Minor Project Proposal

Team Members:

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As part of the requirements for the sixth-semester curriculum of our Bachelor of Technology in Computer Science and Engineering (AI specialization with IBM) program, we propose the following project ideas for the Minor Project component –

1. AI-Driven Knowledge Synthesis Platform

The AI-Driven Knowledge Synthesis Platform is a state-of-the-art software solution designed to revolutionize how users create and consume educational and professional content. By leveraging advanced AI/ML techniques, the system ingests diverse document formats (PDFs, research papers, spreadsheets, web articles) and automatically generates structured, interactive learning resources such as summarized notes, flashcards, quizzes, podcasts, and lecture slides.

Built for students, educators, and professional users, the platform eliminates manual content curation by intelligently extracting key insights, identifying patterns, and tailoring outputs to user preferences.

This platform bridges the gap between raw data and actionable knowledge, empowering users to focus on critical thinking rather than content formatting.

Educational institutions can deploy it to automate course material creation, while professionals can rapidly generate training modules or reports. With built-in plagiarism checks and citations sourced from uploaded documents, the system ensures academic integrity and compliance, making it a versatile tool for the AI-driven future of learning and productivity.

Key Features –

- Multi-Format Input Support

- AI-Driven Content Generation

- Dynamic Customization

- Multimodal Output

Technologies to be used –

- **Backend:** Python, LangChain (for RAG pipelines), Hugging Face Transformers (NLP model)

- **Frontend:** Flask, HTML, CSS, and, JavaScript

- **Data Storage**: Vector databases (Pinecone/FAISS) for semantic search

- **Deployment:** Microsoft Azure

2. JARVIS

JARVIS (Just A Rather Very Intelligent System) is an advanced AI-powered virtual assistant built using Python. It integrates various technologies such as speech recognition, natural language processing (NLP), and automation to assist users with daily tasks, answer queries, control smart devices, and provide real-time information.

Key Features –

- Speech Recognition & Voice Commands

- Personalized Assistant

- Web Scraping & API Integration
- Chatbot Functionality
- Secure & Private

Technologies used –

- **Programming Language:** Python
- **Libraries & Frameworks:** SpeechRecognition, pyttsx3, OpenAI API, Wolfram Alpha, Tkinter (GUI), Flask (for web integration)
- **APIs Used:** OpenWeatherMap, NewsAPI, Google Search API, Twilio (for messages/calls)
- **Voice Processing:** Google Speech-to-Text, IBM Watson, or Whisper AI
- **Machine Learning:** TensorFlow/NLTK (for improved AI responses)

3. Debating System

The Debating System is an interactive, AI-enhanced platform designed to host structured debates between users on diverse topics, fostering critical thinking and persuasive communication. Participants can engage in real-time or asynchronous debates, present arguments with supporting evidence, and receive feedback through AI-driven evaluation metrics and community voting. The system emphasizes logical coherence, factual accuracy, and rhetorical effectiveness, catering to educators, students, policymakers, and enthusiasts seeking to refine their debate skills.

Key Features –

- Real-Time Debates
- Asynchronous Debates
- AI Argument Analysis
- Dynamic Topic Generator
- Moderation & Compliance

Technologies used –

- **Backend:** Python, Node.js, WebSocket (for live debates), Hugging Face Transformers (NLP models). SpaCy for fallacy detection, OpenAI API for summarization/feedback, TensorFlow for custom persuasion-scoring models.
- **Frontend:** HTML, CSS, JavaScript, React.js with interactive UI for debate flows, Three.js for real-time data visualization (e.g., argument maps).
- **Database:** Text files for storing debate history and CSV for user profiles
- **Deployment:** Microsoft Azure for hosting and deployment and Firebase for real-time updates

We request your kind approval from any of the above three, preferably the first proposal i.e. AI-Driven Knowledge Synthesis Platform. Thankfully,

Your students,

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