3rd Sem Mini Project Report on

Chatbots Using GenAI For GraphicEra University

Submitted in partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE & ENGINEERING

Submitted by:

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2024-25

CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the project report entitled **"Chatbots Using GenAI For GraphicEra University"** in partial fulfillment of the requirements for the award of the Degree of Bachelor of Technology in Computer Science and Engineering in the Department of Computer Science and Engineering of the Graphic Era Hill University, Dehradun shall be carried out by the undersigned under the supervision of **mr.vineet deopa** (class coordinator) , Department of Computer Science and Engineering, Graphic Era Hill University, Dehradun.

Name- Rahul Rana University Roll no- 2319359

The above mentioned student shall be working under the supervision of the undersigned on the **"Chatbots Using GenAI For GraphicEra University"**

Supervisor **Head of the Department**

Examination

Name of the Examiners: **Signature with Date**

1. Ms. Swati Joshi

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Chapter 1

Introduction and Problem Statement

1.1 Introduction

In today's rapidly changing educational environment, effective communication between students and teachers is more important than ever. At GraphicEra University, we are exploring the potential of generative artificial intelligence (GenAI) to create a chatbot that can streamline this communication. This project aims to develop a user-friendly chatbot that will help students access important information such as class notes and assignments directly from their teachers. By leveraging advanced technology, we hope to enhance the learning experience and ensure that no student is left behind due to communication gaps.

The motivation for this project stems from a common problem faced by students at GraphicEra University. Teachers often rely on class representatives (CRs) to distribute notes and assignments. However, when classes are combined—for example, when multiple partitions are combined—there can be inconsistencies in shared information. Some students may miss important updates simply because they are not part of the Czech Republic's communication loop. By developing a chatbot, we aim to create a direct line of communication between students and teachers to ensure that everyone has access to the same information regardless of class structure.

Chapter 2

Methodology

To bring the chatbot project to life, I have carefully selected a combination of technologies and methodologies that will enable me to create a robust and efficient system. This section outlines the various components of my approach, including the tools used, the architecture of the system, and the development process.

2.1 Tools and Technologies

The successful implementation of the chatbot relies on a well-chosen set of tools and technologies. Below is a detailed breakdown of the components used in this project:

Frontend Technologies:-

1) HTML (HyperText Markup Language):

HTML serves as the backbone of my chatbot's user interface. It provides the structure for the web pages, allowing me to create forms, buttons, and other interactive elements that students and teachers will use to interact with the chatbot.

1) CSS (Cascading Style Sheets):

CSS is utilized to enhance the visual appeal of the chatbot interface. By applying styles, I can create a user-friendly and aesthetically pleasing design that encourages engagement. I also use CSS for responsive design, ensuring that the chatbot is accessible on various devices, including smartphones, tablets, and desktops.

Backend Technologies

1) JavaScript:

JavaScript is the primary programming language used for the chatbot's functionality. It allows me to create dynamic content and handle user interactions in real-time. I use JavaScript to manage the chatbot's logic, process user inputs, and generate appropriate responses.

2) Node.js with Express.js:

Node.js is a powerful runtime environment that enables me to run JavaScript on the server side. I use Express.js, a web application framework for Node.js, to build the server that handles requests from the frontend. This setup allows for efficient routing and middleware management, making it easier to develop and maintain the application.

3) GitHub:

GitHub is used for version control and collaboration. It allows me to manage different parts of the project, such as the Sign-In Page and Teacher File Uploading Page, ensuring that I can work on the project seamlessly. I also use GitHub for deploying the project, making it accessible to users.

Database Technology

1) MySQL:

MySQL is the relational database management system chosen for this project. It provides a reliable way to store and retrieve data, such as teacher notes and student queries. I design the database schema to include tables for storing user information, uploaded documents, and interaction logs, ensuring that all necessary data is organized and easily accessible.

Chapter 3

Project Work Carried Out

While I have previous experience working with SQL and developing chatbots, combining these two elements into a cohesive teacher-student chatbot presents unique challenges. One of the main hurdles is ensuring a seamless integration between the database and the conversational capabilities of the chatbot. I need to ensure that the chatbot can accurately interpret user queries and retrieve the correct information from the database. Beyond that, another significant challenge I try to address is creating a natural and engaging conversational flow that meets the needs of both students and teachers.

Code Snippets

1. Teacher Document Uploading Code (server.js):

This code allows teachers to upload their notes.

```
app.post('/upload-note', upload.single('note'), (req, res) => {
  const teacherName = req.body.teacher_name; // Get teacher name from the request
  const fileUrl = `http://localhost:3000/uploads/${req.file.filename}`; // Create full URL

  // Save to database
  const query = 'INSERT INTO teacher_notes (teacher_name, file_url) VALUES (?, ?)';
  connection.query(query, [teacherName, fileUrl], (err, results) => {
    if (err) {
      return res.status(500).send('Error saving note to database');
    }
    res.send('Note uploaded successfully');
  });
```

2. Student Notes Fetching Code (server.js):

This code enables students to fetch the notes uploaded by teachers

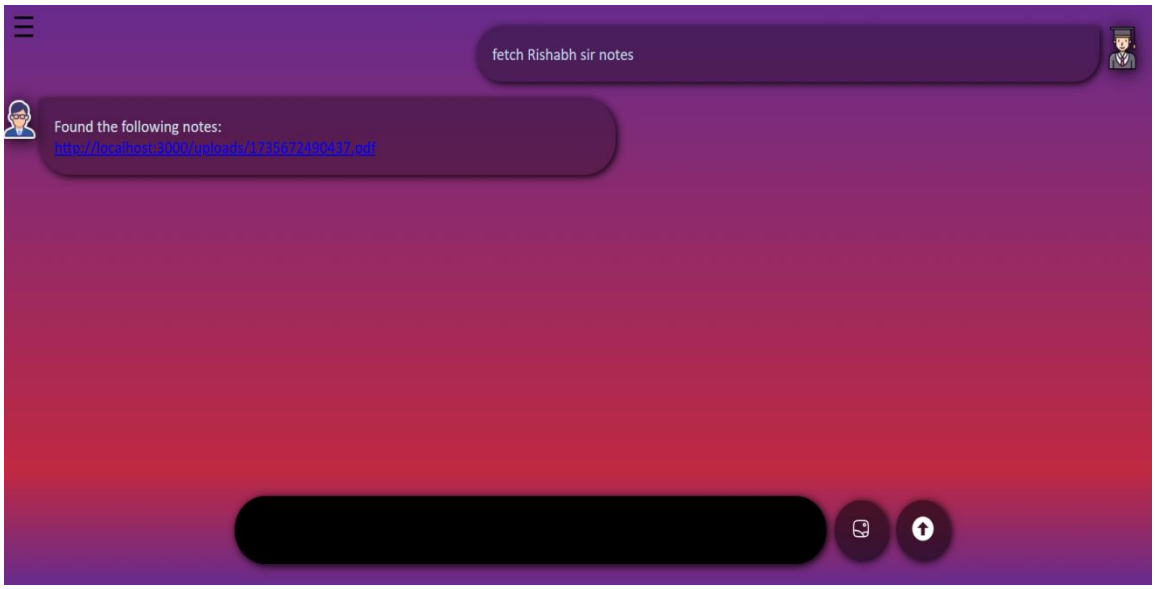
```
app.get('/fetch-notes', (req, res) => {
  const { teacher_name, keyword } = req.query;

  // Build the query
  let query = 'SELECT * FROM teacher_notes WHERE teacher_name = ?';
  let queryParams = [teacher_name];

  if (keyword) {
    query += ' AND file_url LIKE ?'; // Add keyword filter
    queryParams.push(`%${keyword}%`);
  }

  connection.query(query, queryParams, (err, results) => {
    if (err) {
      console.error("Database query error:", err);
      return res.status(500).send('Error fetching notes from database');
    }
    res.json(results);
  });
```

3. Color I made by using gradient property for frontend:

```
body {
    font-family: Arial, sans-serif;
    background: linear-gradient(to left, #652c90, #c02942);
    margin: 0;
    padding: 20px;
}
```

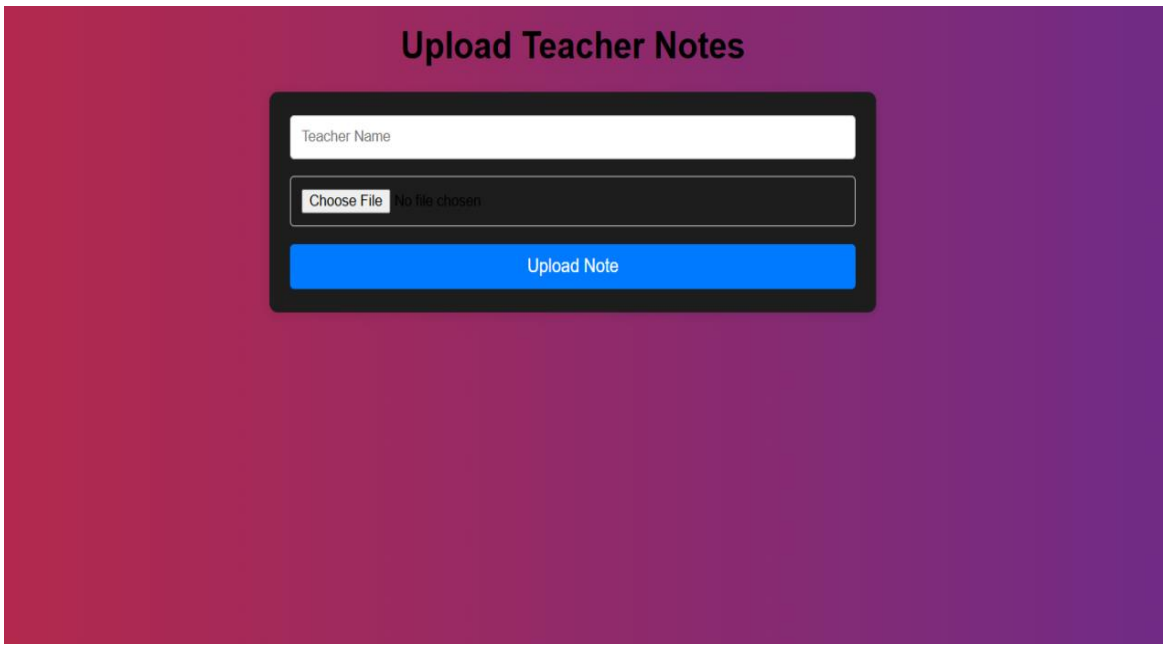
4. Front-End Interface:

The front-end interface of the chatbot is designed to be user-friendly and intuitive.

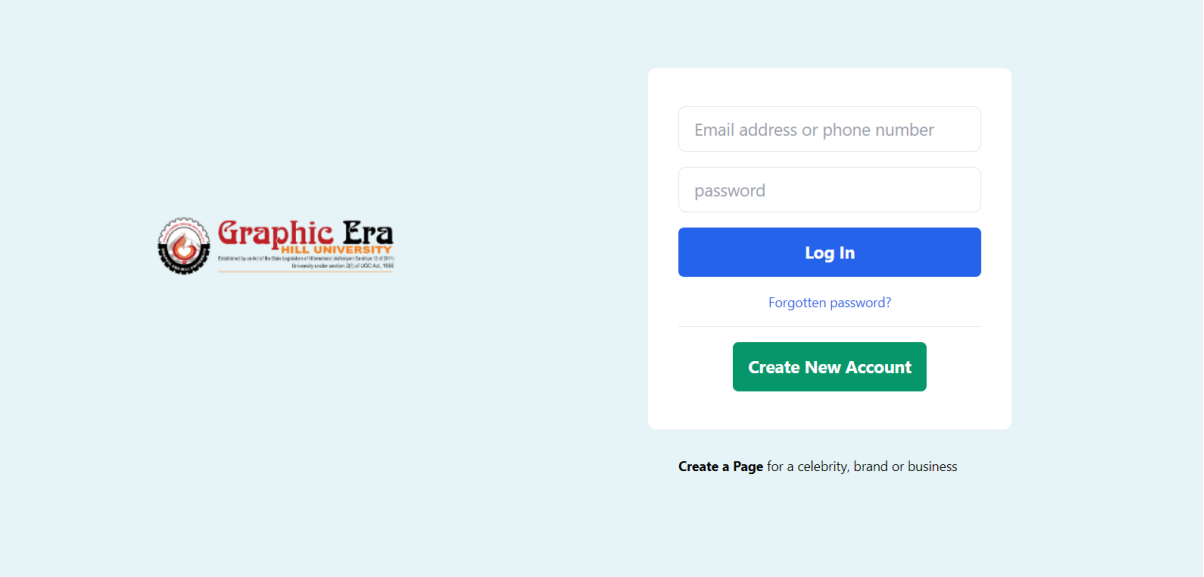


5. Teacher Document Uploading Form:

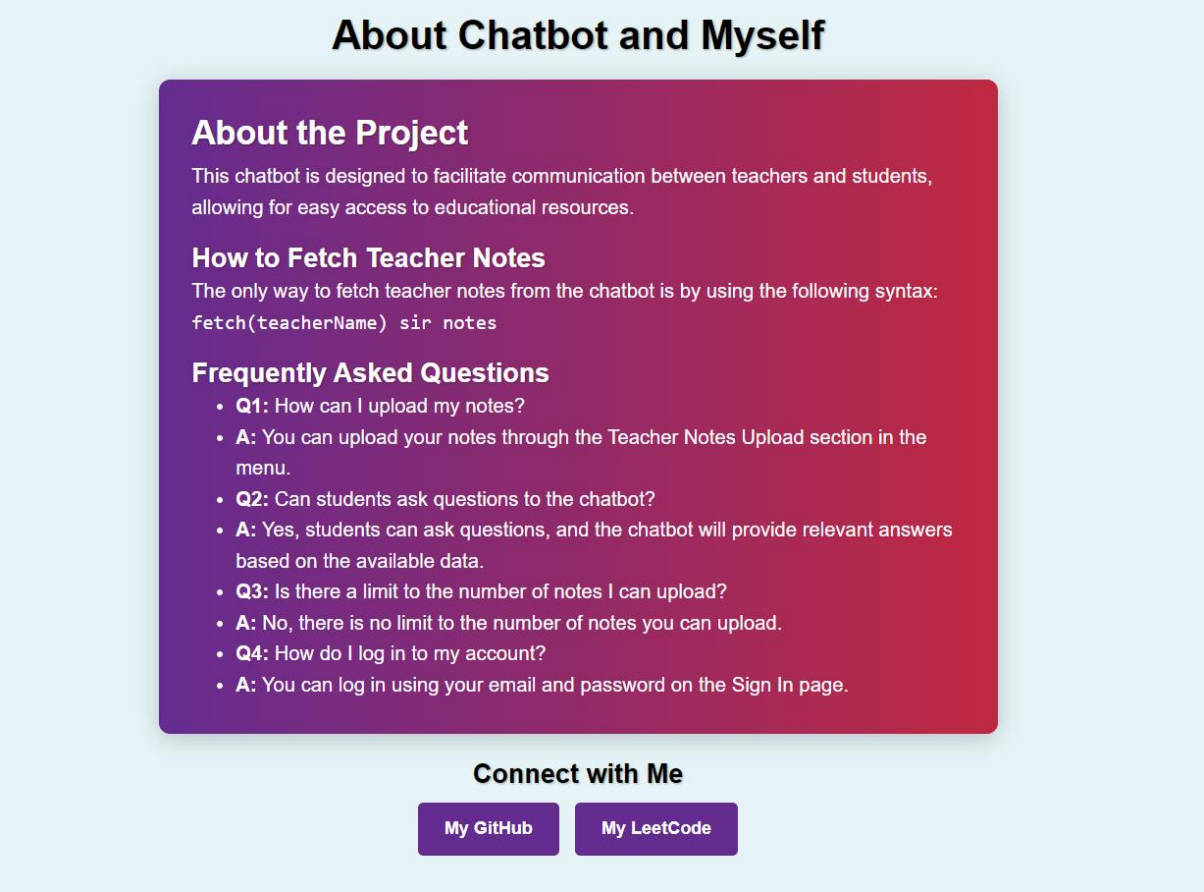
A simple form for teachers to upload their documents.



6) **SignUP page** for the user (using:- HTML , CSS , JS)



7) **AboutUs Page** :- (this provide the detail about my self or my project , ex:- frequently ask quesiton by a new user)



SQL Database Command:

This command is used to create a table for storing teacher PDFs and their names.

```
C:\Users\ACER>mysql -u root -p
Enter password: ***************
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 20
Server version: 8.0.40 MySQL Community Server - GPL

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> USE teacher_notes
Database changed
mysql> SHOW TABLES;
+-------------------------+
| Tables_in_teacher_notes |
+-------------------------+
| teacher_notes           |
+-------------------------+
1 row in set (0.00 sec)

mysql> SHOW COLUMNS FROM teacher_notes;
+--------------+-----------------+------+-----+-------------------+-------------------+
| Field        | Type            | Null | Key | Default           | Extra             |
+--------------+-----------------+------+-----+-------------------+-------------------+
| id           | bigint unsigned | NO   | PRI | NULL              | auto_increment    |
| teacher_name | varchar(255)    | YES  |     | NULL              |                   |
| file_url     | text            | YES  |     | NULL              |                   |
| upload_date  | timestamp       | YES  |     | CURRENT_TIMESTAMP | DEFAULT_GENERATED |
+--------------+-----------------+------+-----+-------------------+-------------------+
4 rows in set (0.00 sec)
```

Chapter 4

Results and Discussion

The results are :

The development of a chatbot using generative artificial intelligence for GraphicEra University presents an exciting opportunity to improve communication within the academic community. By eliminating existing gaps in the dissemination of information, we aim to create a tool that will benefit not only students, but also support teachers in their efforts to provide timely and relevant information. As we move forward with this project, we are committed to overcoming the challenges we face and providing a solution that truly meets the needs of our university.

Chapter 5

Conclusion and Future Work

In conclusion, the chatbot project aims to revolutionize the way students and teachers communicate at GraphicEra University. By providing a direct line of communication, we hope to eliminate the inconsistencies that often arise from traditional methods of information sharing.

Future Work

In the future, we plan to increase the reliability of the chatbot for students by implementing several new features. One of the key improvements will be the addition of a voice command feature that will allow students to interact with the chatbot more naturally and intuitively. This enhancement will make it easier for students to access information hands-free and adapt to different user preferences and needs.

In addition, we strive to incorporate more advanced natural language processing capabilities to help the chatbot better understand user queries, making interactions smoother and more efficient.

I also plan to explore the integration of personalized user experiences, where a chatbot can remember individual student preferences and provide customized responses. We are excited about the potential impact of these improvements and are committed to delivering a solution that truly meets the needs of our university community.

References

1) Gen AI Magazine (from library)

2) IEEE Research Paper on Chatbots (S. Meshram, N. Naik, M. VR, T. More and S. Kharche, "Conversational AI: Chatbots," *2021 International Conference on Intelligent Technologies (CONIT)*, Hubli, India, 2021)

3) Read articals of OPENAI (GHAT GPT) how they provide the API for developers