EduGenie: AI-Powered Interactive Learning Assistant
Intel Unnati Industrial Training Project

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Introduction

Traditional classroom methods often fail to adapt to diverse learning preferences.
EduGenie is an AI-based interactive platform that:

- Accepts spoken or typed topic inputs
- Generates simple, structured notes using AI (FLAN-T5 + OpenVINO)
- Creates quizzes to test understanding
- Offers study plans for effective revision

It bridges the gap between static teaching and adaptive, digital learning.

Problem Statement

- Students face difficulty finding personalized, interactive study resources.
- Most online tools lack instant feedback or topic-wise quizzes.
- There's a need for self-paced platforms with audio/text input and intelligent content generation.

Project Objectives

- Build a web-based assistant that generates notes from voice/text input.
- Use AI to produce relevant MCQs and provide real-time feedback.
- Create downloadable study materials (PDF) and personalized 7-day planners.

System Architecture

- **Input**: Student enters topic via voice or text
- **Processing**: AI generates notes and quiz questions
- **Output**: Notes displayed $+$ quiz attempted $+$ planner generated
- **Tools**: React frontend $+$ Express/FastAPI backend $+$ OpenVINO $+$ Gemini API

Libraries and Technologies

Frontend:

- React.js, SpeechRecognition, jsPDF, Axios

Backend:

- Express.js, FastAPI, Python

AI/ML:

- FLAN-T5, Hugging Face Transformers, OpenVINO Toolkit

Other:

- Gemini API (7-day planner), RESTful APIs, MongoDB

Methodology

1. Topic captured via text or speech
2. AI generates readable academic notes using FLAN-T5 + OpenVINO
3. A separate backend route uses LLMs to create MCQs
4. Notes displayed and exported as PDF
5. Quiz attempted with instant feedback
6. Gemini API provides 7-day study planner

Implementation Highlights

- Voice input via Web Speech API
- Notes + quiz generated dynamically
- Real-time quiz scoring and PDF download
- Gemini API used for personalized planner
- Fully responsive UI with login/authentication

Results and Discussion

Note Generation: 1.5s average time using OpenVINO

Quiz Accuracy: Over 90% in domain expert validation

PDF Export: ¡ 0.6s average time

Optimization Impact: FLAN-T5 Large inference cut from 5.8s to 2.1s

User Feedback: Rated $> 4.5/5$ on usefulness and ease of use

Conclusion

EduGenie successfully integrates:

- LLM-powered note and quiz generation
- Voice-based inputs for accessibility
- Smart planning tools for better learning outcomes

This platform shows the future of adaptive, AI-based education.

Thank You