

Omer Mohamed Osman Hussain

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EDUCATION

King's College London

London

Bachelor of Science in Computer Science

Expected 2025

- First-Class overall in year 1
- Relevant Courses: Data Structures, Programming Practices and Applications, Practical Experiences of Programming, Database Systems, Computer Systems, Introduction to Software Engineering

Universal American School

Dubai, UAE

International Baccalaureate

Sep. 2012 – June 2021

- Overall Score: 36/45 points
- 776 at Higher Level in Biology, Chemistry, and Business Management

PROJECTS

Trading Engine | C#

- Designed and implemented an order book capable of adding, modifying, and cancelling both buy and sell orders
- Implemented a logging library that provides logs and responses for order executions, cancellations, and system events, enabling transparency and streamlined debugging
- Leveraged Dependency Injection to support scalability by enabling the substitution of different matching algorithms (FIFO, Pro Rata) and the addition of new functionality without significant code changes
- Enhanced order management by streamlining order addition, modification, and removal processes, **reducing order execution times by 30%**

Option Pricer | C++, Boost

- Engineered a Monte Carlo option pricing system in C++, optimizing performance and memory management for large-scale simulations
- Implemented a Geometric Brownian Motion model with control over key parameters, enhancing the accuracy and adaptability of pricing calculations
- Optimized the Polar-Marsaglia generator to enhance precision and speed in Monte Carlo simulations, resulting in a **20% reduction** in runtime
- Ensured code quality through comprehensive testing, validation, and performance profiling, resulting in a reliable and robust option pricing tool

Black-Scholes Price Surface Plotter | C++, Boost, Python, NumPy, matplotlib

- Developed a C++ program for option price surface generation, implementing the Black-Scholes PDE using Finite difference methods
- Implemented an Object-Oriented approach which allows for the implementation of various pricing models
- Plotted the option price surface using Python, Numpy, and matplotlib as a function of the spot price, time to maturity, and call price
- Introduced an adaptive time-stepping scheme in the Explicit Euler method resulting in a **35% increase** in option price surface accuracy and a **45% reduction** in solving time

TECHNICAL SKILLS

Languages: Java, Python, C#/C++, SQL, Scala, HTML, JavaScript

Frameworks/Libraries: Boost, pandas, NumPy, Matplotlib, Django, JUnit, MASS, QuantLib, JavaFX

Developer Tools: Git, VS Code, Visual Studio, IntelliJ, CLion, L^AT_EX

Languages Spoken: English (Native), Arabic (Fluent)