EduTutor AI: Personalized Learning with Generative AI and LMS Integration

1.Introduction

Project Title: EduTutor AI – Personalized Learning with Generative AI

Team Members:

- KASIMSETTY ANOOSHA – Team Leader Full-stack AI development, coordination

- GADDAM THARUNYA – Backend DeveloperQuiz logic, prompt design

- GAJJALA ALEKHYA – UI/UX Designer Interface design using Gradio

- KAYAMKHANI THANWEER – Tester/Validator App testing, user feedback integration

2.Project Overview

- Purpose:
  EduTutor AI is designed to help students learn more effectively by using AI to summarize PDFs, generate quizzes, and track their academic progress interactively.
- Features:
  - Secure Login & Registration
  - Upload and summarize academic PDFs
  - AI-based tutor answering concept questions
  - Topic-based and document-based quizzes
  - Personalized Progress Tracker
  - Simple and interactive UI (Gradio)

3. Architecture

***Frontend:**

Developed using Gradio (Python-based UI library), served on Hugging Face Spaces. Acts like a React-like frontend for fast prototyping.

***Backend:**

Built using Python, with API-based integration to AI services (OpenAI, Transformers). Logic for summarization, quiz generation, login management, and progress tracking is handled in Python functions.

***Database:**

Uses Python dictionaries or JSON (can be extended to MongoDB) to store user details, quiz data, and progress metrics.

4. Setup Instructions

Prerequisites:

- Python 3.8+
- Gradio
- Hugging Face Transformers
- OpenAI or similar LLM API key

Installation:

git clone https://huggingface.co/spaces/Anoosha-12/EdututorAi cd EdututorAi
pip install -r requirements.txt python app.py

5. Folder Structure

- Aap.py
- requirements.txt
- readme.md

6. Running the Application

- Frontend (Gradio):
  python app.py # Automatically starts UI with Gradio
- Backend:
  Included in the same Gradio interface. No separate server.

7. Authentication

Endpoint	Method	Description	Parameters
/login	POST	Login with username & password	username, password
/register	POST	Register new user	username, password
/upload_pdf	POST	Uploads a PDF	pdf_file
/summarize_pdf	GET	Generates summary from PDF	
/generate_quiz	POST	Creates quiz based on topic/pdf	topic or pdf_text
/track_progress	GET	Shows progress summary	user_id

8. Folder Structure

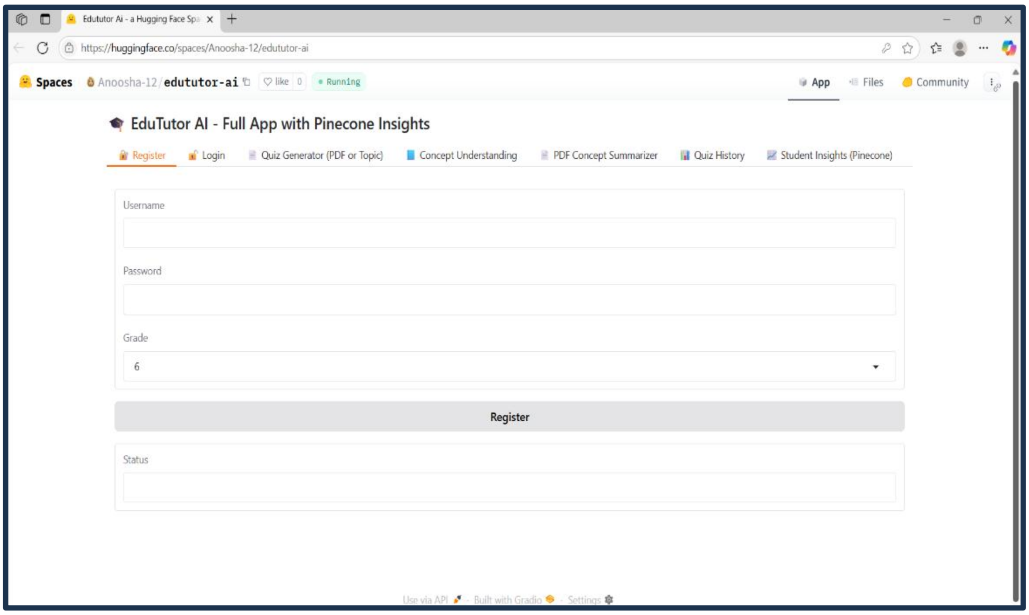
- Authentication is handled using a simple username-password system.
- Data is stored temporarily in memory or JSON (extendable to MongoDB).
- Sessions are not persistent unless implemented with a database.

9. User Interface

Screenshot from project:

![UI Screenshot](attachment from earlier)

- Clean Gradio tabbed interface
- Sections: Register, Login, AI Tutor, PDF Quiz, Summary, Progress Tracker
- Login status shown dynamically
- Real-time quiz and summary interaction


Edututor Ai - a Hugging Face Spa
https://huggingface.co/spaces/Anoosha-12/edututor-ai
Spaces
Anoosha-12/edututor-ai
like 0
Running
App
Files
Community
Register
Login
Quiz Generator (PDF or Topic)
Concept Understanding
PDF Concept Summarizer
Quiz History
Student Insights (Pinecone)
Register
Use via API · Built with Gradio · Settings

EduTutor AI - Full App with Pinecone Insights

Username

Password

Grade: 6

Status

10. Testing

Manual testing done for each feature (login, upload, quiz, tracker)

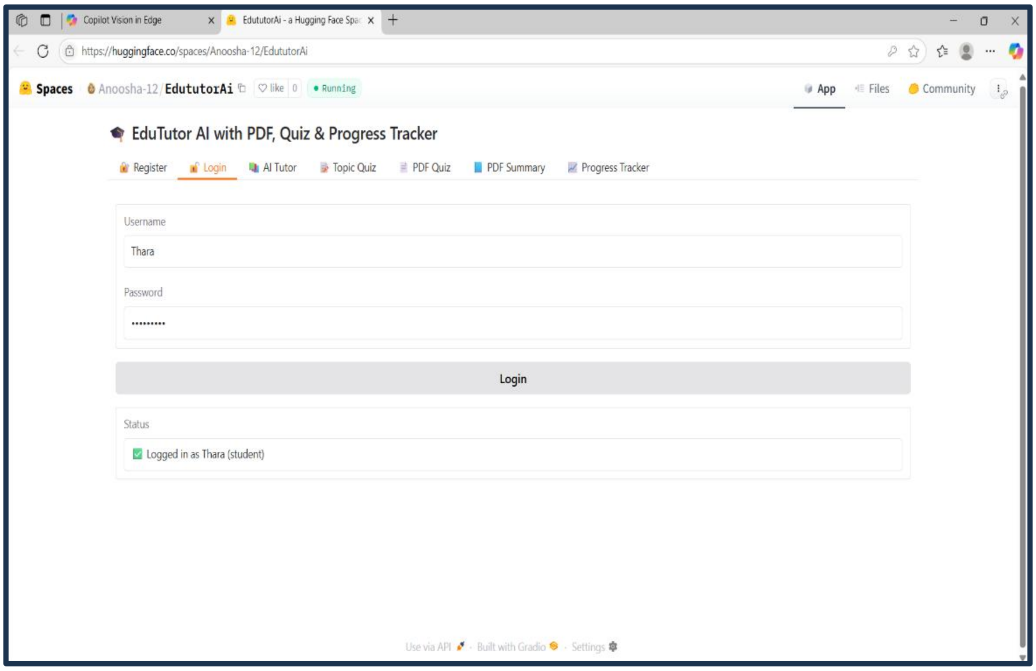
- Suggested tools:
  - Postman (for API)
  - Pytest (for backend function testing)

11. Screenshots or Demo

Hugging Face Live Demo: https://huggingface.co/spaces/Anoosha-12/EdututorAi

- Screenshots:

  Login screen (Thara – Student)


Copilot Vision in Edge
EdututorAi - a Hugging Face Spa
https://huggingface.co/spaces/Anoosha-12/EdututorAi
Spaces
Anoosha-12 / EdututorAi
like 0
Running
App
Files
Community
EduTutor AI with PDF, Quiz & Progress Tracker
Register
Login
AI Tutor
Topic Quiz
PDF Quiz
PDF Summary
Progress Tracker
Login
Use via API · Built with Gradio · Settings

Username

Thara

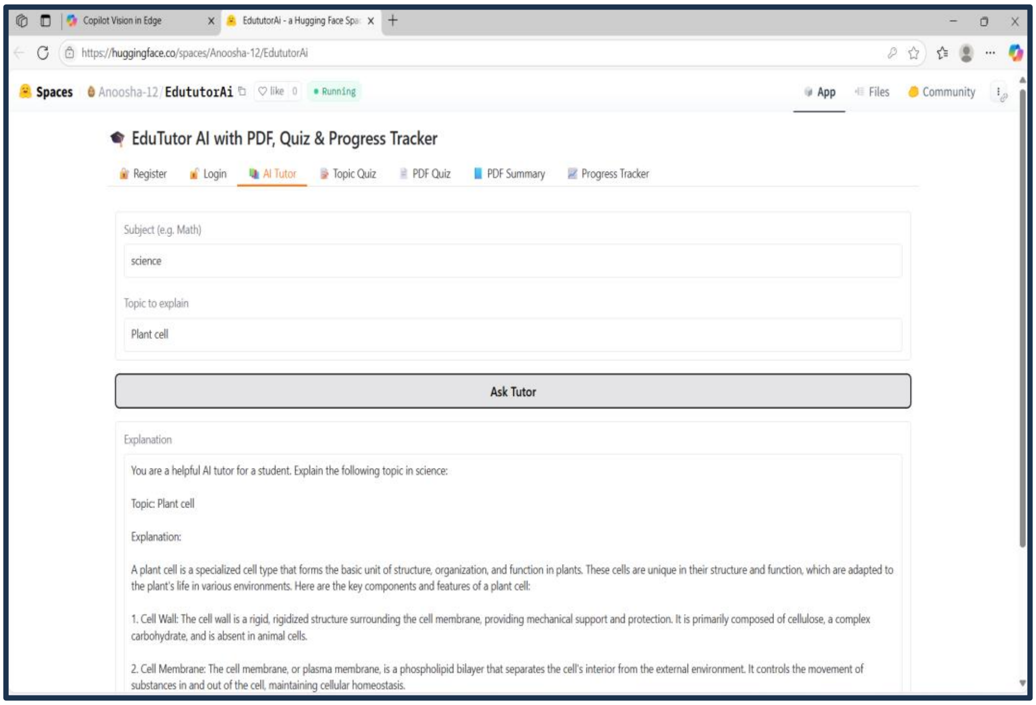
Password

••••••••••

Status

✅ Logged in as Thara (student)

AI Tutor



Subject (e.g. Math)

science

Topic to explain

Plant cell

Explanation

You are a helpful AI tutor for a student. Explain the following topic in science:

Topic: Plant cell

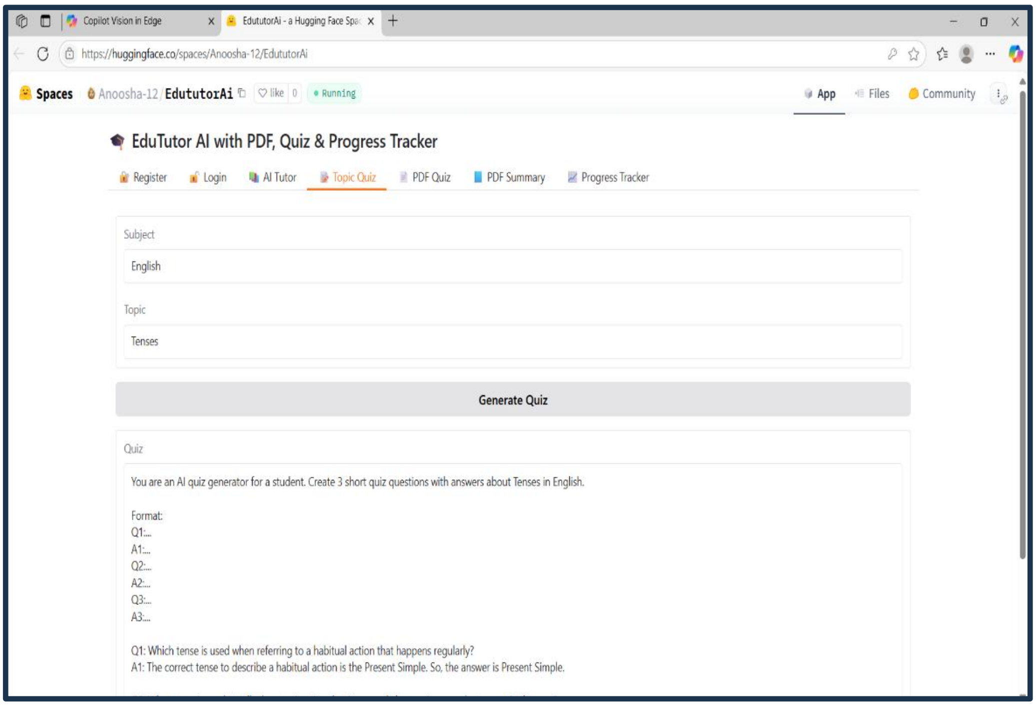
Explanation:

A plant cell is a specialized cell type that forms the basic unit of structure, organization, and function in plants. These cells are unique in their structure and function, which are adapted to the plant's life in various environments. Here are the key components and features of a plant cell:

1. Cell Wall: The cell wall is a rigid, rigidized structure surrounding the cell membrane, providing mechanical support and protection. It is primarily composed of cellulose, a complex carbohydrate, and is absent in animal cells.

2. Cell Membrane: The cell membrane, or plasma membrane, is a phospholipid bilayer that separates the cell's interior from the external environment. It controls the movement of substances in and out of the cell, maintaining cellular homeostasis.

Quiz & Summary view



EduTutor AI with PDF, Quiz & Progress Tracker

Subject: English

Topic: Tenses

Quiz

```
You are an AI quiz generator for a student. Create 3 short quiz questions with answers about Tenses in English.

Format:
Q1:...
A1:...
Q2:...
A2:...
Q3:...
A3:...

Q1: Which tense is used when referring to a habitual action that happens regularly?
A1: The correct tense to describe a habitual action is the Present Simple. So, the answer is Present Simple.
```

11. Known Issues

- No database persistence for progress tracking (can be lost on restart)
- Quiz generation depends on context accuracy from LLM
- No admin dashboard for teacher role

12. Future Enhancements

- Add **MongoDB** or Firebase for real-time storage
- Build **Teacher/Admin Panel**
- Add **adaptive learning path**
- Export progress as PDF reports
- Notification/reminder system for users