Solution Architecture – EduTutor-AI

Date: 28 June 2025

Team ID: LTVIP2025TMID31982

Project Name: EduTutor-AI: Personalized AI Tutoring Platform

Solution Architecture:

Solution architecture is the structural design that defines the behavior, structure, and more views of a system. It bridges the gap between business problems and technological solutions by providing a framework that aligns software capabilities with user needs.

Its goals are to:

- Identify the best technical solution for an educational support problem  
- Describe the architecture and operations of the AI-powered tutoring system  
- Define features, development phases, and solution requirements  
- Guide how the solution is developed and delivered to end-users

## EduTutor-AI Solution Architecture Overview

EduTutor-AI follows a modular, AI-integrated architecture for delivering personalized learning support. It uses natural language models to help students with subject-wise tutoring, answer generation, and document understanding.

Key components include:

- Front-end: Streamlit-based web interface for interactive learning and document/question upload  
- Backend: Python services leveraging LLMs for inference, explanations, and feedback generation  
- AI Models: OpenAI-based models or HuggingFace transformers for summarization, Q&A, and reasoning  
- Document Processor: PyMuPDF (fitz), PIL, and pytesseract to extract content from PDFs or images  
- Data Handling: In-memory processing with Streamlit session state; export logs or responses as PDFs for reuse

## Development Phases

- Phase 1: Streamlit UI setup and base question upload features  
- Phase 2: Integration of OCR + PDF parsing modules for content understanding  
- Phase 3: Integration of AI-powered question answering and summarization models  
- Phase 4: Real-time tutoring chatbot using conversation memory and subject tracking  
- Phase 5: Performance optimization, feedback collection, and final deployment

This architecture ensures personalized assistance, flexibility, and scalable delivery of educational content using AI.

[Leave space for image: “System Architecture Diagram – EduTutor-AI”]

Caption: Diagram showing user interaction, backend AI modules, document parsing, and output generation flow.