Layyana Junaid

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Objective

AI undergraduate specializing in **ML engineering and LLM-powered systems**, with experience developing **RAG pipelines, multi-step reasoning agents, and production-ready FastAPI backends**. Seeking applied AI engineering roles focused on scalable system architecture and real-world deployment.

Education

Bachelor of Science in Artificial Intelligence — FAST NUCES, Karachi Campus 2023–2027 (Expected)

A Levels (Pre-Engineering) — Beaconhouse College Program 2021–2023

Experience

AI Competition Lead — LangChain Mysteries *Oct 2025–Feb 2026*

- Designed a **Sherlock Holmes–themed AI competition** centered on applied LLM orchestration and tool-based reasoning.
- Structured three progressive technical stages covering **speech-to-text workflows, document/CSV parsing, and multi-step agent pipelines**.
- Established evaluation criteria focused on **retrieval accuracy, agent coordination, and interpretability**.
- Directed dataset curation, challenge flow, and judging structure, strengthening technical leadership and systems thinking.

AI Intern — Jaffer Business Systems *Jul–Aug 2025*

- Developed **LLM-driven agent systems** using LangChain and LangGraph for structured financial reasoning tasks.
- Implemented a **Debt Management Agent** integrating Pinecone-backed RAG pipelines for contextual financial retrieval.
- Constructed deterministic multi-step logic for **Avalanche and Snowball** debt optimization strategies.
- Built a **Smart Conversation Analyzer** supporting YouTube ingestion (yt-dlp), local audio/video uploads, and real-time microphone streaming via WebSockets.
- Integrated **Deepgram v3 diarization API** for speaker-separated transcription with timestamps, enabling structured multi-speaker conversation analysis.
- Implemented a **LangChain-powered LLM pipeline** (Groq/OpenAI) to transform transcripts into structured notes, flashcards, and quizzes.

Projects

Voice-Guided Banking Assistant

- Architected a real-time **voice navigation assistant** enabling users to complete banking workflows through natural speech.
- Engineered a **FastAPI backend** with WebSocket-based bi-directional communication for dynamic UI orchestration.
- Integrated **intent extraction and response generation** using LangChain and Groq LLM APIs.
- Built a **state-driven flow engine** to manage UI highlighting, modal transitions, and transactional simulations.
- Implemented an end-to-end bill payment demo with confirmation logic and dynamic balance updates.

X-Ray Screening — ML-Powered Pneumonia Detection

- Fine-tuned **EfficientNetB0** on **5,800+ pediatric chest X-rays** using transfer learning.
- Addressed class imbalance through weighted loss functions to reduce false negatives in screening scenarios.
- Achieved **AUC = 0.98, Recall = 0.87, Precision = 0.99**.
- Deployed a **FastAPI inference service** generating probabilistic risk scores.

Hybrid Music Genre Predictor

- Generated **163-dimensional audio features** (MFCCs, spectral, harmonic, rhythmic) using librosa.
- Benchmarked a **PyTorch ANN** against a **PCA-reduced SVM (37 components)**, achieving **80.7% accuracy**.
- Combined model outputs via an **ensemble layer** to enhance generalization performance.
- Enabled end-to-end inference from YouTube audio links with real-time prediction and LLM-based explanation generation.

Technical Skills

Programming:	Python, C/C++, SQL
AI Systems:	LangChain, LangGraph, RAG Pipelines, LLM API Integration, Hugging Face
Machine Learning:	PyTorch, TensorFlow, Scikit-learn, Transfer Learning, Feature Engineering, PCA, Model Evaluation
Backend & Tools:	FastAPI, WebSockets, Flask, MongoDB, Pinecone, Git/GitHub, Linux