QueryMate: A Student Assistance to Solve Queries Faced in College .

Mansvi Shinde¹, Mrunal Jagdale², Soham Matkar³, Malhar Sadavarte⁴, Prof. A. D. Talole⁵

mansvishinde06@gmail.com mrunaljagdale03@gmal.com matkarsoham0731@gmail.com malharsadavarte@gmail.com
adtalole@kkwagh.edu.in

Department of Computer Technology, K. K. Wagh Polytechnic, Nashik, Maharashtra, India.

Abstract- **With the rapid advancement of technology, artificial intelligence has revolutionized various domains, including education. The conventional student inquiry process in colleges often leads to delays, miscommunication, and excessive workload on administrative staff.** *Query Mate* **is an AI-powered chatbot designed to assist students in obtaining real-time information regarding college processes, such as admissions, scholarships, placements, and other academic-related inquiries. By leveraging Natural Language Processing (NLP), Query Mate enhances accessibility and responsiveness, providing instant, accurate answers to student queries. This system decreases the amount of work that the college administration has to do in giving information to students, as well as the amount of work that the staff has to do in answering all of the students' questions.**
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Keywords- Chatbot, College Enquiry System, Natural Language Processing (NLP), Student Assistance, Query Mate.

1. INTRODUCTION

A chatbot is a software application designed to simulate human-like conversations utilizing text or text-to-verbalization technology. In scholastic institutions, university chatbots accommodate as perspicacious virtual auxiliaries that provide students with instant replications to their queries. Over time, several chatbot systems like Eliza and Cleverbot have been developed, demonstrating the potential of AI-driven communication.

The proposed system is a web-predicated chatbot that avails students by answering their academic and administrative queries in genuine-time. Unlike traditional inquiry methods, which require visiting college offices, this chatbot eliminates delays and enhances accessibility. Our project leverages Natural Language Processing (NLP) to enable seamless interaction, sanctioning students to ask questions in any conversational format.

The primary goal of this system is to streamline academic processes such as admissions, fee inquiries, scholarship details, department schedules, and document submission guidelines. By automating these tasks, the chatbot amends efficiency and minimizes discombobulation during crucial academic activities. Supplementally, it provides instant updates on college events, results, consequential descries, and placement opportunities, ascertaining students remain well-apprised at all times.

The chatbot features an interactive utilizer interface embedded within the college website, offering a utilizer-cordial experience. Unlike AI-powered auxiliaries like Google Assistant, which direct users to external links, this system retrieves pertinent information directly from a structured college database and presents precise replications. The chatbot follows a pattern-matching approach to understand student queries and extract consequential insights, ascertaining precise and context-cognizant replications.

1.1 PROBLEM STATEMENT

Traditionally, students need to visit the college avail desk to resolve their queries, which can be both time-consuming and inconvenient, especially for those living far from campus. This manual approach may lead to delays, miscommunication, and inefficiencies in addressing student concerns. To surmount these challenges, the proposed Query Mate chatbot provides a virtual, AI-driven support system that distributes instant answers, truncating dependency on physical visits and amending student-college communication.

1.2 OBJECTIVES

The objectives of the proposed Query Mate chatbot are as follows:

1) Contextual Replications: The chatbot will provide precise and germane answers predicated on the utilizer's query, ascertaining a smooth interaction from divergent perspectives.

2) Efficient Query Handling: Unlike traditional methods, the chatbot will instantly address student queries cognate to college admissions, fees, placements, faculty details, and events.

3) Admission Guidance: The chatbot will avail students throughout the admission process, providing step-by-step guidance and sanctioning users to submit suggestions or feedback for further ameliorations.

4) Comprehensive College Information: The system will provide structured, precise details about the institute, faculty members, placements, events, and location, eliminating the desideratum for students to visit multiple sources.

The proposed system will accommodate as a web-integrated chatbot, sanctioning students to obtain instant replications to their inquiries without following a predefined question format. If a query is not apperceived or lacks a predefined replication, it will be stored in a pending queries database, which the administrator can review and update. In clamant cases, students will receive an automated message verbally expressing, "Our staff will contact you shortly," ascertaining their concerns are acknowledged and addressed in a timely manner.

This chatbot will bridge the communication gap between students and the administration, making college-cognate processes more expeditious, more accessible, and utilizer-cordial.

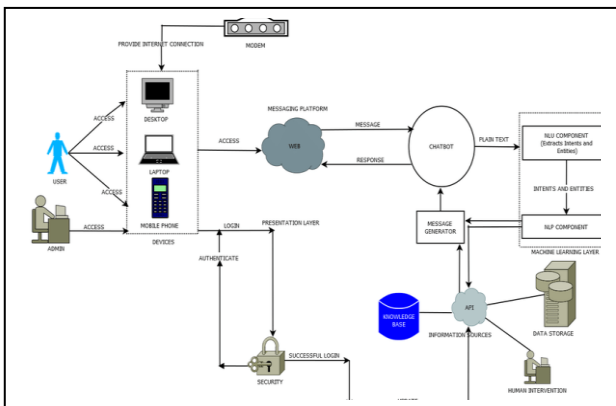The System Architecture is shown in the figure below:

Fig.1 System Architecture diagram

1.3 SCOPE

Query Mate is a chatbot system designed to provide instant, precise replications to student queries cognate to fees, scholarships, placements, and academic schedules. It aims to streamline information access, truncate administrative workload, and enhance student contentment by offering automated query resolution predicated on a structured erudition base. The system ascertains efficient communication between students and the institution, aligning with the goal of digital transformation and operational efficiency.

2. LITERATURE SURVEY

[1] Prof. Ram Manoj Sharma: This chatbot system is developed for college inquiry and has been developed with the help of the Artificial Intelligence Mechanism. This chatbot identifies and analyzes the user's input query and understands what user messages are. The system has a facility like an Online chatbot, Online Notice boards, etc. [6]

[2] Ms.Ch.Lavanya Susanna,R.Pratyusha, P.Swathi, P.Rishi Krishna, V.Sai Pradeep: This Chatbot System could be a internet application that provides answers to the queries provided by thescholar or the user. Users will merely question through the chatbot that's used for chatting. Students will chat by using any format there's no specific format the user needs to follow. Theanswers are applicable what the user queries.[2]

[3] Nitesh Thakur, Abhijeet Shinde, and Prof. Namrata Mahakalkar: This is one innovative approach of an artificial chatbot using Natural Language Processing (NLP) which accepts written text andthe also voice command. This paper introduces an interest in some emerging capabilities for evolving speech understanding and processing in virtual human dialogue systems.[3]

[4] Harsh Pawar, jay Yadav, Joyce Lemos: This Chatbot is based on knowledge in a database. The proposed system has an Online Enquiry module. The development is done using various programming languages. It also provides a user-friendly graphical interface to submit quey and receive a response. The main purpose is it uses Structured Query Language (SQL) for pattern matching. But it works if an input query matches with a query in the database i.e. in the backend. [4]

[5] P.Nikhila, Mr. C Kishor Kumar Reddy: the system was designed using Artificial Intelligence Mark-up Language (AIML) to make a response to queries. Artificial Intelligence Mark-up Language is employed to make or customize an Artificial Linguistic Internet Computer Entity (ALICE) bot that could be a chat-bot application supported by ALICE-free code. [5]

3. EXISTING SYSTEM

In the olden days students had to visit the college to enquire about details and other information about the college ,which is a time consuming process as well as lengthy procedure for both parents as well as students. now a days there are many changes occurred in the Edification system with avail of advanced technological ameliorations. Everything is transpiring over the cyber world without any arduousness. In those days for submitting a minuscule application withal ,we have to visit that place, but as the days are passing away its consummating transmuting. Amassing the applications manually will be hectic procedure and it additionally needs a manpower. For truncating that manpower and such difficulties many contrivances or systems were emerged day by day.

4. PROPOSED SYSTEM

The Query Mate chatbot system is developed utilizing C# for backend processing, ASP.NET for the frontend, and MySQL as the database to store and manage query replications. This web-predicated application is designed to provide students with instant and precise answers to their inquiries cognate to fees, admissions, scholarships, placements, faculty details, and academic schedules.

Students can interact with the chatbot in any format, without following a predefined structure. If a query is not apperceived or lacks a stored replication, it is authenticated in an unrecognized queries table, which the admin can later review and update. In imperative cases, the system will exhibit an automated message verbally expressing "Our representatives will contact you shortly", ascertaining student concerns are addressed efficiently.

The admin panel, accessible through a secure ASP.NET-predicated portal, sanctions sanctioned personnel to review, update, and abstract invalid replications, ascertaining perpetual amendment of the chatbot's cognizance base. By integrating MySQL, the system efficiently stores and retrieves student inquiries, ascertaining smooth and expeditious processing of replications.

This chatbot eliminates the desideratum for students to visit the college in person for general inquiries, offering a genuine-time, utilizer-amicable, and interactive support system. The chatbot's graphical interface is designed to engender a conversational experience, making interactions more engaging and efficient. Adscititiously, the system provides students with timely updates on college-cognate activities, availing them stay apprised without manual intervention.
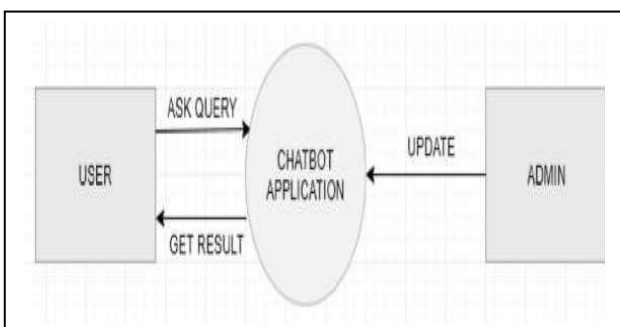
4.1 DATA FLOW DIAGRAM

Fig: 4.1.1 DFD level 0

The DFD-0 Diagram represents the interaction within the Chatbot Application system. The Utilizer submits a query, which the Chatbot Application processes and responds to. The Admin updates the chatbot's cognizance base to ascertain replications are precise and current. This setup sanctions the chatbot to provide pertinent answers while the Admin manages content updates.
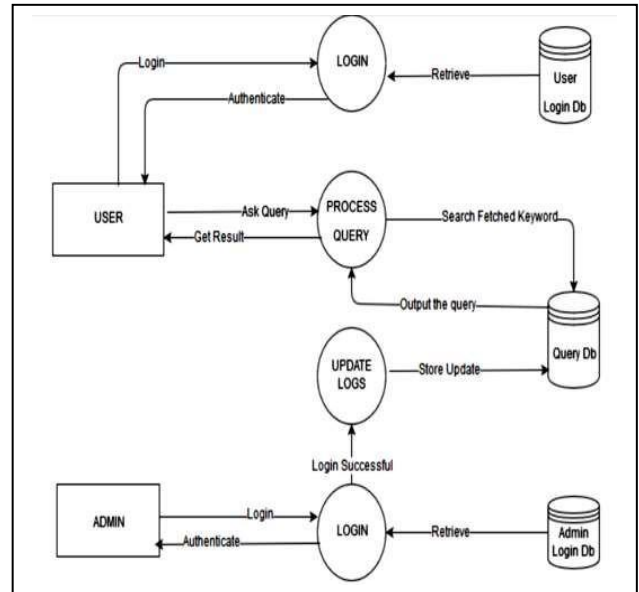

Fig: 4.1.2 DFD level 1

The DFD-1 Diagram represents the flow of chatbot system involving utilizer and admin interactions. Users authenticate through the AUTHENTICATE module, where their credentials are verified against the Utilizer Authenticate Db. After prosperous authentication, users can ask queries, which are processed in the PROCESS QUERY module by fetching pertinent keywords from the Query Db. The chatbot then returns the result to the utilizer. Admins additionally authenticate through the AUTHENTICATE module, verified by the Admin Authenticate Db, and can update the system. These interactions are recorded in UPDATE LOGS for tracking and system management.
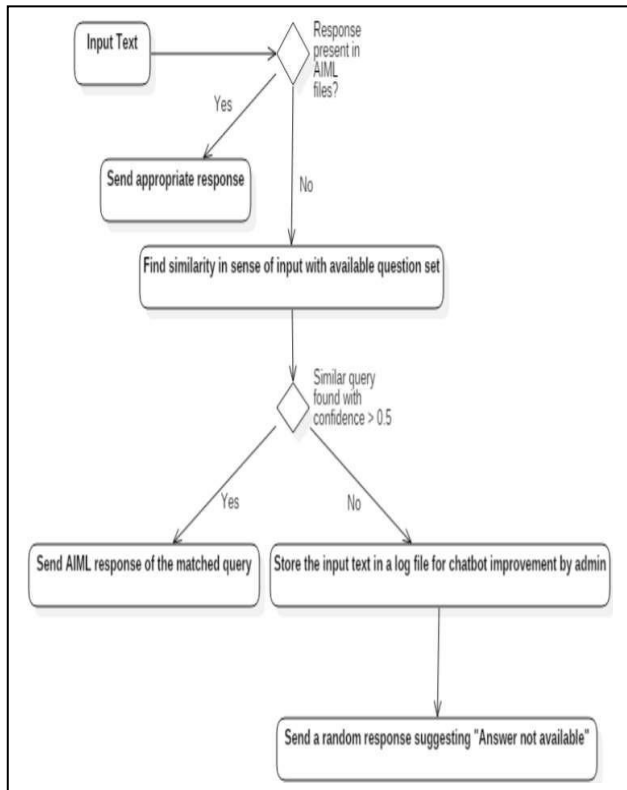
4.2 ACTIVITY DIAGRAM

Fig: 4.2 Activity Diagram

The Activity diagram illustrates the replication process of a chatbot system. When input text is received, the system checks if a replication subsists in AIML files. If found, it sends a felicitous replication. If not, it probes for a homogeneous query with a confidence score above 0.5. If a match is found, the system sends the corresponding replication; otherwise, it logs the input for amelioration and sends a replication betokening "Answer not available."

4.3 USE CASE DIAGRAM

This diagram shows a chatbot system's workflow. The user types a query, which goes through a messaging channel to the chatbot API. The chatbot processes the message, and the NLP component defines intents, classifies them, and extracts entities. The response is then sent back and displayed to the user. Audio inputs can be converted to text if needed.

Fig: 4.3 Use Case Diagram

4.4 SEQUENCE DIAGRAM

The Sequence Diagram for Query Mate illustrates the step-by-step interactions involved in processing a student query. The diagrams illustrate the processes for an admin and a utilizer in a system.

1. Admin Workflow: The admin authenticates by entering their utilizer ID and password, then can upload queries with answers, upload notice data, manage student details, and view student details.

2. Utilizer Workflow: The utilizer authenticates with their credentials, enters queries to chat, views the notice board, and can download files.

Each sequence shows the steps involved in managing and accessing information predicated on utilizer roles.
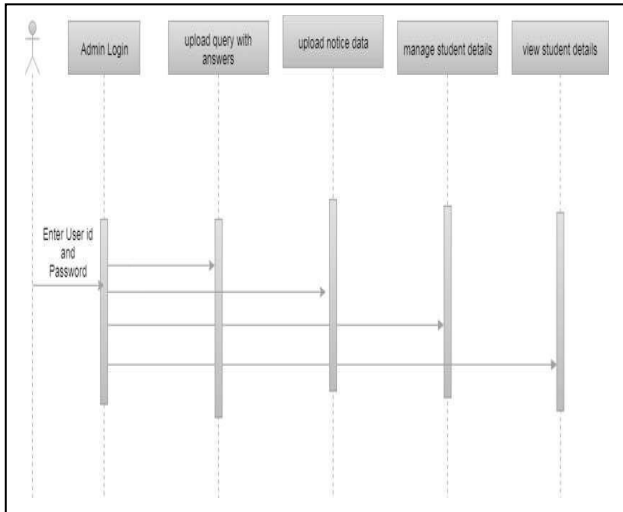
Fig: 4.4 Sequence Diagram
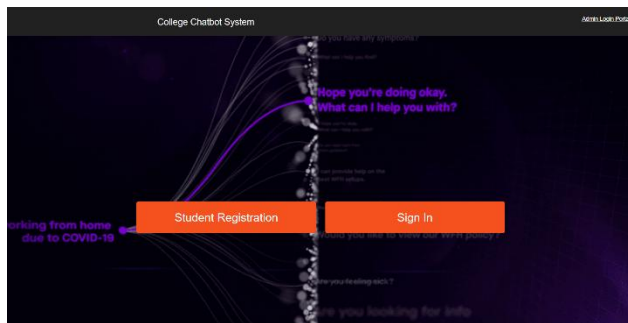
5. MODULES AND FUNCTIONS

Fig: 5.0 The Landing Page of the system.

The Home Page of the chatbot system provides some options such as to Login, Register new student and login as Admin or Register a new Admin.

5.1 ADMIN MODULE

The Admin user is the one who will have the every authority of controlling the questions and answers asked by the student users. The admin user will have the authority to add/update/delete the questions and answers as well as uploading or removing the documents.

Fig: 5.1.1 Admin Login

The system provides the secure login module for the admin logins. The Admin user can either login as a existing user or can be registered as a new user.

Fig: 5.1.2 Admin Dashboard

Application provides an interactive and attractive dashboard to a admin user. The dashboard comes with various functionalities and features on it.
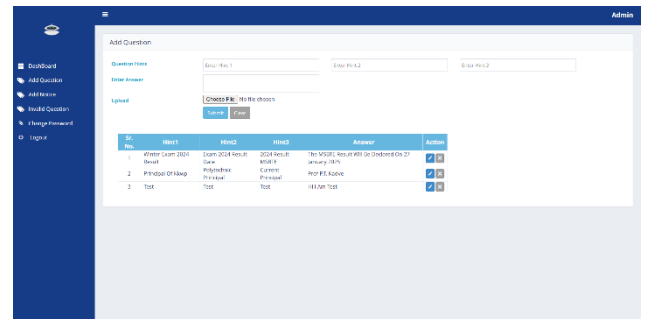

Fig: 5.1.3 Adding or Updating the Questions/Answers.

This feature allows admin user to add/update/delete the new/existing question in the database. It also provides the feature of entering multiple possibilities of the question to be asked.
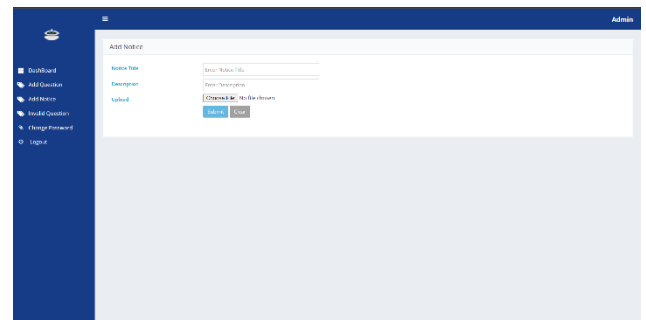

Fig: 5.1.4 Notice Board

System provides feature of displaying the notices or announcements on the notice board panel on the application. It also gives admin a authority to upload a document regarding any notice to be announced.
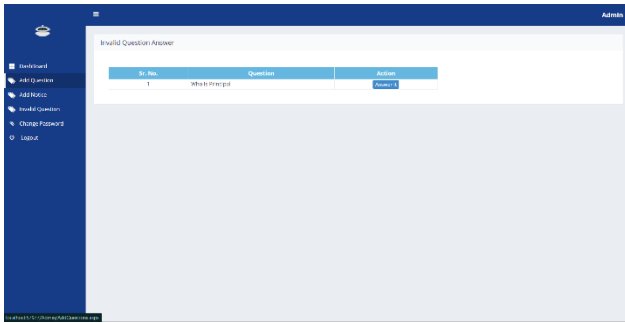
Fig: 5.1.5 Answering Invalid questions.

If the Questions asked from the student or any other users isn't present in the database, then the admin has authority to check/update the question and answer dedicated to it in the database. This can give a dynamic addition of unanswered questions from the end-user.

5.2 STUDENT MODULE

The Student user is the end-user who will ask or type the queries and will get the accurate answers accordingly. Each student will be served 24/7 with detailed answers and the necessary resources.
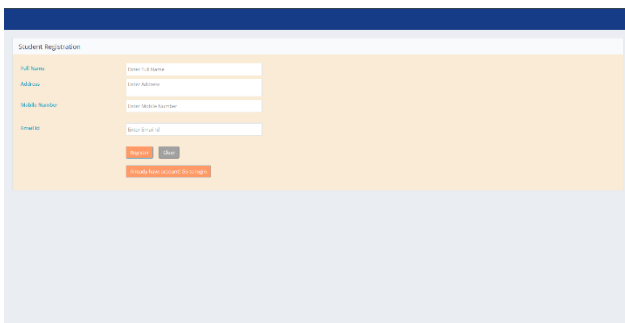

Fig: 5.2.1 Student Registration page

Application provides a separate Registration page for the new student user. Student user can simply enter the valid details and get registered to the system.
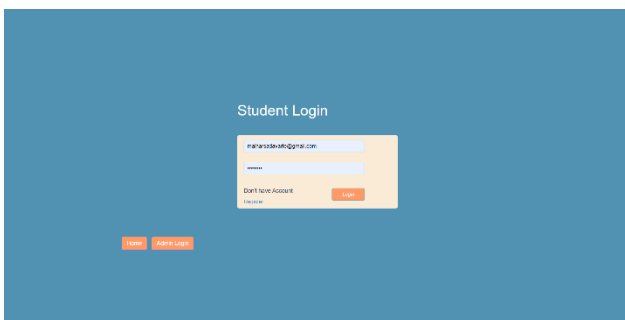

Fig: 5.2.2 Student Login page

Application provides the separate login page for the existing student user. The user can simply enter his/her credentials and get logged in to the chatbot application.
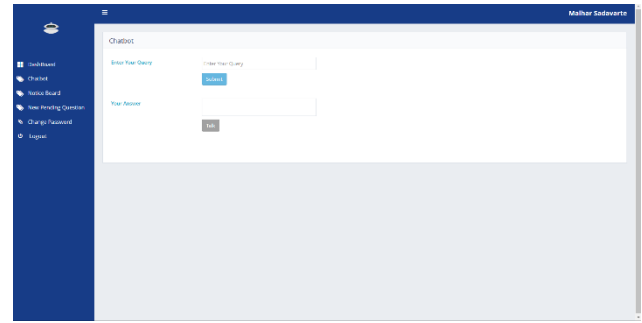

Fig: 5.2.3 Chat interface

Application serves with the functionality of answering the queries asked by the student users. The Student user can simply type a valid query into the textbox and the accurate answers/resources will be served to the user. It also provides the feature TALK using which the user can get the answers in audio form.
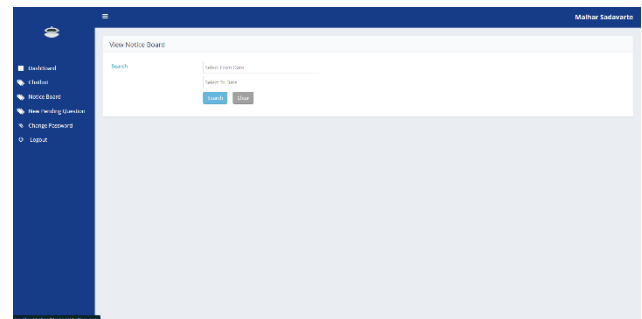

Fig: 5.2.4 Notice Board

Application serves with the notice board feature in it, The latest notices regarding to the academics or extracurricular will be posted here with the document resources.
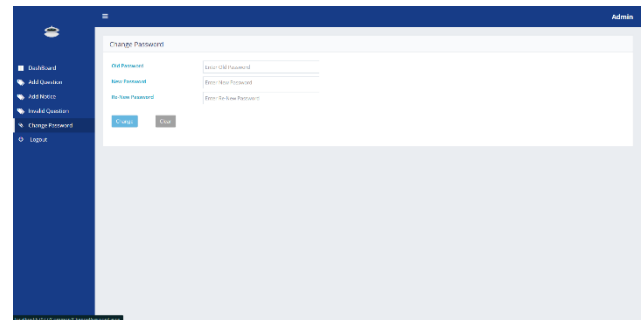

Fig: 5.2.5 Change Password

The Student user can simply change his/her password if needed for security purpose and can use this updated password for the future login credentials.

6. REFERENCES

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