

## Student Helper Chatbot

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### Abstract –

This paper presents the development and implementation of an advanced college enquiry chatbot, utilizing Natural Language Processing (NLP) techniques to address the escalating strain on college resources due to the increasing volume of student inquiries. As higher education institutions experience growing numbers of prospective and current students seeking information, traditional methods of handling these inquiries have proven inefficient. The proposed chatbot is designed to alleviate this issue by providing immediate, accurate, and contextually relevant responses to frequently asked questions related to various aspects of college life, including courses, admissions, scholarships, and campus facilities. By employing sophisticated AI algorithms and NLP models, the chatbot effectively interprets user queries in natural language, offering personalized and real-time assistance. This approach not only streamlines the process of information retrieval but also significantly enhances the user experience by reducing the time students spend searching for information and improving overall website usability. The chatbot offers a cutting-edge approach to enhancing college resource management by providing dynamic and interactive assistance to students. This not only streamlines support services but also strengthens the overall efficiency and responsiveness of campus communication systems.

**Key Words:** Student Helper Chatbot Web-based Application, HTML, CSS, JAVASCRIPT, MongoDB

### 1. INTRODUCTION

The college admissions process has long been a complex and time-consuming task, both for prospective students and college staff. With an increasing number of students seeking information on courses, admissions criteria, scholarships, and campus facilities, the pressure on traditional support resources has never been higher. College websites, although providing valuable resources, are often insufficient in managing the growing volume of inquiries in an efficient and timely manner. As a result, the existing support structures are stretched thin, making it difficult for college staff to address all inquiries in a timely and personalized manner. This imbalance can lead to frustration among students and increased workloads for college staff.

To address this challenge, the implementation of a college enquiry chatbot powered by Natural Language Processing (NLP) presents a promising solution. A chatbot using NLP techniques can be employed to interact with users in natural language, effectively answering a wide range of questions related to admissions, academic programs, scholarships, campus facilities, and more. This not only reduces the strain on college staff but also ensures that students receive accurate, prompt, and relevant information at any time of the day.

The college enquiry chatbot is built with sophisticated AI algorithms, enabling it to accurately understand and process a wide range of user queries. This intelligent system ensures quick, relevant, and human-like responses, making the college enquiry experience smooth and efficient. Unlike traditional chatbots, which may rely on predefined responses, this AI-driven system is capable of understanding complex queries, providing tailored and dynamic answers, and continuously improving its accuracy through machine learning. By leveraging these sophisticated capabilities, the chatbot enhances user experience by reducing search times, improving website navigation, and making the process of obtaining information more seamless and efficient for prospective students.

In addition to enhancing the user experience, the integration of this AI-driven chatbot contributes significantly to improving the usability and efficiency of the college's online resources. The chatbot can answer frequently asked questions in real time, guide students through application processes, and reduce the need for human intervention, which can be especially helpful during peak periods such as application deadlines or enrollment seasons.

#### 1.1 Objectives

The primary objective of this college enquiry chatbot is to streamline the admissions and registration process for both prospective students and college staff. By providing comprehensive college information, ensuring easy access to information, minimizing query resolution time enabling effective communication, and simplifying the user experience, the chatbot aims to reduce the time and effort required for students to enroll, while also improving the efficiency of college admissions processes.

## 1.2 Scope

An NLP-powered college inquiry chatbot can transform student interaction by providing instant, accurate responses, improving communication efficiency, and reducing administrative workload. By understanding and processing natural language, it can provide real-time, personalized responses to queries about admissions, courses, campus life, financial aid, and more. The chatbot can automate tasks like application tracking, fee payments, and scheduling, while also answering frequently asked questions 24/7.

## 2. MOTIVATION

In our time at college, we often need access to various types of information whether it's about fee structures, pending dues, or how to complete certain administrative procedures. Sadly, getting this information is usually far more complicated than it needs to be. For something as simple as checking due fees, we might have to visit the administration block, locate the right office or window, collect a no-dues form, fill it out properly, and then wait for someone to verify it. This outdated system wastes time and energy, especially when we live in an era of advanced technology and automation.

As computer science students, we believe that repetitive and tedious tasks like these can be simplified using the tools we study. That's why we came up with the idea of an intelligent voice bot designed specifically for college-related queries. Imagine just asking a voice assistant, "Do I have any due fees?" or "What's the fee structure for my program?" and getting the answer instantly, without standing in lines or filling forms.

This bot could also help new students by answering questions about college admission procedures, hostel rules, or campus facilities saving them from hunting through multiple web pages or making unnecessary phone calls. It's all about making information more accessible, reducing friction, and using technology to improve the everyday college experience.

## 3. EXISTING SYSTEM

In the past, students and their parents faced significant challenges when seeking information about college courses, fee structures, and the admission process. To gather such details, they often had to physically visit the college, navigate long processes, and spend considerable time waiting for responses. This traditional method was not only time-consuming but also required considerable manpower to manage inquiries and provide the necessary information.

However, with the advancement of technology, the education system has undergone significant transformations. The traditional approach of collecting and disseminating course information manually is increasingly being replaced by more

efficient, technology-driven solutions. Over time, various digital systems and devices have emerged to simplify the process, reducing the need for physical visits and the labor-intensive work involved in managing inquiries.

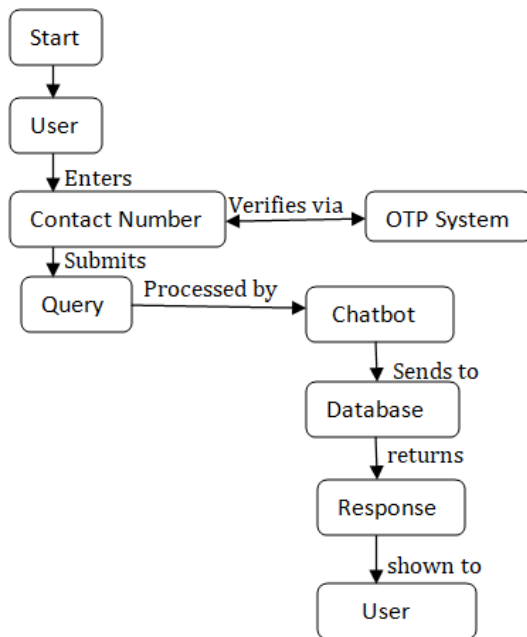
As a result, students and parents no longer need to go through the cumbersome process of visiting the campus to obtain details about courses, fees, and admission procedures. Modern technology, particularly through online platforms and automated systems, now enables instant access to this information. This shift not only saves time but also eliminates the need for excessive manpower, allowing colleges to streamline their operations and focus on other critical tasks.

By leveraging these technological advancements, colleges can now provide instant and accurate responses to inquiries, making the process more convenient for students and parents while also optimizing administrative workflows. This evolution in the education sector highlights how technology has played a pivotal role in transforming the way educational institutions manage and deliver essential information.

## 4. PROPOSED SYSTEM

The user journey begins when the individual initiates contact by entering their phone number into the system. Following this, the system triggers a One-Time Password (OTP) verification process, sending a unique code to the user's device, which they must enter to proceed. Once authenticated, the user is presented with a chatbot interface where they can type in their query. This input is then forwarded by the chatbot to a backend processing unit or machine, which analyzes the query through pattern matching mechanisms. By comparing the input against a structured database or external data services, the system identifies the most relevant information. The matched results are then returned to the chatbot, which formulates an appropriate and understandable response. Finally, the chatbot displays this response to the user, completing the interaction cycle.

### 4.1 Process flow diagram



**Fig-1:** Flow Chart diagram for College Enquiry Chatbot

The process starts with a User who Enters their Contact Number. This contact number is Verified via an OTP System. The user then Submits a Query, which is Processed by a Chatbot. The Chatbot Sends this query to a Database, which then returns a Response. Finally, this Response is shown to the User.

### 5. Methodology

It describes the technique used in this CHATBOT USING AI as well as the planning it. This design will be created using the most advanced technology that are currently used, which gives the website more capability and productivity.

The planning and workflow for the design are covered in this section. The extension will be created with the help of mostly three lines and the database provider.

- The HTML extension.html and used as framework for the front end in our project.

- JavaScript the operation's backend functionality is provided by JavaScript train (extension.js).

- CSS used for the better graphical interface to the html extensions.

- PHP is a server side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, even build entire e-commerce sites.

- For the database we implemented MySQL as database provider.

- XAMPP web server are used for application testing on a local host webserver.

#### Student:

The Student Login feature allows students to access the app using a password sent to their mobile number, with the option to save the login credentials for future access. For adding a new student, the Admin initiates the process by entering the student's details. The system then generates an OTP (One-Time Password) and sends it directly to the student's mobile phone for verification. This ensures secure and easy registration for students on the platform.

### 2.1 Module Descriptions

#### 1. OTP Authentication:

OTP authentication is a security measure that ensures the identity of the user by sending a unique, temporary code to the registered mobile number of the user (in this case, a student). The code is used for one-time access, enhancing the security of the system by ensuring that only the person with the correct mobile number can authenticate their identity.

#### 2. User Receives OTP:

When a student tries to access the system, an OTP is generated automatically by the system and sent to the student's registered mobile number. The student then enters this OTP into the system to verify their identity. This process ensures that the person accessing the system is the legitimate user.

#### 3. Student Registration:

The Admin is responsible for adding the student to the system. Once the student's information is entered into the system by the admin, an OTP is generated by the system and sent to the student's mobile number for verification. This ensures that the student's registration is legitimate and connected to a valid mobile number.

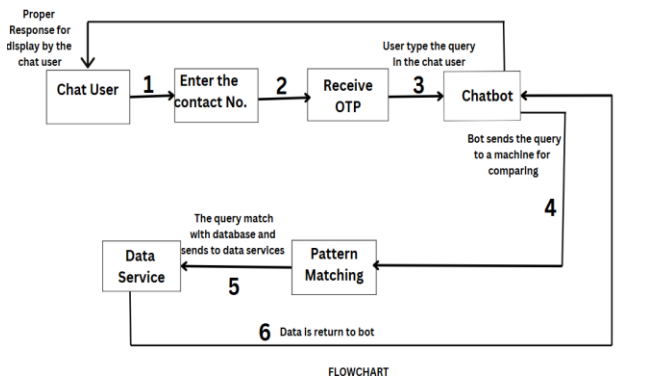
#### 4. Access Control:

The final step in this process is access control, which is achieved based on the successful OTP authentication. If the student enters the correct OTP received on their mobile device, they are granted access to the system. If the OTP is incorrect or expires, the student will not be able to proceed, preventing unauthorized access and maintaining the security of the system.

## 5. Use Case Diagram

Use case diagrams identify the functionality provided by the system (use cases), the users who interact with the system (actors), and the association between the users and the functionality. Use cases are used in the analysis phase of software development to articulate the high-level requirements of the system.

## 6. Workflow Explanation:



## Chatbot with Contact Number Verification and OTP

### User Enters Contact Number:

The process begins when the user interacts with the chatbot by entering their contact number into the chatbot interface. This number could be used for various purposes, such as verification, registration, or account-related inquiries. The chatbot captures this input to initiate the next step.

### Pattern Matching and Validation:

Upon receiving the contact number, the chatbot employs pattern matching techniques to verify that the entered number is in a valid format (e.g., checking for the correct number of digits, country code, and proper structure). If the format is incorrect, the chatbot prompts the user to re-enter the correct contact number. Once validated, the chatbot confirms the validity of the number and moves on to the next step.

### OTP Generation:

After validating the contact number, the chatbot initiates the OTP (One-Time Password) generation process. The system generates a unique, time-sensitive code that will be sent to the provided contact number. This OTP serves as a temporary authentication key for the user, ensuring that the number entered belongs to the user and is legitimate.

### OTP Delivery:

The generated OTP is then sent to the user's contact number via an SMS or other messaging services, depending on the

setup. The chatbot notifies the user that the OTP has been sent and provides instructions for its use.

### User Enters OTP:

The user receives the OTP on their mobile device and enters it into the chatbot interface. The chatbot prompts the user to input the code, ensuring that it matches the one sent previously. This step helps ensure that the user is the legitimate owner of the entered contact number.

### OTP Verification:

Once the user submits the OTP, the chatbot compares it against the generated code stored in its system. If the entered OTP matches the one sent to the user, the chatbot verifies the user's identity successfully. In case of an incorrect OTP, the user is prompted to retry entering the correct code or to request a new OTP if necessary.

### Data Services and Final Response:

Upon successful OTP verification, the chatbot can now provide access to the intended data services, such as account registration, personalized assistance, or any other feature that requires verification. If the OTP is valid, the chatbot may proceed with further interactions, like answering user queries, providing information, or completing transactions. If the verification fails (after multiple attempts), the chatbot may offer the user the option to restart the process or contact customer support.

### End of Interaction:

After completing the verification process, the chatbot can end the interaction or continue offering other services as needed. The user is now authenticated and can proceed with their intended activities, such as accessing services or engaging in further chatbot interactions.

## 6. Creation of Tables in the Database

In MongoDB, to create a database for student and faculty registration, you define a database (e.g., college\_registration) and create collections such as 'students' and 'faculty'. The 'students' collection stores information like student ID, name, email, course, and academic year, while the 'faculty' collection holds faculty ID, name, department, and contact details. Unlike traditional relational databases, MongoDB

does not require predefined schemas, and collections are automatically created when the first document is inserted. This flexible, document-based structure allows easy storage and retrieval of registration data for both students and faculty.

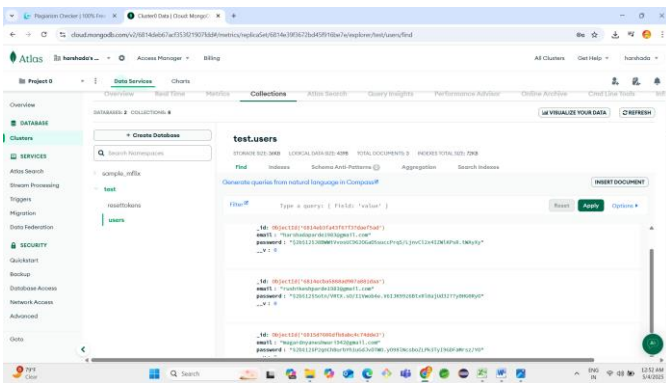
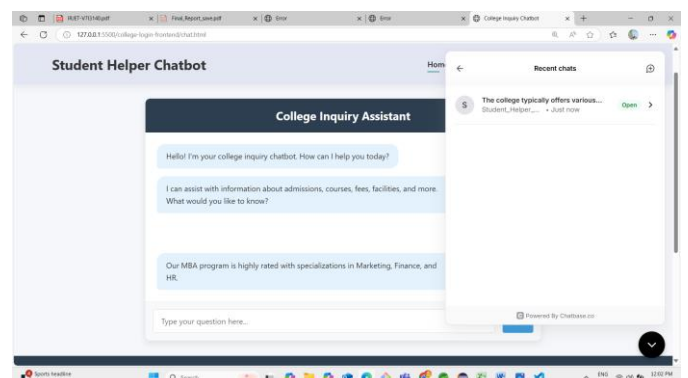
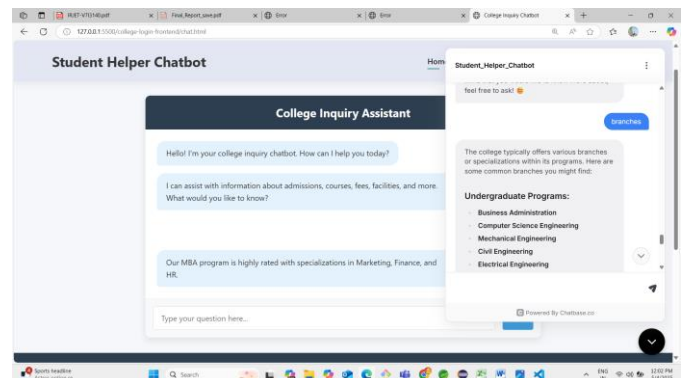
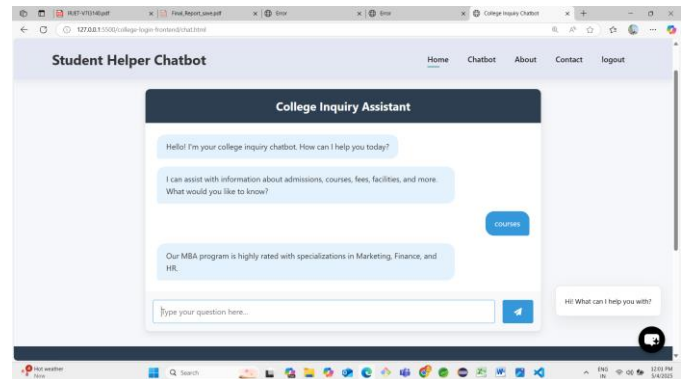
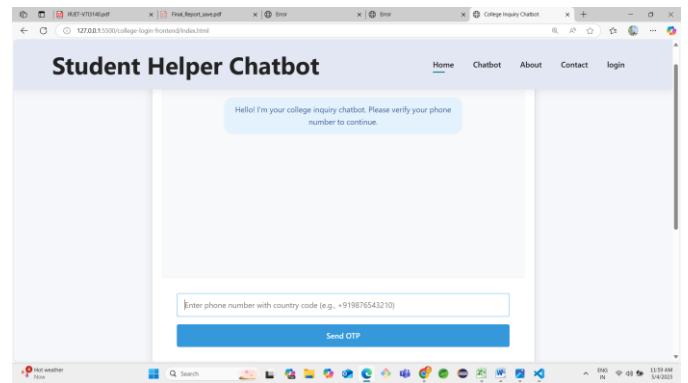
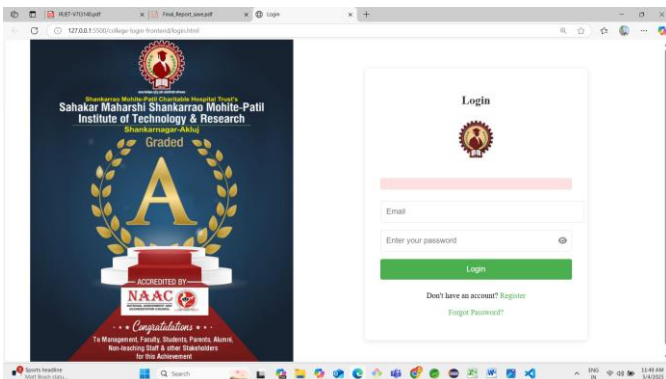
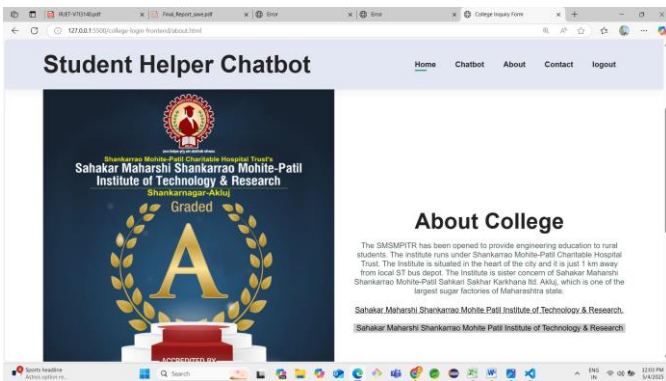


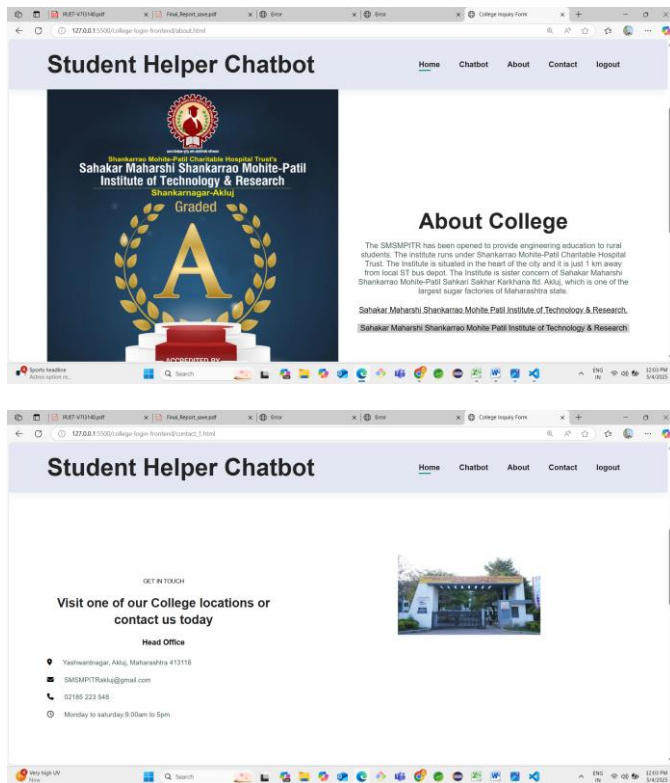
Fig-2 Table in the Database

### 8. RESULTS AND DISCUSSION

The proposed system is a College Enquiry Chatbot, developed to reduce paperwork, manpower, and time by allowing users to interact with the college through a chatbot interface. Instead of physically visiting the college for information, users can ask questions through the chatbot, making the process faster and more convenient. The chatbot handles common queries, while any unanswered questions are monitored and updated by the admin, ensuring continuous improvement. The system facilitates smooth communication between students/users and the college administration.

### 9. LIST OF OUTPUT SCREENS





## 10. CONCLUSIONS

The development of a college enquiry chatbot using NLP presents an opportunity to revolutionize the college admissions process by providing an efficient and user-friendly interface for prospective students. The chatbot's ability to understand natural language and provide instant responses will alleviate the burden on college staff, reduce waiting times and enhance the overall experience for students. By leveraging the power of NLP, the chatbot will offer accurate and personalized information, fostering a positive impression of the college and increasing the likelihood of successful enrollments. Ultimately, the implementation of this innovative solution will lead to improved efficiency, customer satisfaction, and increased enrollment rates for the college.

## ACKNOWLEDGEMENT

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## FUTURE SCOPE

The project has a broad reach in the current context. The proposal's majority of proposed features have been implemented. So, if I continue working on this project, I intend to create a database for the system where the admin may keep the extracted data. Further, future study will include a more in-depth examination of certain techniques, further research on other libraries, and new approaches to explore different methods.

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