Solution Architecture

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Team ID: LTVIP2025TMID35893
Project Name: edututor ai: personalized learning with generative ai and lms
Maximum Marks: 2 Marks

Solution Architecture

Solution architecture bridges educational challenges with AI-driven technological solutions. Its core goals are to:

- Identify the best technical method to support learners through AI.

- Define the structure and behavior of the platform for all stakeholders.

- Specify features and development phases.

- Provide a roadmap for defining, managing, and delivering the AI solution.

Edututor AI – Solution Architecture Description

Edututor AI is a generative AI tutoring platform built entirely in **Google Colab**. The project uses Hugging Face's **IBM Granite 3.3-2B Instruct** model to generate contextual, personalized academic responses in real time.

All user interactions happen via **prompts entered directly into Google Colab**, eliminating the need for a separate frontend. This makes the platform lightweight and highly accessible to students and educators alike.

Key components include:

- **Google Colab**: Hosts the entire workflow — from input to response generation and sentiment analysis.

- **Hugging Face API**: Handles natural language queries and generates intelligent responses.

- **Sentiment Analysis Module**: Analyzes feedback to understand student sentiment and improve learning outcomes.

- **Dynamic Output Display**: Results and analytics are shown directly in the Colab notebook using Python-based visualization libraries such as matplotlib, seaborn, or plotly.

Key Features Supported:

- Prompt-based academic Q&A in real-time

- No separate frontend — all in-notebook interaction

- Sentiment analysis of student feedback

- Scalable and adaptable using Colab's cloud resources

- **Edututor AI – Solution Architecture Diagram**

Edututor AI – Solution Architecture

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│   Google Colab      │
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┌─────────────────────┐
│   User Prompts      │
└─────────────────────┘
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┌─────────────────────┐
│  Hugging Face API   │
└─────────────────────┘
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          ▼
┌─────────────────────┐
│     Sentiment       │
│  Analysis Module    │
└─────────────────────┘
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┌─────────────────────┐
│    Outputs and      │
│    Analytics        │
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