GenTutor: A Syllabus-Based AI Teaching Assistant

Abstract

GenTuTor is an AI-based tutor system that helps students study their syllabus easily and smartly. This app allows students to upload their syllabus file (PDF or text), and the system will automatically create short topic-wise lessons, exam tips, and real-world examples using pre-trained machine learning and NLP models. The app also provides a chatbot for asking doubts and a quiz section for testing their knowledge.

Another important feature is the **admin dashboard**, where the admin can view how students are using the app. Based on their activity (reading time, quiz attempts, etc.), the admin can track each student's performance using simple charts and graphs.

The app learns from **pre-trained AI models** and also **uses information from university textbooks** to make the lessons more relevant to the student's syllabus.

Existing System

- Students depend on classroom lectures, long textbooks, YouTube videos, or general chatbots.
- These systems are **not personalized** and don't follow the **student's actual syllabus**.
- There is **no complete platform** that gives lessons, solves doubts, and tracks performance together.

Proposed System

The **GenTuTor system** is designed to make learning easier and more syllabus-focused. It works in 3 main parts:

1. **Learning Section**:
    - Student uploads their syllabus.
    - The system splits the syllabus into lessons.
    - For each topic, the app gives:
        * Short explanation and Exam tips
        * Real-world examples
2. **Chat + Quiz Section**:
    - Students can ask doubts related to the topic.
    - A chatbot will reply using pre-trained NLP models.
    - After each lesson, a quiz is generated for self-check.

3. **Admin Dashboard**:
    - The admin can view student usage and progress.
    - It shows how many lessons a student completed, how much time they spent, and quiz scores.
    - Visual charts help the admin understand student performance clearly.

Advantages

- Personalized learning from the student's own syllabus
- Combines lessons, doubt solving, and testing in one app
- Easy-to-use and time-saving
- Admin can monitor each student's learning progress
- No need for video — content is short and focused

Software Specification

Component	Technology Used
Frontend	HTML, CSS, JavaScript, jQuery
Backend	Python with Flask Framework
Database	SQLite
Vector Database	FAISS, ChromaDB (for storing and searching syllabus content)
AI/NLP Models	Pre-trained Machine learning and Deeplearning models (used with LangChain)
Data Source	University Textbooks + Pretrained AI/NLP Models