Sajid Miya

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Education

Thapar Institute of Engineering and Technology, Patiala, Punjab **2027**
B.E. Computer Science and Engineering
CGPA: 8.73/10

St. Xavier's College, Maitighar, Kathmandu **2021 – 2023**
School Leaving Certificate (SLC)
GPA : 3.66/4

The Old Capital Secondary School, Raniban, Gorkha **2021**
Secondary Education Examination (SEE)
GPA : 3.95/4

Technical Skills

Languages: Python, C++, C, JavaScript, SQL
AI & LLMs: LangChain, LangGraph, Ollama, MCP, Agent Workflows, Tool Calling, Prompt Engineering
RAG: Agentic RAG, GraphRAG, Self-RAG, Corrective RAG, RAPTOR, LightRAG, Vector Search
Machine Learning: Scikit-learn, Pandas, NumPy, TensorFlow, PyTorch, NLP
Backend: FastAPI, Flask, REST APIs, Flask-SocketIO
Databases: PostgreSQL, MySQL, MongoDB, Redis, SQLite
Vector Databases: FAISS, ChromaDB, Pinecone
Cloud & DevOps: Docker, AWS, Git, GitHub

Projects

Synapselearn **Link**

- Developed a desktop-based AI learning platform using **Python**, **FastAPI**, **PostgreSQL**, and **Electron** with secure authentication and conversation management.
- Built a **Retrieval-Augmented Generation (RAG)** pipeline supporting PDFs, web resources, and other learning materials using **FAISS/ChromaDB** for contextual responses.
- Implemented memory-aware chat features including persistent conversation threads, session tracking, conversation merging, and an admin dashboard for user management.

Portfolio Agent **Link**

- Built a local-first AI assistant platform using **FastAPI, LangGraph, Ollama, and SQLite** with real-time streaming chat capabilities.
- Designed persistent memory architecture using **SQLite + JSON-based long-term storage** for contextual multi-session conversations.
- Integrated vision input, tool calling, and dynamic model orchestration, enabling fully local privacy-first AI assistant deployment.

AI-Powered ASL Translator **Link**

- Developed an AI-powered sign language translator using **OpenCV, MediaPipe, and Scikit-learn** for real-time webcam-based ASL recognition.
- Built a custom ML training pipeline supporting classifiers like **Random Forest, SVM, and Logistic Regression** for gesture detection.
- Integrated interactive model comparison and visualization dashboards using **Plotly and Chart.js** to evaluate model performance.

Research Experience

HiPPA: Hierarchical Multi-Granularity Pronunciation Assessment Pipeline **Link**

- Designed and implemented a hierarchical pronunciation assessment system using the SpeechOcean762 dataset.
- Developed a reference-conditioned transformer architecture based on WavLM for phoneme-, word-, and sentence-level pronunciation scoring.
- Implemented multi-task learning, cross-attention mechanisms, CTC-based confidence features, and calibration pipelines for speech assessment.
- Achieved Pearson correlations of 0.754 for sentence fluency, 0.737 for sentence prosodic quality, and 0.697 for sentence-level total score.
- Built an end-to-end pipeline covering data preprocessing, model training, evaluation, report generation, and Streamlit-based analysis dashboard.

Achievements

COMPEX Scholarship Recipient **2023 – Present**

- Awarded the prestigious COMPEX Scholarship by the Government of India through EdCIL for pursuing B.E. in Computer Science and Engineering at Thapar Institute of Engineering and Technology.
- Selected through a merit-based scholarship program for Nepalese students pursuing higher education in India.
- Scholarship provides financial support towards tuition fees and hostel accommodation for the duration of the undergraduate program.