



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Issue 5, May 2024

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

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# Student Helpdesk Chatbot

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**ABSTRACT:** A chatbot, usually referred to as a chatterbot, attempts to have a conversation with a person. When a question is posed, the system has the ability to detect sentences and select the proper answer. The response principle is the matching of the user's input phrase. The current technical project involves building a professional system for a college help desk employing an android-based chatbot, artificial intelligence technology, and virtual assistance (human-machine communication), then sending that natural language to a server. Chatbot systems have become increasingly popular for automating interactions with users and providing information in various domains, including college enquiries. In this paper, we propose a chatbot system for college enquiry using a knowledgeable database. The system utilizes a knowledgeable database that contains relevant information about the college, such as courses, faculty, campus facilities, and admissions procedures. The system employs various algorithms, including rule-based, retrieval-based, natural language processing (NLP), and machine learning algorithms, to understand and respond to user queries in a context-aware manner. The rule-based algorithms provide predefined rules and patterns for handling specific intents or frequently asked questions, while the retrieval-based algorithms search the knowledgeable database for relevant information.

## I. INTRODUCTION

This Application is for college students, staff, and parents. Easy way to interaction and time consuming. This project is mainly targeted at colleges and the synchronization of all the sparse and diverse information regarding regular college schedule. Generally, students face problems in getting correct notifications at the correct time, sometimes important notices such as campus interview, training and placement events, holidays, and special announcements.

Smart Campus tries to bridge this gap between students, teachers, and college administrators. Therefore in the real world scenario, such as college campus, the information in the form of notices, oral communication, can be directly communicated through the android devices and can be made available for the students, teachers directly for their android devices and the maintenance of application will be easier in later future because of the use of architectural MVC which separates the major works in the development of an application such as data management, mobile user interface display and web service which will be the controller to make sure for fast and efficient maintenance of application.

The College bot project is built using artificial algorithms that analyses user's queries and understand user's message. This System is a web application which provides answer to the query of the student. Students just must query through the bot which is used for chatting. Students can chat using any format there is no specific format the user has to follow. The System uses built in artificial intelligence to answer the query. The answers are appropriate what the user queries. The User can query any college related activities through the system. The user does not have to personally go to the college for enquiry. The System analyses the question and then answers to the user. The system answers to the query as if it is answered by the person. With the help of artificial intelligence, the system answers the query asked by the students.

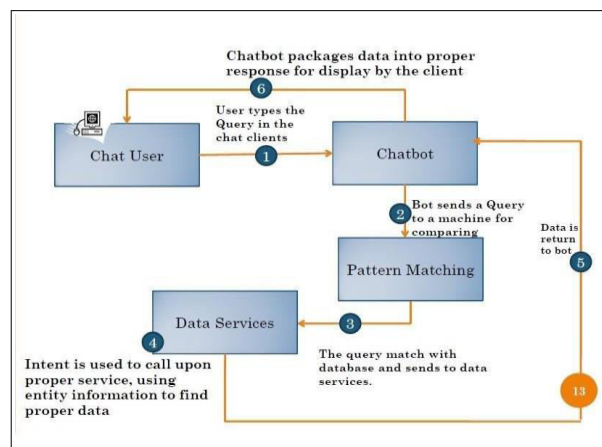
## II. SCOPE

In today's world as there are everything is digital. In education system work is very lengthy and time consuming and required extra manpower. We develop this application for students, teachers, parents, and guest. In this project we implement android application due to this application The Student does not have to go personally to college office for the enquiry. The application enables the students to be updated with college cultural activities. If application saves time for the student as well as teaching and non-teaching staffs. It is useful for parents also to show his/her child marks and important notices.

### III. SYSTEM ARCHITECTURE

A block diagram is a diagram of a system in which the principal parts or functions are represented by blocks connected by lines that show the relationships of the blocks. It may also show how the system operates, what are its inputs and outputs at various stages, and how the information, and/or materials flow through it. The block diagram for "Online chatting system for college enquiry knowledgeable Database" The proposed system has a client server architecture. All the information will be kept in an optimized database on the central server.

This information can be accessed by the users through the android application installed on their smartphones (client machines). Each client machine will have an improved user interface. A chatbot is a technology that allows users to have natural conversations to access content and services. Chatbots typically take the form of a chat client, leveraging natural language processing to conduct a conversation with the user.



Chatbots control conversation flow based on the context of the users requests and respond with natural language phrases to provide direct answers, request additional information or recommend actions that can be taken. The diagram below provides a high-level description of how a chat client could be used to leverage natural language processing to assist with access to content or perform data queries.

**Modules Client-Server (chat user):** The proposed system has a client server architecture. All the information will be kept in an optimized database on the central server. This information can be accessed by the users through the android application installed on their smartphones (client machines). Each client machine will have an improved user interface.

**Chatbot:** A chatbot is a technology that allows users to have natural conversations to access content and services. Chatbots typically take the form of a chat client, leveraging natural language processing to conduct a conversation with the user. Chatbots control conversation flow based on the context of the users requests and respond with natural language phrases to provide direct answers, request additional information or recommend actions that can be taken.

**Pattern matching:** Bot send a query to a machine for comparing. The query match with database sends to data services.

**Data Services:** Intent is used to call upon proper service.using entity information to find proper data. Hence all the modules are described above are completed in polynomial time sec t, So this problem is P.

#### IV. METHODS

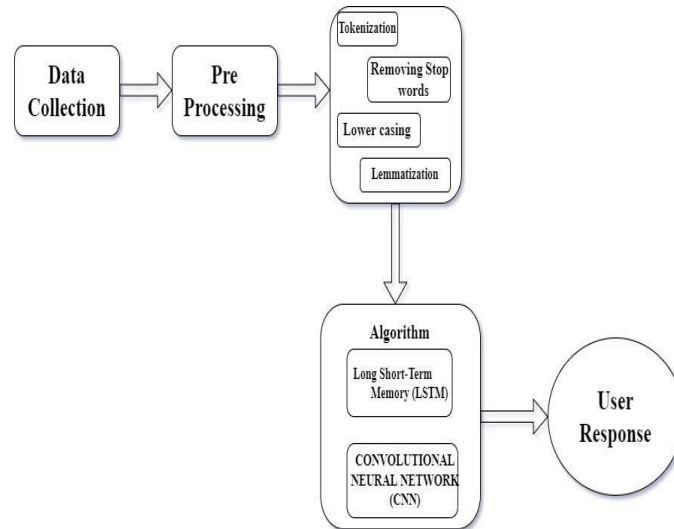


Fig 1.2 Activity diagram

**Data collection:** The first step is to collect a large amount of relevant data, such as frequently asked questions, course information, admission requirements, campus facilities, etc. This data will be used to train the chatbot model. The relevant data is taken from Concordia university for the overview of the project.

**Preprocessing:** The first step is to preprocess the text inputs to extract important features and remove any noise. This can involve steps such as tokenization, stemming, lemmatization, stop word removal, and spell correction.

**Tokenization:**The initial stage in text analysis is tokenization. It enables to determine the text's core components. Tokens are the fundamental units. Tokenization is beneficial since it divides a text into smaller chunks. Internally, spacey determines if a "." is a punctuation and separates it into tokens, or whether it is part of an abbreviation like as "B.A." and does not separate it. Based on the problem, we may utilize sentence tokenization or word tokenization.

**Removing Stop Words:**To eliminate noise from data, data cleaning is essential in NLP. Stop words are the most frequently repeated words in a text that give no useful information. The NLTK library includes a list of terms that are considered stop words in English. [I, no, nor, me, mine, myself, some, such we, our, you'd, your, he, ours, ourselves, yours, yourself, yourselves, you, you're, you've, you'll, most, other] are only a few of them.

**Lemmatization:** The process of reducing inflected forms of a word while verifying that the reduced form matches to the language is known as lemmatization. A lemma is a simplified version or base word. Lemmatization uses a pre-defined dictionary to saves word context and verify the word in the dictionary as it decreases. Organizes, organized, and organizing, for example, are all forms of organize. The lemma in this case is organize. The inflection of a word can be used to communicate grammatical categories such as tense (organized vs organize). Lemmatization is required since it aids in the reduction of a word's inflected forms into a particular element for analysis. It can also assist in text normalization and the avoidance of duplicate words with similar meanings.

**Lower casing:** When the text is in the same case, a computer can easily read the words since the machine treats lower and upper case differently. Words like Cat and cat, for example, are processed differently by machines. To prevent such issues, we must make the word in the same case, with lower case being the most preferable instance. In python lower () is a function that is mostly used to handle strings. The lower () function accepts no parameters. It converts each capital letter to lowercase to produce lowercased strings from the provided string. If the supplied string has no capital characters, it returns the exact string.

**Algorithms:** LSTM is a kind of recurrent neural network. In RNN output from the last step is fed as input in the current step. It tackled the problem of long-term dependencies of RNN in which the RNN cannot predict the word stored in the long-term memory but can give more accurate predictions from the recent information. As the gap length increases

RNN does not give an efficient performance. LSTM can by default retain the information for a long period of time.

A Convolutional Neural Network (CNN) is a type of deep learning algorithm commonly used in image recognition and computer vision applications. This stands for Convolution Neural Network where Image data is mapped to a target variable. They have proven to be successful in that they are now the techniques of choice for any form of prediction issue utilizing data as an input to the model. CNN is a multi-layered feed-forward neural network that is built by layering several hidden layers on top of one another in a certain sequence.

## V. RESULTS

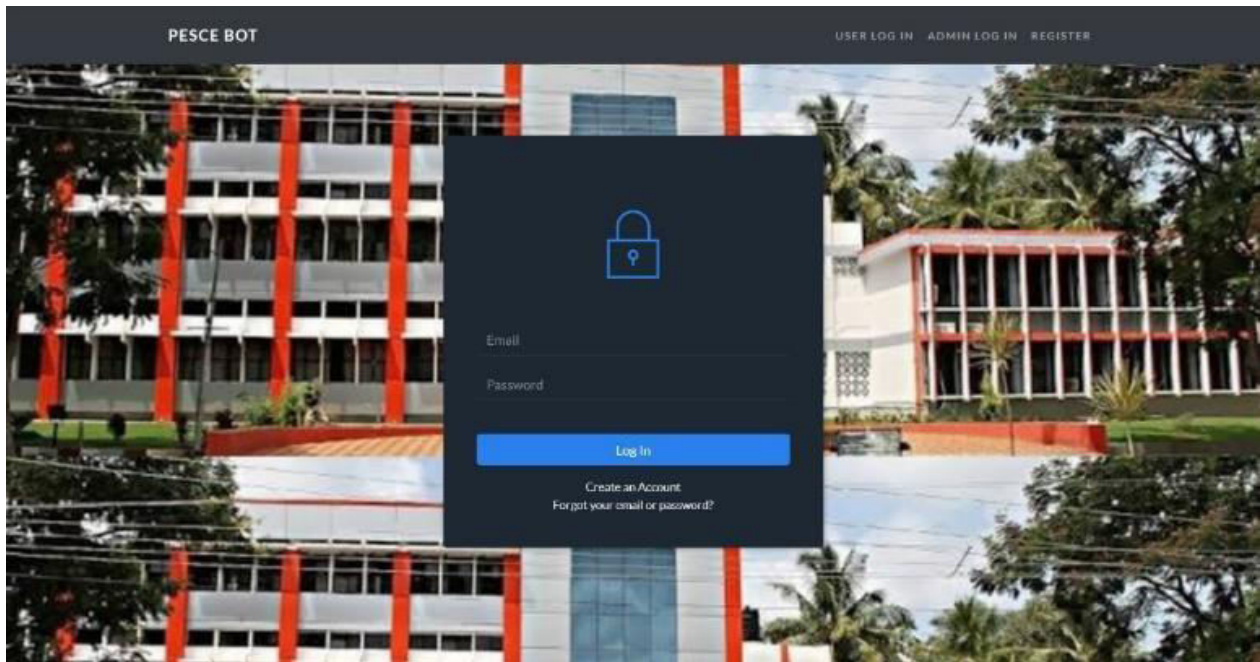


Fig 1.3 Snapshot of user interface

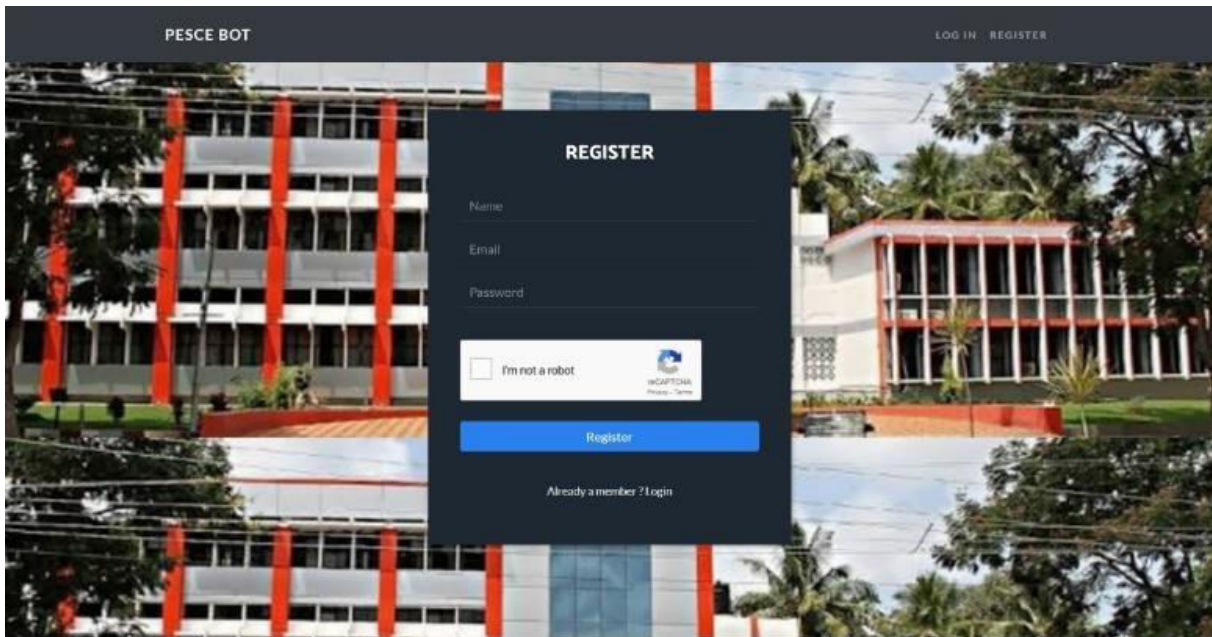


Fig 1.4 Login Page

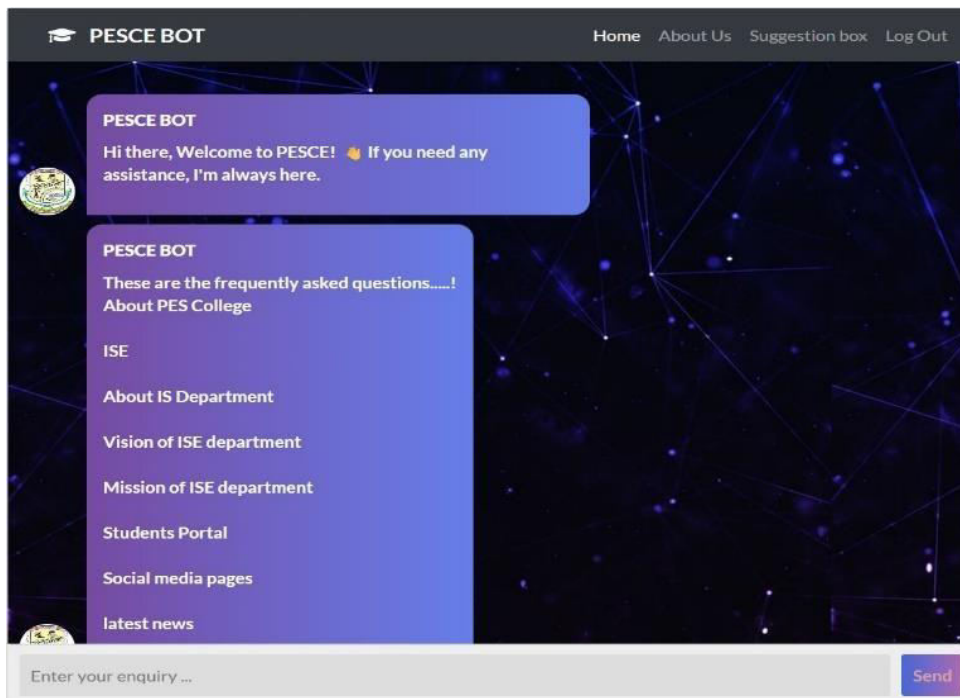


Fig 1.5 Snapshot of chatbot before asking any queries

We provide information about the college using our chatbot. That's the webpage. The customer is informed in a guardianship or understudy manner. Human language was transformed into an information language with the use of NLP, by giving college data to the client via AI. This conversation could be type- based (written) or even nonverbal.

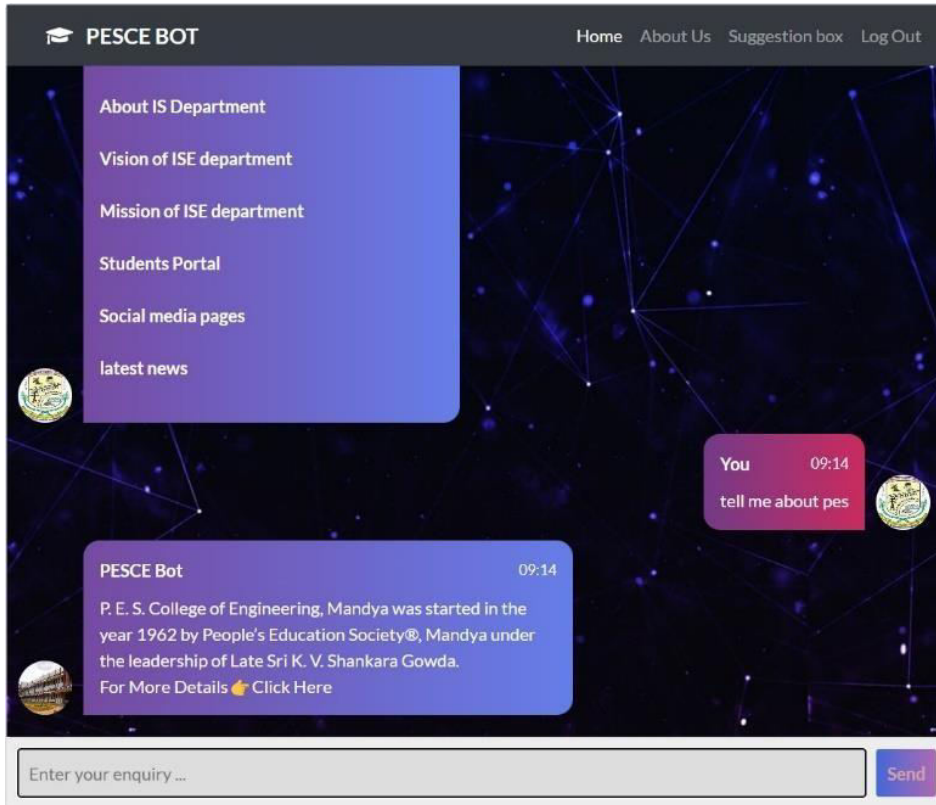


Fig 1.6 Snapshot of asking queries

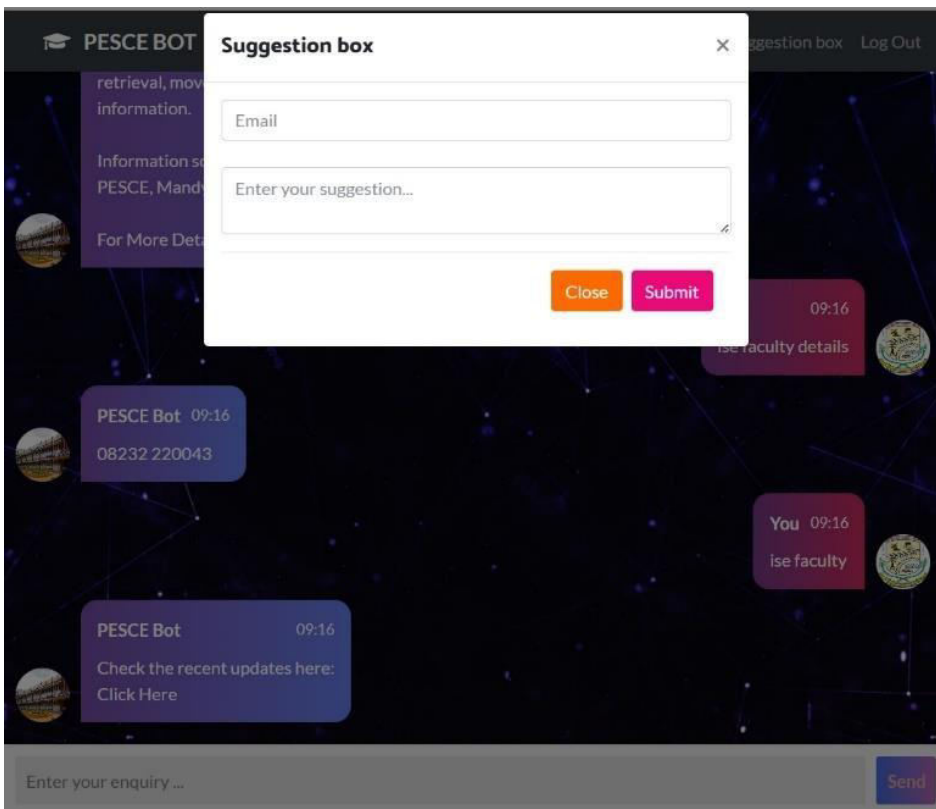


Fig 1.6 Snapshot of Suggestion box

Our Chatbot provides information regarding to the college. It is the website. It is communicate to the client like guardians, understudy. By utilizing NLP human language changed into an information language. By utilizing AI to client give college data. This could be type-based (composed) discussion, even a non-verbal discussion. At the point when ChatBot innovation is incorporated with well known web administrations it very well may be used safely by a significantly bigger crowd. Chabot framework is carried out to meet scholarly necessities of the clients. Generating reaction from a Chabot is information based one.

WordNet is answerable for recovering the reactions and for this situation; it contains all rationales that is set off at whatever point the client setting is coordinated. At the point when a client starts asking questions in the Chabot Graphical User Interface (GUI). The question is looked in the information base. On the off chance that the reaction is found in the information base it is shown to the client else the framework tells the administrator about the missing reaction in the data set and gives a predefined reaction to the client. Several studies have been conducted on college enquiry chatbots, and the results suggest that chatbots can significantly improve the efficiency and effectiveness of college enquiries.

**Improved efficiency:** Chatbots can significantly reduce the workload on college administrators and provide faster, more efficient, and personalized services to students.

**Higher user satisfaction:** Several studies have found that students are generally satisfied with the performance of college enquiry chatbots. For example, a study by Stieger et al. (2020) found that students rated the chatbot developed for their university highly on ease of use, usefulness, and overall satisfaction.

**Accuracy and effectiveness:** Chatbots have been shown to be effective in handling a wide range of college enquiries, including admission inquiries, course registration, financial aid, campus facilities, and career services. However, accuracy and effectiveness can vary depending on the quality of the chatbot's NLP and ML algorithms.

**Future research directions:** Several research directions have been proposed for college enquiry chatbots, including improving NLP and ML algorithms, designing chatbots that can handle complex and multi-turn conversations, providing personalized recommendations and support, and developing chatbots that can handle emotional and mental health inquiries.

## VI. CONCLUSION

Fastest-growing technology in history is artificial intelligence. utilizing a database that is both artificially intelligent and knowledgeable. We are able to transform virtual aid and pattern matching. This method is creating a chatbot based on the Android operating system with the help of a virtual assistant and an artificially intelligent database. A chatbot that can distinguish between human and machine speech and answers to user enquiries is something we can make. Researchers must cooperate and decide on a common strategy in order to build a chatbot. In this study, we investigated the development of chatbots and their applications across several industries. Also, there are parallels with other chatbots. The knowledge base of the chatbot should generally be brief, approachable, and simple to understand. Even if some of the commercial solutions have just become accessible, there is still work to be done in order to discover a standard method for building chatbots. In conclusion, a chatbot system for college enquiry using a knowledgeable database can provide a convenient and efficient way for students, faculty, and other stakeholders to access information about college programs, courses, and admission requirements. By utilizing natural language processing algorithms, a knowledgeable database, and a recommendation engine, the chatbot system can generate accurate and relevant responses to user queries in a timely manner. Save timing of students and teachers and also save extra manpower. Student can see all document related college like, notice, study material, question papers etc. on time to time and from any place. It is proper communication in between staff and students.

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