Mosah Hassan

+44 746404717 | mosah.contact@gmail.com | LinkedIn | GitHub | Portfolio

EDUCATION

Durham University, B.S in Computer Science, Predicted 1:1 *Sep 2022 - July 2026*
Relevant Coursework: Data Structures & Algorithms, Networks & Systems, Programming Paradigms, Theory of Computation

TECHNICAL SKILLS

Programming Languages: C++, Python, SQL, PostgreSQL, JavaScript, Java, Haskell, HTML/CSS
Frameworks & Tools: STL, Threading, NumPy, Pandas, SciPy, Matplotlib, Seaborn, Git Flask, scikit-learn, Agile, Selenium

WORK EXPERIENCE

KEO International Consultants **Doha, QA**
Returning Software Engineering Intern| *Sep 2025 – Oct 2025*

Parsons Corporation **Doha, QA**
Upcoming Python Developer Intern| *Aug 2025 – Sep 2025*

Commercial Bank of Qatar **Doha, QA**
Finance & Trading Intern | Equity Markets, Trading Simulations, Risk Analysis, Excel *Jul 2025 - Aug 2025*

- Executed simulated trades on international and Qatari equities using live market data to assess portfolio performance, risk-return profiles, and allocation strategies.
- Analyzed price movements and trading volumes to identify patterns, evaluate investor behavior, and inform data-driven equity decisions in structured trading sessions.

KEO International Consultants **Doha, QA**
Software Engineering Intern | Python, SQL, PostgreSQL, Pandas, Excel *Aug 2024 - Sep 2024*

- Automated BoQ extraction from Excel and PDF files using Python and Pandas, cutting manual data entry time by over 50% and improving workflow efficiency across infrastructure projects.
- Designed a PostgreSQL schema and built validation scripts to normalize and verify project cost data, enabling accurate early-stage estimates and fast querying across 20+ projects.

PROJECTS

AskDurham | Python, FAISS, OpenAI API, RAG, Git

- Built a private LLM chatbot that responds to questions based on Durham University's official academic regulations using Retrieval Augmented Generation (RAG) and vector search via FAISS.
- Developed a one-time preprocessing pipeline to extract text, intelligently split into semantically meaningful chunks, embed it with OpenAI's text-embedding-ada-002, and store vectors in a FAISS index for low-latency retrieval.
- Designed the system for scalability, new guidelines can be deployed with no need for retraining or manual reprocessing.

Latency-Aware Order Book Engine | Python, NumPy, OOP, Matplotlib, Git

- Built a high-fidelity simulation of a limit order book system to model how latency affects order matching and fill probability in modern electronic markets.
- Simulated price-time order matching with latency ($\mu = 125\mu s$) to model queue jumping and partial fills.
- Developed animated visualizations of order book depth and mid-price drift using Matplotlib; wrote 45+ unit tests to cover edge cases like crossed books and stale orders.

Inverse Stock Pair Finder | Python, Pandas, NumPy, Matplotlib, Concurrency, Multi-Threading, Git

- Built an end-to-end ETL pipeline that ingests raw CSV price data, computes return, filters by overlapping history and statistical significance, and exports the top inverse pairs to JSON.
- Optimized 125,000 Pearson r calculations using a multithreaded engine, cutting runtime from 35s to 9s via ThreadPoolExecutor.
- Produced a CLI-driven visualization system producing normalized price and return scatter charts complete with regression lines, slopes, R-values, and p-values applied to Airbnb (ABNB) to surface defensive-sector hedges.

LEADERSHIP

Durham Arab Society **Durham, UK**
President *Aug 2024 – Present*

- Led a team of 5 students to design and launch the society's official website, improving member communication and automating event registration.
- Organized multiple high-impact cultural events with 100+ attendees, including panels, society balls, and social mixers.