Muhammad Waleed

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PROFESSIONAL SUMMARY

Versatile software engineer with hands-on experience in web development, vibe coding, and blockchain applications, now focused on machine learning and AI. Skilled in Python, Golang, PyTorch, TensorFlow, and LangChain, with expertise in building scalable ML pipelines, LLM deployment, and embeddings-based systems. Passionate about leveraging past full-stack and decentralized development experience to design and implement impactful AI solutions.

EDUCATION

BS Computer Science **2023-Present**
SEECS, NUST H-12 Campus Islamabad, Pakistan

WORK EXPERIENCE

Blockchain Developer **Mmm YYYY – Present**
CSN Lab SEECS, NUST Location

- Designed and implemented a **blockchain-based supply chain tracking system**, enabling real-time verification of product provenance and reducing fraud risks.
- Developed **smart contracts using Solidity** for automated transaction verification and inventory updates, streamlining order-to-delivery workflows.
- Integrated **Ethereum and IPFS** for secure, decentralized storage of shipment and product data, improving data transparency and accessibility across stakeholders.
- Conducted **end-to-end testing and simulation** of supply chain operations, identifying bottlenecks and reducing process delays by **20%**.
- Documented project architecture and **presented findings to peers and mentors**, showcasing measurable improvements in supply chain efficiency.

PROJECTS

SafePath: Intelligent Urban Routing System | Python, Graph Algorithms, Data Pipelines, Predictive Modeling

Sep 2025 – Dec 2025

- **Project Scope:** Engineered an end-to-end navigation system that ingests crime statistics and environmental data to generate dynamic "safety scores," optimizing route suggestions for user security rather than just latency or distance.
- **Technical Implementation:** Built the data processing pipeline to normalize heterogeneous datasets and implemented a modified pathfinding inference algorithm, balancing computational efficiency with granular safety weighting.
- **Collaboration:** Defined the system architecture in a cross-functional team and presented the technical evaluation to stakeholders, demonstrating the viability of integrating social metrics into production routing logic.

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Mistral-for-Diction: LLM Fine-Tuning for Structural Scaffolding | *PyTorch, Unsloth, QLoRA, Mistral 7B, Google Colab*

- **Efficient Fine-Tuning:** Engineered a low-resource training pipeline using **Unsloth** and **QLoRA** to fine-tune Mistral 7B (v0.3) on a free Tesla T4 GPU; utilized 4-bit quantization to reduce memory overhead by ~60% and accelerate training speed by 2x compared to standard implementations.
- **Automated Scaffolding:** Designed the model to act as a "structure generator" rather than a solution engine; it produces academic report templates with designated placeholders , automating layout friction while strictly adhering to academic integrity standards.
- **LoRA Implementation:** Curated a private synthetic dataset to specialize the model's diction for technical documentation; achieved a final training loss of **0.75**, successfully demonstrating the effectiveness of parameter-efficient fine-tuning (PEFT) for style transfer tasks.

TECHNICAL SKILLS

Languages: Python, Golang, SQL, C/C++,Java,Javascript
Frameworks & Libraries: PyTorch, TensorFlow, Transformers, LangChain, Pandas, NumPy, Matplotlib
Tools & Platforms: Git, Docker, CUDA, MLOps tools (e.g., Ollama), Vector Search Tools, Agentic AI Tools
Other: Model fine-tuning, LLM deployment, embeddings & retrieval systems, scalable inference pipelines