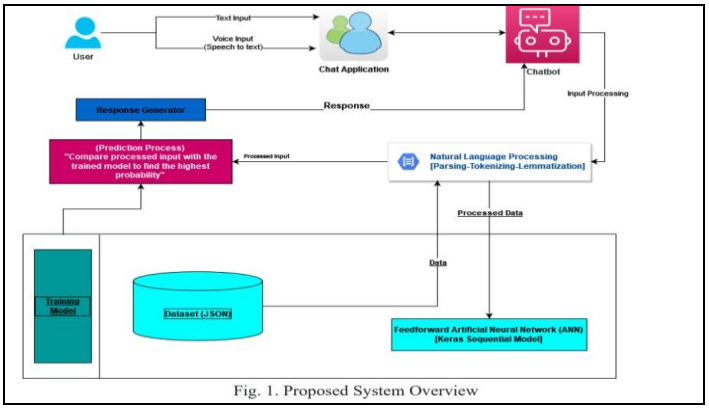

Fig. 1. Proposed System Overview

- Input Processing: The first process, input processing, deals with the creation of intake from input. Input that learners attend to and process is converted to intake, the subset of input that is usable for acquisition.
- Response Generator: This reply to reviews and messages generator helps you quickly craft effective responses to customer reviews and messages.
- Natural Language Processing: Natural Language processing uses many different techniques to enable computers to understand natural language as humans do.
- Prediction Processing: This process uses data along with analysis, statistics, and machine learning techniques to create a predictive model for forecasting future events.
- Training Model: A training model is a dataset that is used to train an ML algorithm.
- Dataset (JSON): It is an open data interchange format that is both human and machine readable.
- Artificial Neural Network: It is a method in artificial intelligence that teaches computers to process data in a way that is inspired by the human brain.

ALGORITHM STEPS

Step 1: Start.
Step 2: Get the input query from the user
Step 3: The query is pre-processed.
Step 4: Fetch the remaining keywords from the query.
Step 5: Match the fetched keywords with the keywords in Knowledge base, and provide an appropriate response.
Step 6: Further the Database module is used to call proper services using entity information to find proper data.
Step 7: The keywords will be matched with the help of keyword matching algorithm.
Step 8: It returns the query response to the bot.
Step 9: Chat-bot packages the data into proper response for display by the client.
Step 10: Exit

IV. CONCLUSION

This research study presents a college enquiry chatbot that can be integrated with a college website to interact with students, parents and visitors and answer their questions about the college. The proposed chatbot will be able to accept text-based [5] input from users. We have conducted a comprehensive literature survey to find the most appropriate chatbot framework and have referred to existing works that could provide an insight into the domains of NLP and Conversational AI.

This research study is focused on identifying the requirements for the in the chatbot space: development of a dynamic chatbot that supports text interaction with the users.

As technology continues to advance, there is vast potential for further development and expansion of the chatbot's capabilities, ensuring its ongoing relevance and utility in meeting the evolving needs of higher education.

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