Moosa Hassan Alvi

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EXPERIENCE

AI Engineer (Freelance) Jan. 2025
COD Return Prediction Remote

- Engineered **10+ features** from raw customer data (name, address, phone, email) using domain-driven feature construction
- Trained a CatBoost classifier achieving **F0.5: 0.72**, **AUC-ROC: 0.79**, and **accuracy: 0.75** on real-world e-commerce data
- Optimised for precision-heavy F0.5 metric to minimise false positives in return flagging for the client

HeadStarter AI Jul. 2024 – Aug. 2024
AI Software Fellow Remote

- Built **5 AI-powered applications** end-to-end, including a RAG-based document reviewer and a flashcard generator SaaS
- Deployed projects using Next.js and Firebase; integrated OpenAI and vector search APIs across multiple apps
- Completed 7 mock technical coding interviews; shipped a personal portfolio site and a full-stack inventory system

PROJECTS

Agentic Pygame Game Generator | *Python, LangGraph, LangChain, OpenAI API*

- Built a multi-agent LangGraph system with QA, engineer, scorer, and coder nodes that generates fully playable Pygame games from a natural language prompt
- Implemented **human-in-the-loop** feedback: scorer node pauses execution for user review and re-triggers the generation loop until the game meets approval
- Tested end-to-end on Dino Runner and Geometry Dash clones; system generalises to arbitrary game descriptions

Compressed-Domain Log Query Engine | *Python, C++, LogLite-B (VLDB 2025)*

- Implemented three query strategies over LogLite-B compressed binaries: full decompression, minor optimisation, and a **novel static Bloom filter** variant with a 64-bit per-record token bitmap
- Bloom filter achieves **zero false positives** across all runs; exact on **95/112 token-safe** query-dataset cells; skips **81.8% of records** on average and cuts CPU time by up to **55%** on HDFS

Pakistan Real Estate Bias Analysis | *Python, pandas, seaborn, matplotlib*

- Performed EDA on 168k+ Zameen.com property listings; identified geographic bias — data heavily skewed toward Lahore and Karachi, underrepresenting smaller cities
- Analysed price-per-sqft by property type and city; built correlation heatmaps revealing strongest price predictors (area, location, bedrooms)

EDUCATION

Lahore University of Management Sciences (LUMS) Sep. 2023 – Present
B.Sc. Computer Science — Syed Babar Ali School of Science & Engineering CGPA: 3.505 / 4.0

- **Coursework**: Foundations of AI & ML, Deep Learning, MLOps, LLMOps & Agentic AI Systems, Big Data Analysis

LACAS Aug. 2018 – May 2023
A-Levels & O-Levels

- **A-Levels**: Computer Science (A), Chemistry (A), Physics (A), Mathematics (B)
- **O-Levels**: 9 subjects, straight A/A* including Maths, Physics, Chemistry, Computer Science

SKILLS

Languages : Python, C++, JavaScript / TypeScript, SQL
ML / AI : scikit-learn, XGBoost, CatBoost, LangGraph, LangChain, OpenAI API, pandas, NumPy, matplotlib
Web & Cloud: Next.js, NestJS, Firebase, Vercel, REST APIs, Docker
Tools : Git, VS Code, Jupyter Notebook, Pygame, Github