



Empowering Student Voice: Smart Chatbot for University Grievances

Prof. Virendra Chaudhari¹, Om Dumbre², Akshay Bangar³, Premchand Kunjir⁴

¹ (Computer Engineering, SGOI's COE, Belhe / SPPU, Pune India)

² (Computer Engineering, SGOI's COE, Belhe / SPPU, Pune India)

³ (Computer Engineering, SGOI's COE, Belhe / SPPU, Pune India)

⁴ (Computer Engineering, SGOI's COE, Belhe / SPPU, Pune India)

ABSTRACT

The growing complexity of modern universities and the increasing demands of students have necessitated the development of efficient and responsive grievance resolution systems. This abstract This model leverages artificial intelligence and natural language processing technologies to create a user-friendly, accessible, and swift grievance redressal mechanism. The Chatbot is specifically designed to cater to the unique needs of university students, offering a seamless interface for lodging and tracking grievances. Key features of this innovative Chatbot include its ability to Receive and process grievances 24/7, ensuring round-the-clock support for students, Understand and categorize grievances based on context, urgency, and severity.

Keywords: Smart chatbot; University website; Natural language processing; Educational chatbot;

1. Introduction

In the modern world, where individuals frequently look for and obtain information via surfing websites, websites have become increasingly popular. Compared to twenty years ago, websites are making the process of looking for information easier for individuals in their everyday lives. As a result, the majority of businesses, organisations, and even the government have created their own websites, including universities. Websites can serve a variety of functions, depending on what the owner intends for them to do. Nevertheless, a number of issues with stakeholder interaction and university websites have arisen as a result of the websites' increasing popularity. According to this study, a stakeholder is an individual or a group of individuals who are advantageous to the organisation and associated with it either inside or outside.

In today's digital age, universities face the challenge of efficiently addressing student grievances. Our project aims to develop a Smart Chatbot for Universities, specially designed to streamline and expedite the resolution of student grievances. This chatbot will leverage cutting edge natural language processing and machine learning technologies to provide an intelligent, 24/7 support system for students.

2. Literature Review

This section summarizes common neural network approaches to construct generative chatbots, and then discusses frame-works used to build virtual assistants in the university environment. We also present the benefits and drawbacks of ChatGPT in education, which motivate our selection of Transformer-based models for building a virtual assistant instead of using ChatGPT.

A. ELIZA

The first chatbot, ELIZA, was created by Joseph Weizenbaum at the Massachusetts Institute of Technology (MIT) in 1966. The chatbot technology was first developed in the 1960s. Research studies use a variety of definitions for the term "chatbots," including "artificial intelligence conversational entities" (AICEs), "virtual assistant" (VA) "chatterbot" (CB),

"Chatbot," and "digital assistant" (DA).

B. Bing Chat and Google Bard

Google AI introduced Bard, a chatbot in February 2023, based on the company's Language Model for Dialogue Application. In more than 180 countries, Bard is available in three languages: US English, Japanese, and Korean. Bard was trained on a sizable dataset and also has real-time web search capabilities. Bing Chat, which is based on the GPT-4 and integrated into a search engine, was made available by Microsoft. Testing was done by Rudolph. To determine how well ChatGPT, Google Bard, and Bing Chat performed.

C. Seq2Seq

This literature review discusses Sequence-to-Sequence (Seq2Seq) chatbots, a key technology for natural language understanding and generation. It explores their development, role in natural language processing, integration in chatbot development, applications, evaluation metrics, challenges, limitations, user experience, research and case studies, and future trends. The review concludes by highlighting the significance of Seq2Seq models in advancing chatbot capabilities and providing recommendations for researchers and businesses.

D. Framework based chatbot

Chatbot platforms can be used to build chatbots. Using the Chatfuel2 chatbot platform, the social assistants LiSA and APU Admin Bot were created to support students with university life and administrative and academic issues, respectively. The for-profit Chatfuel platform applies a rule-based method for pattern recognition to translate input questions into outputs via an AI model. Chatfuel does not encourage the use of any local knowledge and is rigid in how conversations flow. Despite being the most popular platform, Chatfuel only permits users to create straightforward chatbots³. Using Dialogflow and a core NLP focus, Barus and Surijati created an assistant for the Frequently Asked Questions services in the Matana University Library in Indonesia. The chatbot doesn't offer accurate.

3. Proposed System

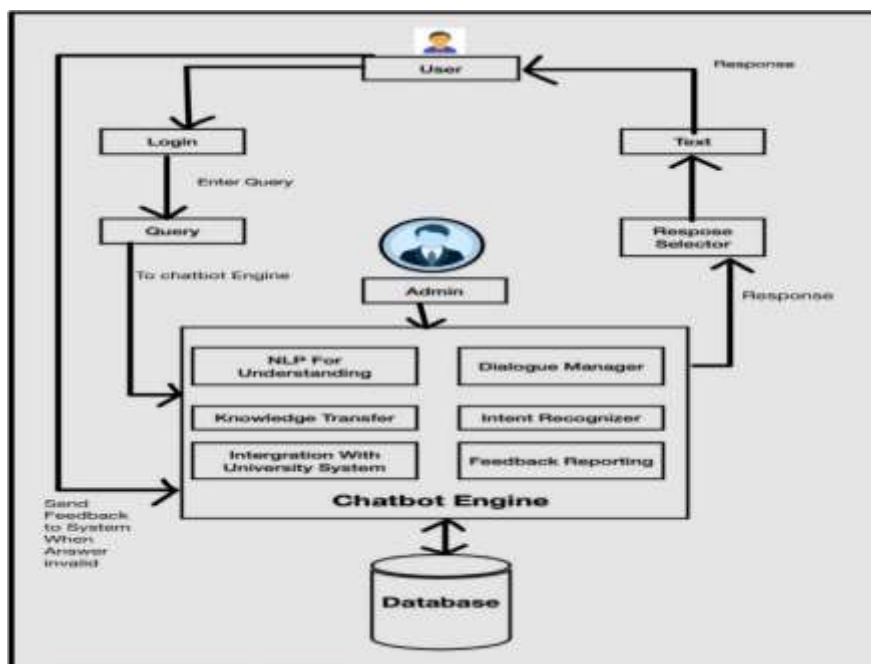
To create a chatbot that enhances the process of reporting and resolving student grievances.

Contextual Understanding: The chatbot will be designed to maintain context throughout the conversation, enabling it to provide more relevant and personalized responses based on previous interactions.

Voice-enabled Interface: In addition to the text-based interface, the chatbot will feature a voice-enabled option, allowing users to interact using speech commands for greater accessibility

4. Module Description

The Student Grievance Chatbot System is an application which will enable users to ask queries related to university Student grievance and the chatbot will give out the response. The input can be in speech or in text format. The speech to text and text to speech module will be in action whenever the user inserts the query. This module will use NLP to process the natural language queries entered by the user which may be in voice or text format and then convert it into a database specific query. If the query entered by the user gives an invalid result then the user has the option to report that query to admin. The admin module contains the list of the invalid questions reported by the user and also the admin can insert those questions with it's answer to the database so whenever the user enters the same query it would get an valid answer. Admin module can insert new questions and it's corresponding answers into the database. The text to speech and speech to text module will convert the input given by the user into it's appropriate format so that the query generated after the conversion can be fetched in the database and an response will be generated as an answer to the query .The Chatbot module will do the work of fetching the appropriate answer for the given query.



(Architecture of Smart ai-chatbot)

5. Methodology

This study uses a mixed-methods approach to investigate the experiences and perceptions of students in addressing grievances using a smart chatbot. Data collection includes surveys, content analysis, and chatbot interaction data. The chatbot will be developed with AI developers and experts, incorporating natural language processing and machine learning algorithms. Data analysis will be conducted to identify trends and preferences. The study will compare the chatbot's effectiveness with traditional grievance handling methods, ensuring data privacy and security. The findings will be reported and disseminated, contributing to the field of student satisfaction and engagement.

Steps

- 1) Step 1: Start
- 2) Step 2: Get the user's inquiry in step two. (OUTPUT)
- 3) Step 3: The query's pre-processing For example, let's say someone asks, "What is the timing of the university?" Thus, we're going to use pre-processing to eliminate certain stop words like "is" and "the."
- 4) Step 4: Extract the query's remaining only keywords.
- 5) Step 5: Compare the keywords that were retrieved with those in the knowledge base and give a suitable answer.
- 6) Step 6: Give the user the output of the query answer.
- 7) Step 7: Exit

6. Conclusion

Overall, the Smart Chatbot Academic Model represents an innovative and valuable addition to the university website, providing efficient, personalized, and accessible support to students, and visitors.

With continuous advancements in AI and NLP technologies, the chatbot's potential for delivering a seamless and enriching user experience continues to grow, making it a valuable asset for modern educational institutions.

7. Reference

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