

Saveetha Engineering College

Department of Artificial Intelligence and Machine Learning

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Course: AI Project Lab

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AI ASSISTANT PROJECT - DEVELOPMENT LOGBOOK

Objective:

To build a fully offline AI assistant (like Jarvis) using voice recognition, computer vision, and a local LLM for Q&A from PDFs.

Motivation:

Inspired by Jarvis from Iron Man. Wanted to avoid OpenAI API and build something that works offline on any PC using open-source tools.

Tech Stack Used:

- SpeechRecognition (voice input)
- Pyttsx3 (speech output)
- LLaMA 2 via ctransformers (LLM)
- LangChain + FAISS (document QA)
- OpenCV + Tesseract (OCR)
- Python 3.11, Windows 11

Week 1:

- Downloaded and tested LLaMA GGML
- Installed langchain, faiss, transformers, etc.
- Wrote initial voice-to-text code

Week 2:

- Built vectorstore from sample PDF using LangChain
- Ran first QA test and it worked!
- Faced bugs in pytesseract image reading from webcam

Week 3:

- Added "open notepad", "exit", and "read screen" voice commands
- Optimized speech output with pyttsx3 properties
- Debugged slow model load and RAM usage

Improvements To Do:

- Add facial unlock
- Integrate DuckDuckGo fallback
- Build simple GUI
- Try multi-language support

Conclusion:

This was the most practical and exciting project I've built so far. I'll include it on my GitHub and use it to apply for remote AI roles abroad.

Signed,

Subikshan P