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AI based Automated Voice Responder for College Queries

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ABSTRACT: College Casio Bot is a virtual assistant, it provides all the details about the institution that is the navigation maps of the department and the entire college. It provides the information about each department, HOD's of the respective departments, faculty and their staff rooms with images and videos. It provides all the latest circulars and information with respect to any events held at the institution. It also provides the student's fee details and admission details accurately. The Casio Bot determines the correlation between user's queries and answers. It provides two modes like text mode and audio mode for better user experiences. For any queries regarding the institution it is difficult for the parents who reside in different cities, states, and countries to enquire about the institution. The goal of this system is to provide a platform for the students and parents to ask queries and clear doubts through simple English language, text messages or audio commands. Students and parents will amalgamate with bot instead of making queue at enquiry desk to ask queries related to admission procedure, location of the department, fee related issues or in knowing the HoD's and faculties of the department.

KEYWORDS: Artificial Intelligence, Database, Intelligence Machine

HISTORY: The history of AI-based automated voice responders for college queries traces back to the early 2000s with the emergence of interactive voice response (IVR) systems. These systems initially relied on rule-based algorithms to handle basic queries, such as providing information about admission procedures, course offerings, and campus facilities. Over time, advancements in natural language processing (NLP) and machine learning led to the development of more sophisticated AI-powered voice assistants capable of understanding and responding to complex inquiries. These systems leverage deep learning models, such as recurrent neural networks (RNNs) and transformers, to interpret spoken language and provide accurate answers in real-time. In the college context, AI-based voice responders have become integral parts of student services, assisting with tasks like course registration, academic advising, and campus navigation. They offer round-the-clock support, freeing up administrative staff to focus on more specialized tasks while providing students with instant access to information and assistance. Moreover, with the increasing popularity of smart speakers and virtual assistants like Amazon Alexa and Google Assistant, colleges have begun integrating AI-based voice responders into their communication channels, offering students another convenient way to access college services and resources. Automated voice responders for college queries have evolved significantly over the years. Initially, basic systems were developed to handle routine inquiries such as admission procedures and course information. With advancements in AI, these systems began incorporating natural language processing (NLP) and speech recognition to better understand and respond to a wider range of queries. Today, AI-driven voice assistants like Siri and Google Assistant can provide comprehensive assistance to students regarding various aspects of college life, including academic support, campus navigation, and even emotional counseling.

I. INTRODUCTION

This project is focusing on creating a chatbot to be used by students to get their queries responded easily from the college website. A chatbot is a program which can do real conversations with textual and/or auditory methods [1]. Using Artificial Intelligence (AI), chatbots can simulate human conversations. There are two categories of chatbots. One category is command based chatbots where chatbots rely on a databank of replies and heuristics. The user must be very specific while asking the questions so that the bot can answer. Hence, these bots can answer limited set of questions and cannot perform function outside of the code. The other category is chatbots based on AI or machine

learning algorithms, these bots can answer ambiguous questions which means the user do not have to be specific while asking questions. Whenever a user asks any query, the bot will first analyze the request, then identifies intents and entities, builds a response and sends it back to the user. Now, intents mean intention of the query and entity means details of that query. For example, if a student wants to know the office hours of a faculty then the intent will be office hours and entity will be name of the faculty in this case. AI-powered chatbots are motivated by the need of traditional websites to provide a chat facility where a bot is required to be able to chat with user and solve queries. When live agent can handle only two to three operations at a time, chatbots can operate without an upper limit which really scales up the operations. Also, if any school or business is receiving lots of queries, having a chatbot on a website takes off the load from support team. Having a chatbot clearly improves the response rate compared to human support team. In addition, since millennials prefer live chats over a phone call, they find a chatbot, which provide a highly interactive marketing platform, very attractive. Furthermore, a chatbot can automate the repetitive tasks. There can be some scenarios where a business or school receives same queries in a day for many times and support team must respond to each query repetitively. Lastly, the most important advantage of having a chatbot is that it is available 24/7. No matter what time it is, a user can get a query solved. All these advantages of a chatbot constitute the motivation to implement a College Enquiry Bot.

II. MAIN OBJECTIVE OF THE PROJECT

1. Efficiency: Provide quick and accurate responses to common queries, reducing wait times for students and staff.
2. 24/7 Availability: Offer support round-the-clock, accommodating users in different time zones or with varying schedules.
- Scalability: Handle a large volume of inquiries simultaneously, ensuring all users receive timely assistance.
3. Consistency: Maintain consistent messaging and information across all interactions, regardless of the user or time of day.
4. Personalization: Tailor responses to individual users whenever possible, enhancing the user experience and engagement.
5. Data Collection and Analysis: Gather data on user inquiries to identify trends, areas for improvement, and frequently asked questions.
6. Integration: Seamlessly integrate with existing systems and platforms used by the college, such as websites, mobile apps, or communication tools.
7. Accessibility: Ensure accessibility for users with disabilities, providing alternative communication methods if needed.
8. Security and Privacy: Protect sensitive user information and adhere to relevant data protection regulations.
9. Continuous Improvement: Regularly update and refine the AI system based on user feedback and changing needs within the college community.

III. LITERATURE SURVEY

Purpose Explain the objectives of the survey, such as understanding the current state of College Bots, their applications, benefits, and challenges. **Scope** Define the boundaries of the survey, including specific areas of focus like student services, academic advising, or mental health support. **Background Definition** Provide a clear definition of what a College Bot is and its role in an academic environment. **Historical Context:** Brief history of chatbot development and their evolution in educational contexts. **Applications of College Bots** **Student Services:** How bots assist with administrative tasks like enrollment, scheduling, and providing information about campus resources. **Academic Advising:** Use of bots for course recommendations, academic planning, and answering academic queries. **Mental Health Support** Implementation of bots for providing initial counseling, stress management tips, and directing students to professional help. **Tutoring and Learning Support** Bots that help with subject-specific tutoring, homework help, and study resources. **Engagement and Retention:** Strategies for using bots to increase student engagement and retention through personalized interactions. **Technologies Used** **Natural Language Processing (NLP)** Discuss how NLP enables bots to understand and process human language. **Machine Learning and AI** Overview of machine learning algorithms and AI techniques used in the development of College Bots. **User Interface Design:** Best practices in designing user interfaces for bots to ensure they are user-friendly and accessible. **Benefits of College Bots** **Efficiency** How bots streamline administrative processes and reduce workload on staff.

[1] Ram Manoj Sharma has contributed significantly to the development of automated voice response systems for college queries, focusing on chatbot technology that leverages artificial intelligence (AI). His work primarily revolves around creating chatbots capable of understanding and responding to student queries through both text and voice inputs. The system proposed by Prof. Sharma utilizes AI algorithms and natural language processing (NLP) to interpret

and process user queries. This chatbot system includes various modules such as online enquiry and noticeboards, designed to provide efficient and timely responses to students' questions about academics, admissions, fee structures, and other college-related information

[2] P. Nikhil and G. Jyothi on "Automated Voice Responder for College Queries" involves the development of an intelligent chatbot system using AIML (Artificial Intelligence Mark-up Language). The chatbot is designed to respond to various college-related inquiries, such as admission processes, course details, and campus facilities, by interpreting and responding to user queries in natural language. This system aims to enhance the efficiency and accessibility of college information for students and staff

[3] Ms. Ch. Lavanya Susanna and her team developed a "College Enquiry Chatbot" designed to address queries related to college activities, such as exam schedules, academic details, fee structures, and placement information. The chatbot uses artificial intelligence and a knowledge database to provide instant responses, significantly reducing the workload on college staff and improving response times for students. The system employs techniques like Natural Language Processing (NLP) and keyword matching to understand and respond to user queries effectively

[4] Payal Jain has contributed to the field of automated voice responders for college queries through her work titled "College Enquiry ChatBot Using Iterative Model," published in the International Journal of Scientific Engineering and Research (IJSER) in January 2019. Her research focuses on developing a chatbot system that uses pattern matching and keyword matching to effectively respond to students' inquiries about college-related information. The iterative model enhances the chatbot's ability to understand and address various queries, providing a practical solution for automating college enquiry processes.

[5] Prof. K. Bala and Mukesh Kumar, along with their colleagues Sayali Hulawale and Sahil Pandita, developed a chatbot for college management systems using artificial intelligence. Their work, published in the International Research Journal of Engineering and Technology (IRJET), focuses on creating an automated system to respond to student queries regarding college-related information. The chatbot utilizes natural language processing to interact with users, providing answers based on a stored database, thus improving efficiency and accessibility for students seeking information about their college (IJERT).

[6] Sagar Pawar and Omkar Rane, along with their co-authors, worked on the development of a web-based college enquiry chatbot. Their research was published in the International Journal of Innovative Research in Science, Engineering and Technology in April 2018. The primary objective of this chatbot is to assist students by providing automated responses to their queries related to college activities, admission processes, fee structures, scholarship details, and more.

IV. METHODOLOGY

1. Implementation of Complete Framework

Enquiry bot that runs a automated task over the internet Such programs are often designed to convincingly simulate how a human would behave as a conversational partner, that implementing by the AIML which is an award winning open source natural language artificial intelligence college enquiry bot which utilizes AIML to form responses to queries.

2. Knowledgebase creation for Chabot

Interactive Question-Answering systems turn the focus to the communication between the user and the program, not just the questionanswering. These systems allow either the user to drive the dialogue or the system to play a greater role by suggesting related materials or even refinements to a user's query. An interactive layer in a QA system also allows for more complex queries to be issued by the user as mistakes made by the system can be rectified through user input; or the system can engage the user to check its understanding of a user's query is correct. Text to Speech: The bot also speaks out the answer

3. Integration and Connectivity

As that defined in bot to bringing together the all data to collect from the knowledgebase and place in SQLite3 database. That connected with the application and gets the proper query of college. Display the conversation between user and the bot sure ask the query and bot will be answrng.as we can see the conversation user say hi and answer of hi display by the bot. Its totally depends on user which type of query user will asked.

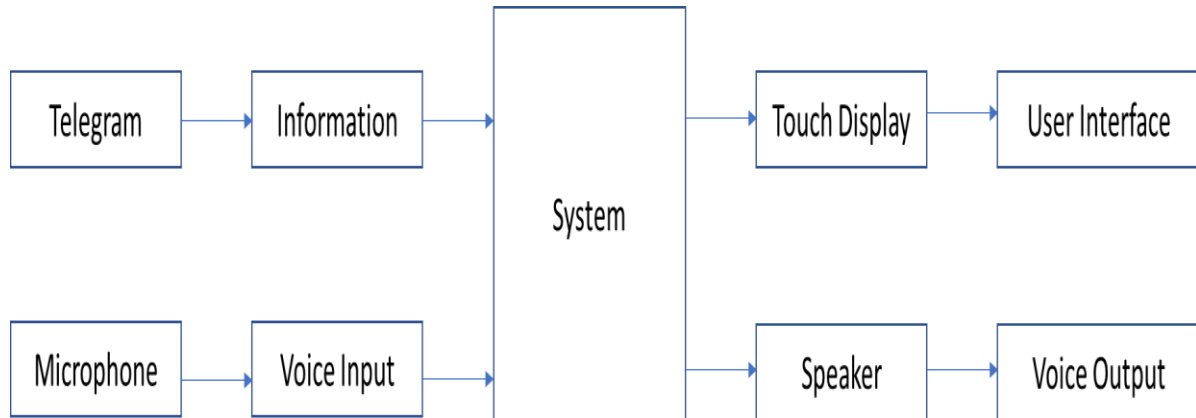


Fig 1: SYSTEM ARCHITECTURE

V. EXISTING SYSTEM

In the early day GSM technology is used for displaying information. Here GSM module which is located on a digital notice board is used to receive information from the authorized user and displayed it. In this work, an only text message is transferred. It becomes inefficient when we need to transfer other than text messages. By introducing the concept of Bluetooth technology communications become faster and more efficient. Here an android application is used for enabling Bluetooth for sending messages. This work mainly focused on cable replacement and data that can send up to the rate of 1 Mb per sec. Bluetooth has a limited range (approximately 70m to 100 m). To increase the range of communication Zigbee-based notice boards are introduced. But here data rate is only about 250 kbps. Wi-Fi-based digital notice boards are currently used in many places like schools, colleges, railway stations, Airports, etc. Here Raspberry pi which acts as a receiver and is connected to local Wi-Fi networks. When a person wants to send information to raspberry pi, the person first connected to the corresponding Wi-Fi. So sender and receiver must be within the Wi-Fi range. The maximum possible range of Wi-Fi is about 100 meters. Due to this range, information exchange must do within the boundaries.

VI. PROPOSED SYSTEM

The aim of our Proposed System is to develop an web based bot Application, which provides answer to the query of the student very effectively. Students just have to put their query to the bot which is used for chatting. The system will use the artificial intelligence algorithms to give appropriate answers to the user. If the answer is found invalid, then some system to declare the answer as invalid can be incorporated. These invalid answers can be deleted or modified by the admin of the system. The student will not have to go to the college for enquiring something. Student can use the chat bot to get the answers to their queries. This system may help students to stay updated with the college activities. The basic algorithm that will be implemented for working of this proposed system

VII. APPLICATIONS

1. Academic Assistance: Provides students with instant answers to academic questions, including explanations of complex concepts, solving problems, and offering study tips.
2. Administrative Support: Helps with administrative tasks such as checking class schedules, course registration, and providing information on campus events and policies.
3. Personalized Tutoring: Offers personalized tutoring sessions based on the student's performance, learning style, and academic needs.
4. Assignment Reminders: Sends reminders about upcoming assignments, exams, and deadlines to help students manage their time effectively.
5. Resource Recommendations: Suggests relevant resources such as books, articles, and online courses that can aid in the student's learning process.
6. Mental Health Support: Provides information on mental health resources available on campus, including counseling services and stress management tips.
7. Social Engagement: Encourages student engagement by informing them about clubs, organizations, and social events happening on campus.

8. Technical Support: Offers technical support for accessing online learning platforms, submitting assignments, and resolving common IT issues.
9. Career Guidance: Provides career advice, information on internships, job opportunities, and helps with resume building and interview preparation.
10. These applications help enhance the overall student experience by providing timely support and resources tailored to their needs.

VIII. ADVANTAGES

1. Improved Student Support: A college bot can provide students with immediate answers to common questions about campus services, academic schedules, and administrative processes, reducing the burden on support staff.
2. Enhanced Communication: Bots can facilitate better communication between students, faculty, and administration by sending timely reminders, updates, and important announcements.
3. 24/7 Availability: Unlike human staff, a bot can operate around the clock, providing assistance and information to students at any time, which is particularly useful for international students in different time zones.
4. Personalized Learning: Bots can offer personalized learning experiences by providing tailored academic resources, study tips, and course recommendations based on individual student profiles and learning preferences.
5. Data Collection and Analysis: Bots can gather data on student interactions, which can be analyzed to identify trends, common issues, and areas for improvement in student services and academic programs.
6. Cost-Effective: Implementing a bot can be more cost-effective in the long run compared to hiring additional staff, especially for handling routine inquiries and tasks.
7. Scalability: Bots can easily scale to accommodate an increasing number of students without a significant increase in operational costs or complexity.
8. Increased Engagement: Interactive bots can increase student engagement by providing a more dynamic and responsive means of communication compared to traditional methods like emails and bulletin boards.
9. Accessibility: Bots can assist students with disabilities by providing information and support in formats that are accessible to them, such as text-to-speech or simplified text versions.
10. Resource Optimization: By handling routine inquiries, bots free up human staff to focus on more complex and personalized student issues, optimizing the use of available resources.

IX. CONCLUSION

The Proposed System will be based on Alice and AIML algorithm that will be used to identify answers related to user submitted questions. The need is to develop a database where all the related data will be stored and to develop a User Interface. The web interface developed will have two parts, one for simple users and one for the administrator. A background research took place, which included an overview of the conversation procedure and any relevant chat bots available. A database will be developed, which will store information about questions, answers, keywords, logs and feedback messages.

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