



International Journal of Innovative Research in Computer and Communication Engineering

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)





International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Chatbot for College Website

Shrutika Rajput¹; Sanskruti Mane²; Tanishka Sodanwar³; Mr.V.A. Upadhye⁴; Mr.A. P. Shinde⁵

Students, Department of Computer Technology, Bharati Vidyapeeth's Jawaharlal Nehru Institute of Technology, Pune, Maharashtra, India^{1 2 3}

Lecturer, Department of Computer Technology, Bharati Vidyapeeth's Jawaharlal Nehru Institute of Technology, Pune, Maharashtra, India⁴

Head of the Department, Department of Computer Technology, Bharati Vidyapeeth's Jawaharlal Nehru Institute of Technology, Pune, Maharashtra, India⁵

ABSTRACT: In the present digital era, quick and accurate access to information has become essential for students, parents, and website visitors. Educational institutions frequently receive repetitive queries regarding admissions, courses, fees, examination schedules, and other academic information. Managing these queries manually can be time-consuming and may cause delays in response.

To address this issue, this research focuses on the design and development of a chatbot system for a college website. The proposed chatbot is developed to provide instant and automated responses to frequently asked questions. It uses basic Artificial Intelligence and Natural Language Processing techniques to understand user queries and generate appropriate replies.

The chatbot is integrated into the website to ensure easy accessibility and 24/7 support. The system aims to reduce manual workload, improve communication efficiency, and enhance the overall user experience.

This project demonstrates how chatbot technology can be effectively implemented in educational institutions to improve digital interaction and make information more accessible and efficient.

KEYWORDS: Chatbot, Artificial Intelligence, Natural Language Processing, College Website, Automated Response, Educational Institutions

I. INTRODUCTION

In today's digital world, people expect quick answers whenever they visit a website. Waiting for responses or searching through multiple pages can be time-consuming and confusing. To solve this problem, chatbots are becoming a popular solution. A chatbot is a software program that can communicate with users in simple and natural language, just like a normal conversation between two people.

Chatbots are commonly used in customer service, online shopping websites, banking systems, and educational institutions. They help in answering frequently asked questions, guiding users, and providing important information instantly. This reduces the workload of staff members and saves time for users. Most modern chatbots use technologies like Artificial Intelligence (AI), Machine Learning (ML), and Natural Language Processing (NLP) to understand what the user is asking and give an appropriate response.

The main purpose of a chatbot is to make communication easier and more convenient. Some basic chatbots work on predefined questions and answers, while advanced chatbots can learn from data and improve their responses over time. However, they may still have some limitations in understanding complex questions or maintaining long conversations.

The aim of this project is to develop a chatbot system that can interact with users smoothly and provide accurate information. The system is designed to make communication faster, more efficient, and user-friendly. By implementing this chatbot, the website can provide better support and improve the overall user experience.



International Journal of Innovative Research in Computer and Communication Engineering (IJRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

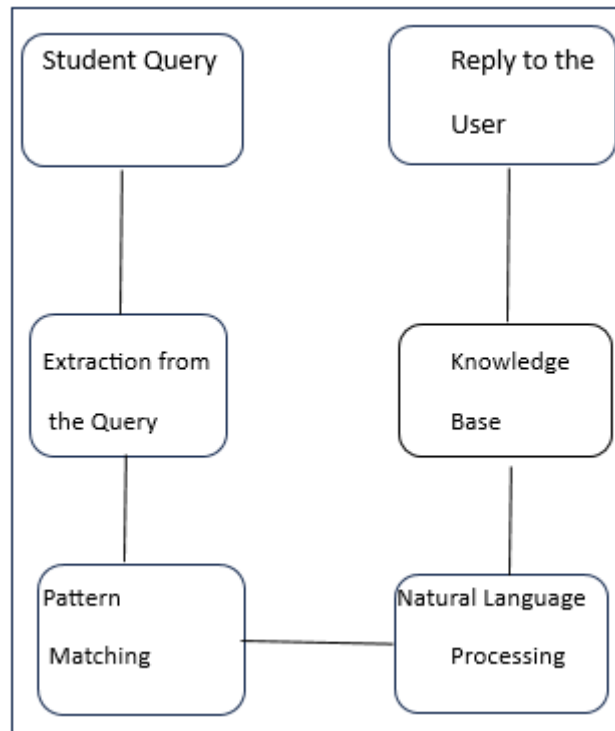


Fig.1 : Data Flow Diagram

II. LITERATURE REVIEW

Many researchers have studied how chatbots can be used to improve communication between humans and computers. In the early stages, chatbots were mainly rule-based systems. They worked using predefined questions and answers stored in a database. These systems were useful for handling simple and repeated queries, but they were not able to understand complex questions or learn from new conversations.

Over time, researchers started developing more advanced chatbot systems using Artificial Intelligence (AI) and Natural Language Processing (NLP). These technologies help chatbots understand user input in a better way and provide more meaningful responses. Some studies also focused on creating conversational agents with specific personalities or roles, especially for educational purposes. Such chatbots help students interact more actively and make learning more engaging.

Many chatbot systems are developed using programming languages like Python and use machine learning techniques to improve performance. These systems can process user queries, search for relevant information, and respond in real time. However, even though chatbots may seem intelligent, their responses are based on programmed algorithms and structured data. Therefore, proper design and planning are important to make the chatbot effective and reliable.

From the reviewed studies, it is clear that chatbot technology has improved significantly over the years. Still, there are challenges such as understanding complex queries, maintaining conversation flow, and providing accurate responses. Based on these findings, this project focuses on developing a simple, efficient, and user-friendly chatbot system for a college website to improve communication and provide instant information to users.

An admin login module is also included in the system. Through this module, the administrator can view unanswered or invalid queries, update the database, delete incorrect responses, or add new question-answer pairs. This ensures that the chatbot improves over time and remains accurate.

The chatbot provides responses through a user-friendly graphical interface that gives the experience of chatting with a real person. The system allows users to enquire about admissions, courses, fees, examination details, events, and other



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

academic information online. Overall, the proposed system aims to make information access simple, fast, and convenient for users.

IV. EXISTING SYSTEMS

At present, most educational institutions provide information to students through traditional methods such as notice boards, administrative offices, phone calls, and official websites. Although these methods are useful, they are not always efficient. Students often need to search through multiple web pages or visit the college office personally to get basic information about admissions, courses, fees, examination schedules, or events. This process can be time-consuming and sometimes confusing, especially for new students or parents.

Many college websites provide FAQ sections where commonly asked questions are listed. However, these pages are static in nature. Students must manually read through all the questions to find relevant information. If their query is slightly different from the listed questions, they may not get a clear answer. Some institutions have also implemented basic chatbots, but these systems are mostly rule-based and limited in functionality. They respond only to predefined keywords and are unable to fully understand natural language or complex queries.

Another major limitation of the existing system is the lack of real-time interaction. When students send emails or submit enquiry forms, they may have to wait for a response. During admission periods or examination time, the number of enquiries increases, making it difficult for staff members to respond quickly to everyone.

Because of these limitations, the current system does not always provide fast, accurate, and user-friendly communication. There is a need for a more interactive and intelligent solution that can provide instant responses and improve the overall experience of users.

V. PROPOSED SYSTEM

The proposed system is an AI-based College Inquiry Chatbot designed to provide quick, accurate, and user-friendly responses to queries related to various college activities. The chatbot serves as a virtual assistant that helps students, parents, and visitors access important information such as admission procedures, available courses, department details, facilities, examination schedules, and other academic updates without waiting for manual responses.

The main objective of this system is to simplify the communication process between users and the institution. Instead of searching through multiple web pages or visiting the campus for basic enquiries, users can simply type their questions into the chatbot interface and receive instant answers. This makes the system convenient, time-saving, and accessible at any time.

The chatbot makes use of Natural Language Processing (NLP) along with basic machine learning techniques to understand user queries written in everyday language. Rather than relying only on fixed keywords, the system analyzes the intent behind the question and matches it with the most relevant response stored in the knowledge base. This allows the chatbot to handle different variations of similar questions more effectively.

The backend of the system is developed using Python, which manages data processing, query handling, and response generation. An intent detection model is used to categorize the user's question into predefined groups such as admissions, fees, courses, or examinations. Based on this classification, the chatbot retrieves the correct

answer from the database. The training dataset includes frequently asked questions collected from the existing college website along with additional commonly expected queries to improve accuracy.

The frontend is developed using Flutter, which provides a simple and interactive user interface. Flutter enables the chatbot to function smoothly across multiple platforms including Android, iOS, and web applications. The interface is designed to be clean and easy to use so that even first-time users can interact with it comfortably.



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

The system supports real-time communication, ensuring that users receive immediate responses. It also maintains a basic conversation flow to handle follow-up questions in a logical manner. Since the chatbot is available 24/7, it reduces the dependency on administrative staff for routine enquiries and improves overall communication efficiency.

In addition, the system is designed to be scalable and updatable. New questions and responses can be added to the knowledge base whenever required, allowing the chatbot to improve over time. This flexibility ensures that the system remains useful even as institutional information changes.

Overall, the proposed chatbot system provides a smart, reliable, and accessible digital solution for managing college-related enquiries in a structured and modern manner. It enhances user experience while supporting the institution in delivering information more efficiently.

VI. SYSTEM ARCHITECTURE

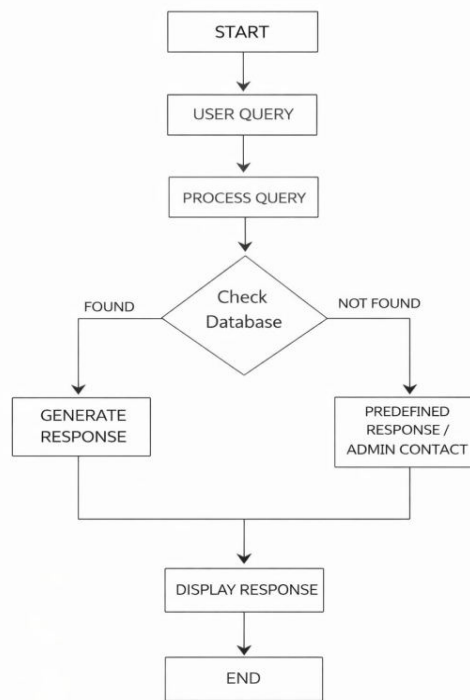


Fig.2: Flowchart for Proposed Model

1. START

The chatbot system is activated and becomes ready to interact with users.

2. USER QUERY

The user enters a question in the chat interface related to admissions, courses, fees, exams, or other college activities.

3. PROCESS QUERY

The system analyses the user's input using Natural Language Processing (NLP) techniques to understand the meaning and identify the intent of the query.

4. CHECK DATABASE

The chatbot searches the knowledge base to find a matching question or related intent stored in the database.

5. GENERATE RESPONSE (IF FOUND)

If a matching answer is found, the system selects the most appropriate response from the database.



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

6. PREDEFINED RESPONSE / ADMIN CONTACT (IF NOT FOUND)

If no matching answer is found, the chatbot provides a predefined message or suggests contacting the administration. The query may also be stored for future system improvement.

7. DISPLAY RESPONSE

The generated response is shown to the user in real time through the chat interface.

8. END

The process for that particular query is completed. However, the chatbot remains active to handle further queries.

VII. METHODOLOGY

• Requirement Analysis

The first step involved identifying the need for an automated enquiry system for college-related information. Common queries such as admissions, fees, courses, examination details, and facilities were studied to understand user requirements.

• Data Collection

Frequently Asked Questions (FAQs) were collected from the existing official college website as a reference. Additional related questions and answers were added to expand the knowledge base and make the system more informative.

• Data Preparation and Categorization

The collected questions were organized into different categories such as admissions, fees, courses, departments, and examinations. Each query was assigned an intent to help the system identify the type of question.

• Model Development

The backend of the system was developed using Python. Machine learning techniques were implemented for intent detection. An XGBoost classifier was used to classify user queries and identify the most relevant category.

• Natural Language Processing Implementation

Natural Language Processing (NLP) techniques were applied to analyze and understand the user's input in natural language. This helps the chatbot interpret the meaning of the query rather than relying only on fixed keywords.

• Knowledge Base Creation

A structured database was created containing question-answer pairs. The chatbot matches the user query with this knowledge base to generate appropriate responses.

• Frontend Development

The user interface was developed using Flutter to ensure cross-platform compatibility. The chatbot can be accessed through web, Android, and iOS platforms with a simple and interactive chat interface.

• Admin Module Implementation

An admin login module was developed to allow the administrator to add new questions, update answers, delete incorrect responses, and monitor user queries for continuous improvement.

• Testing and Validation

The system was tested using different types of queries to check response accuracy, performance, and real-time interaction capability. Necessary improvements were made based on test results.

• Deployment

The chatbot was deployed on a separate web application for academic demonstration purposes, ensuring 24/7 accessibility for users.

VIII. IMPLEMENTATION DETAILS

The implementation of the College Inquiry Chatbot was carried out in different stages, including backend development, frontend design, database creation, and system integration.

The backend of the system was developed using Python. Python was selected because it provides strong support for machine learning and Natural Language Processing. The chatbot uses NLP techniques to understand user input and identify the intent of the query. For intent classification, the XGBoost machine learning algorithm was implemented. This model was trained using a dataset containing various college-related questions categorized into different intents such as admissions, fees, courses, and examinations.

The knowledge base was created using frequently asked questions collected from the existing official college website as a reference. Additional relevant questions were also added to improve the system's coverage. These question-answer pairs were stored in a structured format so that the chatbot can quickly match user queries with appropriate responses.



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

The frontend of the system was developed using Flutter. Flutter was chosen because it allows the development of a cross-platform application that works on web, Android, and iOS devices. The user interface was designed to be simple and interactive, providing a chat window where users can type their queries and receive instant replies.

An admin module was also implemented in the system. The admin can log in securely and manage the chatbot database. This includes adding new questions, updating existing answers, and removing incorrect or outdated information. The admin module helps in maintaining the accuracy and reliability of the system over time.

The chatbot processes user queries in real time. When a user enters a question, the system analyses it, identifies the intent using the trained model, searches the knowledge base, and displays the most relevant answer. If no suitable response is found, a predefined message is shown to guide the user.

Overall, the implementation focuses on simplicity, accuracy, and efficiency. The system is designed to provide 24/7 support and reduce the manual workload of administrative staff while improving user experience.

IX. RESULTS AND DISCUSSION

The chatbot system was successfully developed and tested as a web-based application. It was able to respond to most of the common queries related to admissions, courses, fees, departments, and examination details. The system worked smoothly and provided quick replies to users without noticeable delay.

During testing, it was observed that the chatbot could answer frequently asked questions accurately when the queries were related to the stored database. The real-time response feature helped in reducing the need for manual enquiry and made the process faster and more convenient for users.

The use of Natural Language Processing allowed the chatbot to understand questions written in different formats. Even when users asked the same question in slightly different ways, the system was able to identify the intent and provide the correct response in most cases.

The implementation of the machine learning model improved the system's ability to classify queries correctly. The chatbot was able to match user questions with relevant answers from the knowledge base effectively. However, the accuracy of responses depends on the quality and number of questions stored in the database.

The admin module proved to be very useful. It allowed updating, modifying, and adding new question-answer pairs easily. This ensures that the system can be improved continuously and kept up to date.

The user interface was simple and easy to use. Users could interact with the chatbot comfortably without any technical knowledge. The cross-platform support ensured that the chatbot worked properly on different devices.

Some limitations were also observed. If a user asked a completely new or very complex question that was not available in the database, the chatbot sometimes provided a general or predefined response. This shows that the system still depends on the available training data.

Overall, the developed chatbot system achieved its main objective of providing instant and accessible college-related information. It reduced manual workload and improved communication efficiency. The results indicate that chatbot technology can be a practical and effective solution for handling enquiries in educational institutions.

X. CONCLUSION

The developed College Inquiry Chatbot successfully demonstrates how Artificial Intelligence can be used to improve communication in educational institutions. The system is capable of providing quick and accurate responses to common college-related queries through a simple and user-friendly interface. By using Natural Language Processing and machine learning techniques, the chatbot can understand user questions and respond appropriately in real time.



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

The project helps reduce manual workload, saves time, and ensures 24/7 availability of information. Although the system has some limitations when handling complex queries, it proves to be an effective and practical solution for managing routine enquiries. Overall, the chatbot enhances digital interaction and provides a convenient platform for students, parents, and visitors to access important information easily

REFERENCES

1. Bharati Vidyapeeth's Jawaharlal Nehru Institute of Technology (Polytechnic). (2025). Official Website. Pune, Maharashtra, India. Available at: <https://bvjiot.edu.in>
2. Bharati Vidyapeeth. (2025). Official Website. Pune, Maharashtra, India. Available at: <https://bvuniversity.edu.in>
3. Russell, S., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach (4th ed.). Pearson Education.
4. Jurafsky, D., & Martin, J. H. (2023). Speech and Language Processing (3rd ed.). Pearson.
5. Bird, S., Klein, E., & Loper, E. (2009). Natural Language Processing with Python. O'Reilly Media.
6. Python Software Foundation. (2025). Python Official Documentation. Available at: <https://www.python.org>
7. Flutter Documentation. (2025). Flutter Official Guide. Available at: <https://flutter.dev>
8. NLTK. (2025). Natural Language Toolkit Documentation. Available at: <https://www.nltk.org>
9. scikit-learn. (2025). Machine Learning in Python Documentation. Available at: <https://scikit-learn.org>



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



SJIF Scientific Journal Impact Factor



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details