Muhammad Ahmad

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Lahore, Pakistan

Education

FAST - National University of Computer and Emerging Sciences, Lahore
Bachelor of Science in Computer Science 2021 – 2025

Experience

Research Assistant – SUPARCO March 2025 – Present
TCP Accelerator for Satellite Communication

- Optimizing TCP performance over high-latency satellite links.

AI/ML Intern – NETSOL Technologies, Lahore May 2024 – Jul 2024

- Built a university chatbot using **VoyageAI**, and **FAISS** (RAG).
- Created a CV shortlisting system using NLP techniques and LLMs; deployed MVP for HR.
- Engineered a **YOLO**-based system to estimate vacant seats in large hall.

Projects

Text-to-Ad Generation *[Stable Diffusion, IP Adapter, MMDiT]*
Trained a custom **diffusion model** for ad image generation using text prompts and product image. Fine-tuned **MMDiT Transformer** along with **IP-Adapter**

GPT Language Model *[PyTorch]*
Implemented and trained a **405M-parameter GPT** from scratch with FlashAttention, mixed precision, and gradient accumulation. Pretrained on Simple English Wikipedia and instruction-tuned on Alpaca dataset.

Campus Navigation System *[ResNet, SAM, Zoedepth]*
Built a non-GPS navigation system using landmark recognition and depth estimation

Real-Time ECG Detection *[AD8232, ESP32, CNN, MQTT, Azure, Flask, Gradio]*
Built a Hardware for RealTime Myocardial Infarction (Heart Attack) and Arrhythmia Detection. Trained model from scratch on PTB and MITBIH ECG Dataset and got SOTA accuracy and recall

Desktop Automation Bot *[YOLO, Resnet ,Florence, OCR, LLM, TTS, ASR]*
Built a voice-controlled Windows desktop automation bot that performs general tasks without predefined scripts. The bot visually parses the screen determine which element to interact with for a particular task.

Other Projects:
Weed Detection , Solar Panel Fault Detection , Singer Classification, IoT Room Automation, Line Following Robot.

Skills

Languages: Python, C++, C, JavaScript, SQL
AI/ML: PyTorch, TensorFlow, scikit-learn, Transformers, HuggingFace, Pandas, Numpy
NLP/CV: LangChain,LangGraph, OpenCV, YOLO, FAISS, RAG
Tools: Docker, Git, FastAPI, Flask, Wireshark, GNS3, Azure
Hardware: Arduino, ESP32, ESP8266, Raspberry Pi, MQTT, IoT Sensors