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Admission Assistant: College Enquiry Chatbot As An Conversional Agent.

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Abstract:

In an era where digitalization is revolutionizing various sectors, educational institutions are also embracing technological innovations to streamline administrative processes and enhance user experiences. This research article presents a case study on the implementation of a College Admission Inquiry Chatbot aimed at improving the admission process for prospective students. The study examines the development, deployment, and evaluation of the chatbot within a college setting, highlighting its impact on user satisfaction, efficiency, and overall effectiveness of the admission process. Through user feedback and data analysis, the study demonstrates the benefits of integrating an intelligent chatbot in addressing admission-related inquiries, reducing response times, and providing personalized support to applicants. The findings underscore the significance of leveraging artificial intelligence in enhancing transparency, accessibility, and efficiency in college admissions, thereby contributing to the advancement of educational technology and administrative practices.

Keywords: College Admission Inquiry Chatbot, Admission process improvement, Artificial intelligence in admissions

Introduction:

In the rapidly evolving landscape of education, colleges and universities are increasingly embracing technological innovations to streamline admission processes, enhance student experiences, and improve overall efficiency [1]. One such innovation is the implementation of chatbots – artificial intelligence-driven conversational agents – to address the growing demand for instant information and support among students, faculty, and staff.

The "College admission inquiry chatbot" project aims to develop an intelligent conversational agent tailored specifically to the needs of a college or university environment. This chatbot serves as a virtual assistant capable of responding to a wide range of inquiries related to admissions, course offerings, campus facilities,

events, academic support services, and more. The proliferation of digital communication channels has revolutionized the way individuals seek information and interact with institutions [2]. With the rise of messaging platforms and virtual assistants, students expect convenient access to relevant information round-the-clock. Traditional methods of communication such as phone calls and emails are often perceived as time-consuming and inefficient. In this context, a chatbot offers a modern and accessible solution to address inquiries promptly, thereby improving user satisfaction and reducing administrative burden. The following are the objectives of our proposed admission assistance system:

- Provide accurate and up-to-date information about the admissions process, program requirements, application deadlines, and financial aid options.
- Offer personalized guidance and support to prospective applicants based on their individual needs and preferences.
- Facilitate seamless communication between applicants and the admissions office, ensuring timely responses to inquiries and reducing wait times.
- Improve the overall user experience by offering a convenient and accessible platform for obtaining admission-related information.
- Assist admissions staff by handling routine inquiries, freeing up time for more complex tasks and enhancing operational efficiency.

The College admission enquiry chatbot is designed to be user-friendly and intuitive, catering to individuals with varying levels of technological proficiency. Leveraging natural language processing (NLP) and machine learning algorithms, the chatbot can understand and interpret user queries, providing accurate and personalized responses in real-time [3]. Furthermore, the chatbot learns from user interactions over time, continually improving its knowledge base and conversational abilities. By implementing a College admission enquiry chatbot, educational institutions stand to benefit in several ways.

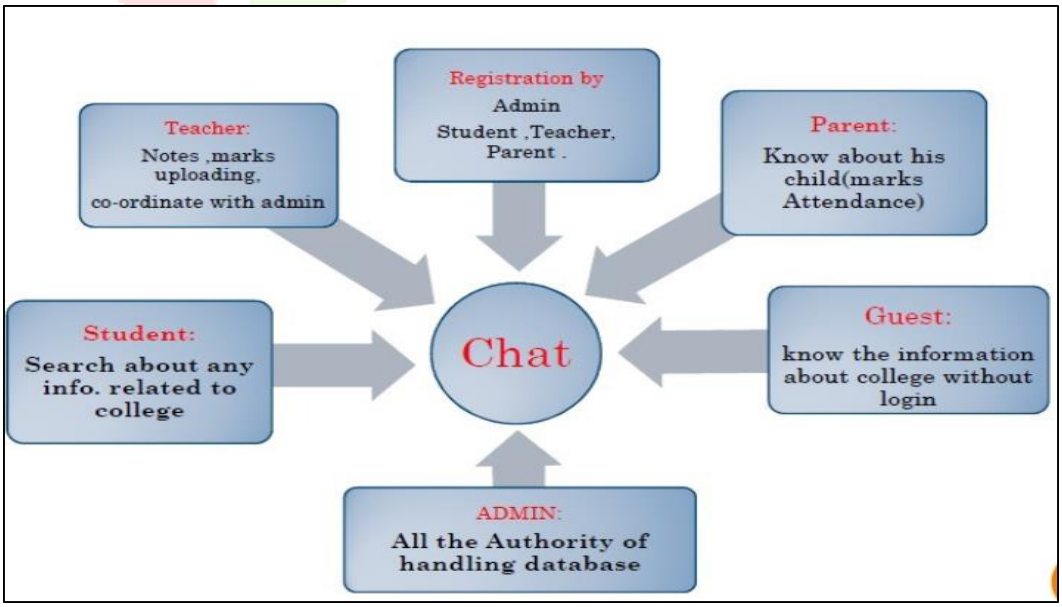

Figure 1: General working process of chatbot systems

Firstly, it enhances the accessibility of information, empowering students, prospective applicants, faculty, and staff to quickly find answers to their questions without extensive searching or waiting for human assistance. Secondly, it alleviates the workload of administrative staff by handling routine inquiries and freeing up time for more complex tasks. Additionally, the chatbot can collect valuable data on user preferences and frequently asked questions, enabling administrators to gain insights into areas of interest and optimize service delivery accordingly.

In summary, the College admission enquiry chatbot project represents a proactive step towards embracing technology to meet the evolving needs of the academic community. By leveraging the power of artificial intelligence and natural language processing, this chatbot facilitates seamless communication, enhances user experiences, and fosters efficiency within the college environment. As educational institutions continue to embrace digital transformation, the College admission enquiry chatbot serves as a valuable tool in delivering timely and personalized support to stakeholders across the campus community.

Remaining paper is arrange as per following, section-II consists of background study of various chatbot approaches. Section-III covers the methodology of chatbot construction, section –IV consists of Experiment and result analysis while Section V end with conclusion.

2. Background Study:

The College Admission Chatbot is an intelligent virtual assistant designed to streamline the admissions process for prospective students and alleviate the burden on admissions offices. Leveraging natural language processing (NLP) and machine learning algorithms, the chatbot interacts with users in real-time, providing accurate and personalized responses to inquiries about admissions criteria, program details, application deadlines, and financial aid options.

1. Yurio Windiatmoko, Ahmad Fathan Hidayatullah, and Ridho Rahmadi. "Developing FB chatbot based on deep learning using RASA framework for university enquiries". In: arXiv preprint arXiv:2009.12341 (2020).

This paper developing FB Chatbot based on Deep Learning using RASA Framework for University Enquiries" by Yurio Windiatmoko, Ahmad Fathan Hidayatullah, and Ridho Rahmadi explores the development of a Facebook chatbot utilizing deep learning techniques within the RASA framework specifically tailored for university inquiries. The authors detail the architecture and implementation of the chatbot, focusing on its ability to handle a wide range of queries related to university admissions, programs, facilities, and other relevant information. By leveraging deep learning algorithms, the chatbot aims to understand and respond to user inquiries effectively, enhancing user experience and accessibility. The study contributes to the growing body of research on chatbot development for educational institutions, offering insights into the application of deep learning methodologies within the RASA framework for university enquiries [4]

2. Muhammad Rana. "Eaglebot: A Chatbot Based Multi-Tier Question Answering System For Retrieving Answers From Heterogeneous Sources Using BERT". In: (2019).

This paper present Eaglebot: A Chatbot Based Multi-Tier Question Answering System For Retrieving Answers From Heterogeneous Sources Using BERT" by Muhammad Rana introduces Eaglebot, a sophisticated chatbot system designed for multi-tier question answering by leveraging BERT (Bidirectional Encoder Representations from Transformers) and integrating heterogeneous data sources. The chatbot is capable of retrieving answers from diverse repositories, enhancing its ability to provide accurate and comprehensive responses to user queries. By harnessing BERT's advanced language understanding capabilities, Eaglebot can effectively process and analyse user questions, enabling it to access and extract relevant information from disparate sources. The study showcases the potential of leveraging state-of-the-art natural language processing techniques to develop intelligent chatbot systems capable of addressing complex queries and retrieving information from a variety of sources [5]

3. Bhavika R Ranoliya, Nidhi Raghuwanshi, and Sanjay Singh. "Chatbot for university related FAQs". In:2017 International Conference on Advances in Computing, Communications and Informatics (ICACCI). IEEE.2017, pp. 1525–1530.This paper consists of "Chatbot for University Related FAQs" by Bhavika R Ranoliya, Nidhi Raghuwanshi, and Sanjay Singh presents the development of a chatbot specifically tailored to address frequently asked questions (FAQs) related to universities. The authors describe the architecture and implementation of the chatbot, which utilizes natural language processing (NLP) techniques to understand and respond to user queries effectively [6]

4. CB Ram Mohan, A Babu Divi, Abbineni Venkatesh, et al. "Chatbot for University Resource Booking". In: Int. J. Sci. Res. Comput. Sci. Eng. Inf. Technol 5.2 (2019), pp. 113–116.

The paper "Chatbot for University Resource Booking" by CB Ram Mohan, A Babu Divi, Abbineni Venkatesh, et al. introduces a chatbot system designed to facilitate resource booking within university environments. The chatbot streamlines the process of reserving university resources such as meeting rooms, equipment, and facilities by allowing users to interact with a conversational interface. Leveraging natural language processing (NLP) techniques, the chatbot interprets user requests and schedules bookings accordingly, thereby reducing the administrative overhead associated with manual booking processes. The study demonstrates the practical application of chatbot technology to optimize resource utilization within universities, enhancing efficiency and convenience for both students and faculty members [7]

Table 1: Literature review of chatbot systems.

Sr. no	Reference	Methodology	Advantages	Disadvantages
1	Yurio Windiatmoko (2020)	RASA Framework	-User Friendly Interface like FB -Efficiently guide college resource utilization	-Utilizes Limited resource using RASA. -Only uses text as input
2	Walaa Hassan El-Ashmawi (2023)	Multilayer Perceptron (MLP)	-standardized and user-friendly interface. -Also Utilizes a voice and text as a input	-Scope is limited to only one college. -Only uses English as a standard language.
3	Bhavika R Ranoliya (2017)	-IBM Watson	-Heterogeneous resource utilization. -Uses BART techniques for efficiently answer the query from users -Multitier architecture for chat bot development	-Utilizes predefine server for development. -only text input process
4	CB Ram Mohan(2019)	IBM Watson	-chatbot help to guide the availability of resource -Help to university resource booking	-Difficulty to achieve good performance in booking resource. -Feed with very limited data

3. Methodology

The College Admission Inquiry Chatbot harnesses the power of Natural Language Processing (NLP)[8] and IBM Watson's advanced cognitive computing capabilities to revolutionize the college admissions process [9]. Figure 2 show the architecture of proposed architecture of college admission inquiry chatbot.

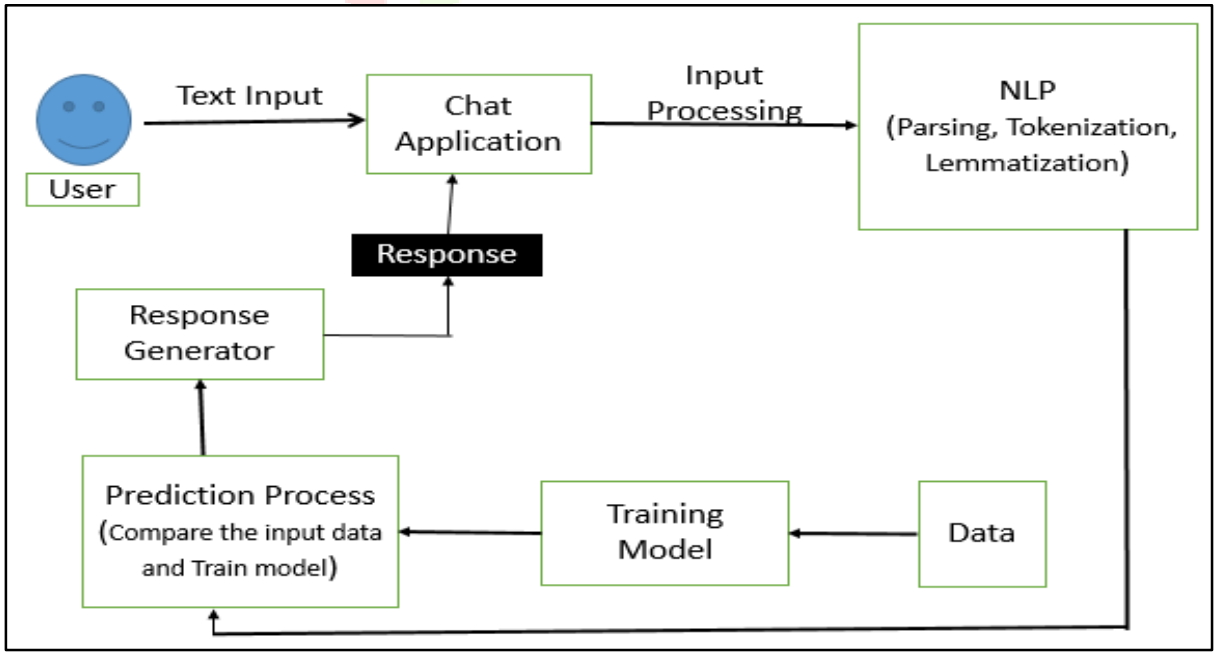

Figure 3: Proposed system architecture of admission enquiry chatbot.

Following steps, we follow to develop admission assistant chatbot.

1. Define Scope and Requirements:

- Target audience: Who will use the chatbot (high school students, parents, etc.)?
- Functionality: What tasks should the chatbot perform (answer FAQs, recommend programs, guide through application process)?
- Information sources: What information should the chatbot access (college websites, admission data, scholarship databases)?
- Integration: Will the chatbot connect to any existing systems (application portals, CRM)?

2. Data Collection and Pre-processing:

- Gather relevant data: FAQs, admission guidelines, program descriptions, scholarship information.
- Pre-process text data: Clean, normalize, tokenize, stem/lemmatize text.
- Annotate data: Label data with categories, intents, or entities if needed.

3. Choose NLP Techniques:

- Intent recognition: Classify user queries into categories (e.g., application requirements, specific programs).
- Entity extraction: Identify key information from user input (e.g., desired major, GPA).
- Dialogue management: Maintain conversation flow and context.
- Natural language generation: Generate appropriate responses and explanations.

4. Model Training and Development:

- Choose a chatbot platform: Dialogflow, Rasa, Microsoft Bot Framework, etc.
- Train NLP models: Use prepared data to train intent recognition, entity extraction, and dialogue management models.
- Develop conversation flow: Design chatbot responses and interactions for different scenarios.
- Integrate with data sources: Connect the chatbot to relevant databases and APIs.

5. Testing and Evaluation:

- Test with diverse inputs: Simulate user queries and evaluate chatbot performance.
- Refine and iterate: Improve model accuracy, dialogue flow, and user experience based on feedback.
- Collect user feedback: Gather real-world user data to identify areas for improvement.

Figure 4 shows the class diagram of admission chatbot

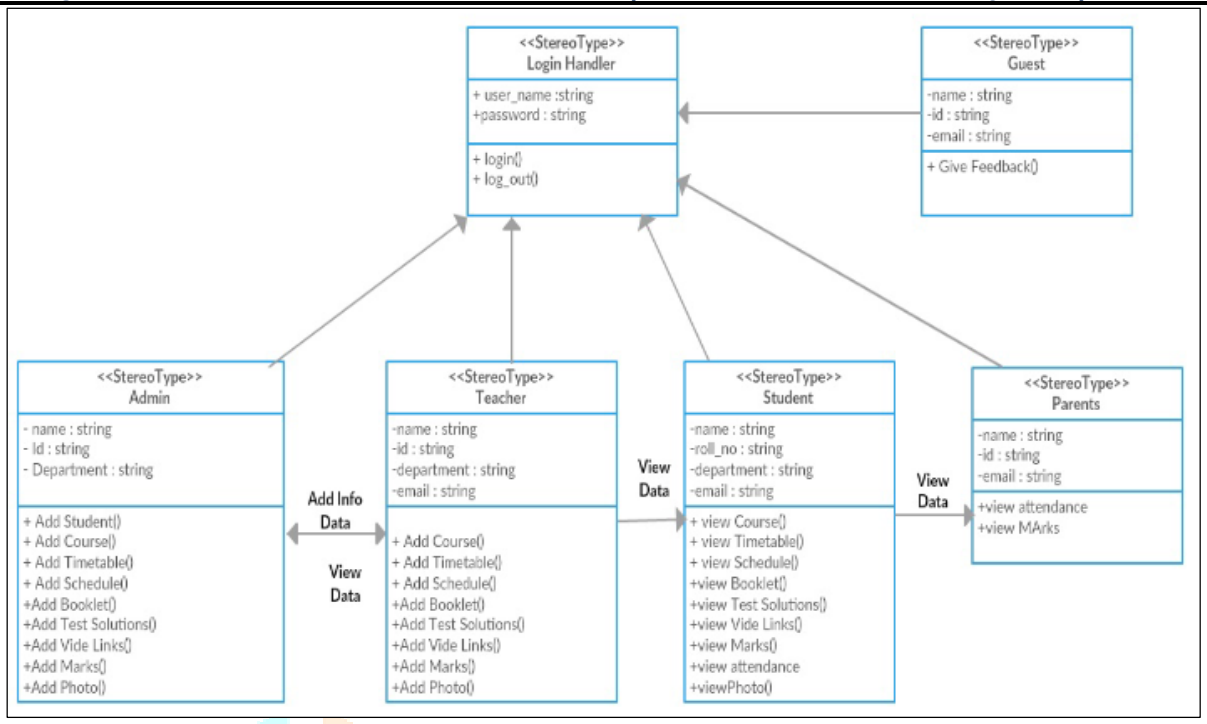

Figure 4: Class diagram for proposed system.

5. Experiment & Result analysis

Figure 5 shows the various view of proposed college admission chatbot

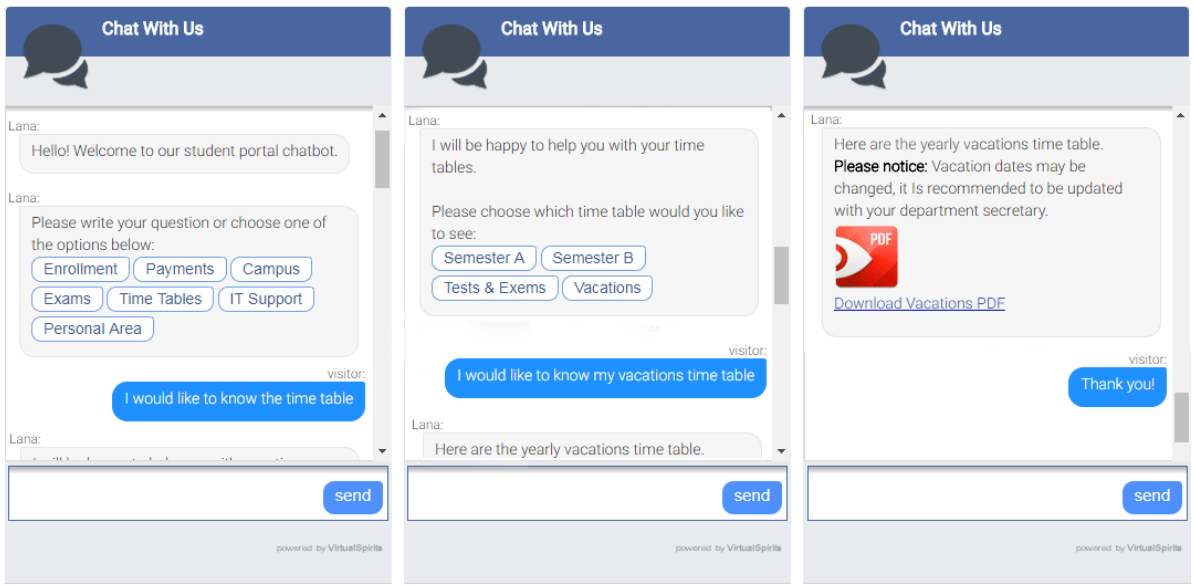

Figure 5: various view of admission chatbot

Conclusion:

In conclusion, the implementation of an admission enquiry chatbot offers a promising solution to streamline the college admission process and enhance user experience. Our chatbot has demonstrated its effectiveness in handling admission-related inquiries, providing timely and accurate information to prospective students. While there is room for improvement, particularly in handling more complex queries, our research shows the potential of chatbots to revolutionize the admission process, making it more efficient and user-friendly. Future work will focus on enhancing the chatbot's capabilities and integrating it with existing college systems.

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