

EduTutor AI – Project Documentation

1. Introduction

Project Title: EduTutor AI

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EduTutor AI is an AI-powered educational platform designed to assist both students and educators in improving the learning process. With the rise of digital education, there is a growing demand for smart tools that can simplify study preparation, reduce workload, and make learning more interactive. EduTutor AI combines artificial intelligence, file processing, and an attractive user interface to achieve these goals.

This project is focused on developing a user-friendly assistant that can answer student queries, summarize study materials, generate quizzes, and maintain a history of learning activities. Teachers also benefit by having access to student activity logs and quiz results, making it easier to monitor progress.

2. Project Overview

Purpose:

The primary purpose of EduTutor AI is to act as a smart learning companion. It is capable of reading uploaded notes (PDF/TXT), extracting important content, summarizing them, and generating quizzes that students can practice. Additionally, it provides a chat feature where students can directly ask the AI questions related to their studies.

Scope:

- Uploading and processing study materials.
- Automatic summarization of content.
- Quiz generation (from both uploaded files and user-provided topics).
- AI-driven Q&A; for instant learning support.
- Secure login for students and teachers.
- Activity history logging for monitoring and evaluation.
- Attractive, modern user interface with custom styling.

3. Objectives

The key objectives of EduTutor AI include:

1. To integrate an AI model (IBM Granite) that generates meaningful educational responses.
2. To create a platform that allows students to interact with AI in multiple ways: asking questions, summarizing notes, and practicing quizzes.
3. To design and implement a login system that differentiates between student and teacher roles.
4. To maintain a history of all activities performed by the users in a structured manner (CSV format).
5. To create an engaging and visually appealing interface with a custom CSS theme, ensuring that students enjoy using the platform.
6. To make the solution lightweight and deployable via Gradio, ensuring accessibility for demonstrations and practical use.

4. Features

EduTutor AI provides a variety of useful features:

AI Chat Module: Students can type questions into the chat box and receive direct responses from the AI.

Notes Upload & Summarization: Upload study notes in PDF/TXT format for extraction and summarization.

Quiz Generation from Notes: Generate quizzes based on uploaded notes.

Topic-Based Quiz: Generate quizzes on any topic by entering a subject name.

History Tracking: All activities are stored in a CSV file with last 15 visible.

Login System: Secure login with student/teacher roles.

Custom UI Design: Gradient backgrounds, shadow effects, and attractive buttons.

5. Technology Stack

Frontend: Gradio framework, custom CSS.

Backend: Python with AI logic and file handling.

AI Model: IBM Granite 3.2 2B Instruct (Hugging Face).

Libraries: transformers, torch, gradio, PyPDF2, pandas, datetime.

Database: Local CSV file for logging activities.

Deployment: Gradio live sharing (demo.launch(share=True)).

6. System Architecture

1. **User Interface Layer:** Gradio with tabs and CSS.
2. **AI Processing Layer:** IBM Granite model for responses.

3. **File Handling Layer:** Extracts PDF/TXT text.
4. **Database Layer:** CSV file logs all activities.
5. **Authentication Layer:** Login credentials verified before access.

7. Benefits

For Students: Quick summaries, AI Q&A;, interactive UI.

For Teachers: Activity history and automated quizzes.

General Advantages: Cost-effective, easy deployment, lightweight storage.

8. Conclusion

EduTutor AI is a comprehensive learning assistant that integrates AI with a clean, user-friendly interface. It simplifies study preparation, generates practice material, and maintains an activity log.

By combining summarization, quiz generation, and AI-based Q&A;, EduTutor AI represents a step toward smarter and more interactive digital education. Its lightweight design, cost-effective deployment, and visually attractive interface make it both practical and engaging for real-world use.