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A CHATBOT FOR THE UNIVERSITY

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Abstract -

This project introduces an AI-driven Chatbot for Universities, leveraging the Rasa framework and data science methodologies to create a user-friendly virtual assistant within the university ecosystem. Powered by Natural Language Processing (NLP), the chatbot enhances the overall university experience by effectively addressing inquiries, streamlining administrative tasks, and facilitating networking. Stakeholders, including administrators, students, faculty, and IT, collaborate to ensure data privacy, while ongoing maintenance strategies driven by user feedback contribute to sustained success. The outcome is an intelligent solution that optimizes user satisfaction, streamlines university processes, and adapts to evolving needs.

Keywords— Service Delivery, Natural Language Processing (NLP), User Queries, Civic Events, Modernization, Efficiency

1. INTRODUCTION

Traditional university communication channels often struggle to efficiently meet the diverse needs of students, faculty, and administrators. To address this challenge, this project aims to develop an AI-driven Chatbot for Universities using the Rasa framework and data science methods. The goal is to create a virtual assistant capable of understanding natural language queries, providing timely and personalized support on academic and campus life matters. The problem to be solved is how to enhance user satisfaction, streamline university processes, and improve the overall experience through a scalable, adaptable, and privacy-conscious chatbot solution.

2. LITERATURE REVIEW

1) Conference/Journal: Published in 2021

Paper Title: Chatbots applications in education: A systematic review

Author: Chinedu Wilfred Okonkwo, Abejide Ade-Ibijola

This paper conducts a systematic review of 53 articles to explore the use of Chatbots in education. Chatbots, increasingly vital in the Fourth Industrial Revolution, enhance teaching and learning experiences, offering personalized support. They serve various purposes, such as answering questions, teaching programming, assessing performance, and providing administrative services. The study addresses research gaps by answering key questions about recent research status, benefits, challenges, and potential future areas in education. The findings aim to contribute structured insights and identify research directions for advancing the educational system.

2) **CONFERENCE/JOURNAL: PUBLISHED IN 2023**

PAPER TITLE: EDUCRAT: AN AI-BASED CHATBOT FOR UNIVERSITY-RELATED INFORMATION USING A HYBRID APPROACH

Author: Hoa Dinh and **Thien Khai Tran**

Digital transformation has created an environment that fosters the development of effective chatbots. Through the fusion of artificial intelligence and data, these chatbots have the capability to provide automated services, optimize customer experiences, and reduce workloads for employees. These chatbots can offer 24/7 support, answer questions, perform transactions, and provide rapid information, contributing significantly to the sustainable development processes of businesses and organizations. ChatGPT has already been applied in various fields. However, to ensure that there is a chatbot providing accurate and useful information in a narrow domain, it is necessary to build, train, and fine-tune the model based on specific data. In this paper, we introduce EduChat, a chatbot system for university-related questions. EduChat is an effective artificial intelligence application designed by combining

rule-based methods, an innovative improved random forest machine learning approach, and ChatGPT to automatically answer common questions related to universities, academic programs, admission procedures, student life, and other related topics. This chatbot system helps provide quick and easy information to users, thereby reducing the time spent searching for information directly from source documents or contacting support staff. The experiments have yielded positive results.

Methodology

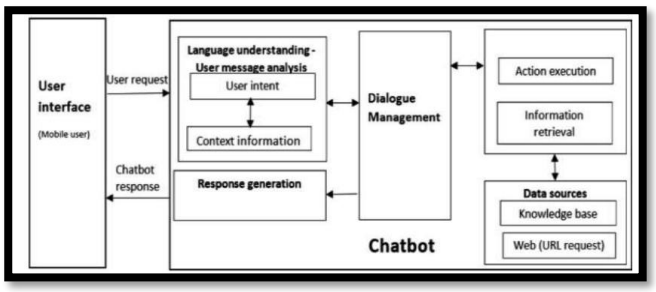


Fig.1 Message flow

1. User Interface: Accepts user queries and serves as the entry point for interaction.

2. User Message Analysis Component: Parses user input messages to deduce intent and identify associated entities.

3. Dialogue Manager: Manages conversation context, updating it to determine appropriate actions based on user input.

4. Data Sources: Retrieves data of interest from various sources, including databases or external resources through API calls.

5. Response Generator: Prepares natural language responses based on intent and context information derived from the user message analysis component. Fig.1 illustrates the chatbot components [2].

3. WORKFLOW

1. User Input
2. NLU Processing
3. Tracker Update
4. Policy Evaluation
5. Action Selection
6. Logging
7. Response Generation

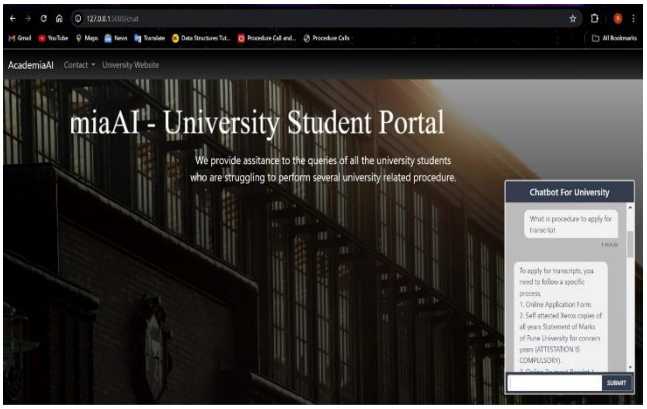
4. USER INTERACTION CHALLENGES

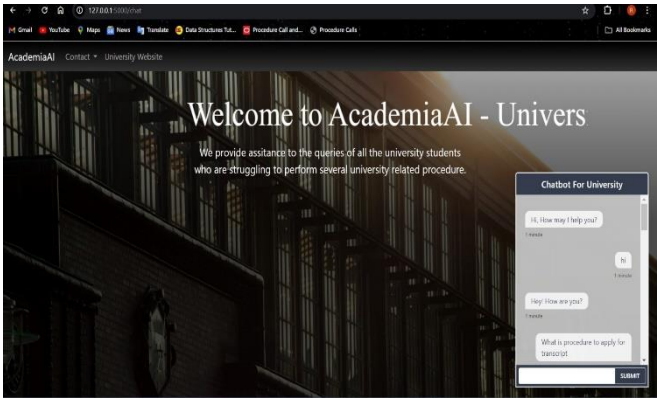
1. Sensitive Student Data
2. Diverse User Needs
3. Constant Updates
4. Natural Language Understanding

5. FUTURE WORK

1. Building Trust: Establish trust by being transparent about data handling and security measures.
2. Machine Learning: Implement algorithms for continuous learning and adaptation based on user interactions.
3. Voice and Visual Interaction: Integrate voice recognition and visual components to support speech and multimedia interactions.
4. Advanced NLP: Enhance NLP capabilities for a better understanding of complex user queries.
5. Integration with University Systems:Improve integration with university databases and systems for seamless information retrieval.

6. SNAPSHOT





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