# Anss Hameed

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## EDUCATION

**University of Bristol | BSc Computer Science** *Sept 2022 – Aug 2025*

- **Predicted:** 1st Class Degree
- **Key Modules:** Machine Learning (NN, MCMC, SVMs, Scikit, PyTorch), Functional + Imperative + Object-Oriented + Concurrent & Distributed Programming, Discrete Maths, Software Tools, Algorithms, Data Science, Cyber & Networks

**St Brendan's Sixth Form College | A Levels** *Sept 2019 – Aug 2021*

- Mathematics (A*), Computer Science (A*), Business (A*), EPQ (A)

## EXPERIENCE

**Bank of America | Software Engineering Intern (Electronic Cash Equity Trading - OMS)** *June – Aug 2024*

- Solved client trading production issues in **OMS** by troubleshooting **FIX protocol** discrepancies, enhancing trading stability.
- Streamlined trade testing processes by automating **load testing** using **Python** and **Bash**, **reducing testing time by 94%** (from 24 hours to 90 minutes), now adopted globally by QA teams across the bank.
- Improved pre-trade and post-trade accuracy by developing new features in FIX testing software using **Java** and **AMPS** middleware, enabling more precise **QA-to-Production trade simulations**.

**University of Bristol | Quantitative Analyst (Bristol Trading Society)** *Oct 2024 – Present*

- Leveraging satellite data (Landsat, Sentinel-2) to track crop health and predict **commodity price movements**.
- Building a trading strategy linking **NDVI trends** and market data with backtesting via **QuantConnect** and execution via **IBKR**.

**Alfa Financial Software | Technology Intern (Consultant + Developer)** *July 2023*

- **Technology consultancy** - Tackled customer queries to optimise software usage for business needs.
- **Full-Stack Dev -** Enhanced **UI/UX** of Alfa's software (**HTML/CSS/JS)**, used **Java** to build software for asset finance company.

**Pyng (Start-Up) | Software Developer** *Mar – Aug 2023*

- **Full-Stack Dev -** Optimised mobile payment transactions, improving transfer speed and UX using **Python** and **React Native.**

**upReach | Tech 500 Associate** *Mar 2023 – Present*

- Selected as a high potential undergraduate to join an accelerated professional development programme.
- **Tech500 Bootcamp Highlights: G-Research** - Developed Python solutions to optimise decision-making in auction bidding challenge**; JMAN**: Data Science role for a client project using **Power BI**, **Excel**, and **Python** (**NumPy**, **Pandas**).

**University of Bristol | STEM Outreach Ambassador & Teaching Assistant** *Mar 2023 – Present*

- Delivered Python and GCSE Maths lessons to **30+ disadvantaged students** at a local secondary school.
- Taught **2 Discrete Maths** modules (**Linear Algebra, Probability & Statistics, Combinatorics, Analysis**) and **mentored 12 students (**1st and 2nd year undergraduates**)** for **ML/AI** projects (**client – IBM)**

## PROJECTS

**Optimisation of HFT Simulations in Distributed Inter-Market Arbitrage (Dissertation) | *C++*** *Jan 2025 – Present*

- Extending DSXE to optimise decision-making with advanced **technical indicators** for improved trading strategy evaluation.
- Enhancing **SHVR** and **ZIP trading agents** for more intelligent and adaptive **trading behaviour**.

**Cointegration-Driven Pairs Trading with Technical Indicators | *Python, Pandas, NumPy*** *Jan 2025*

- Used statistical **cointegration** tests (**ADF**) to identify stock pairs with stationary spreads, ensuring **mean-reversion** potential.
- Built a backtesting engine using **Bollinger Bands**, **RSI** and **Z-Score** as entry/exit signals with **dynamic risk controls** through stop-loss and take-profit levels.
- Achieved a **Sharpe Ratio of 1.06** and **Total Return of 115%** over 4 years, demonstrating robust and risk-adjusted profitability.

**Stochastic Options Pricing Engine (Monte Carlo & Black-Scholes) | *Python*** *Nov 2024*

- Simulated asset price paths using **Geometric Brownian Motion** across **50+ scenarios**, applying **neural networks** for volatility prediction to **improve pricing accuracy by 10%** with **Black-Scholes** as benchmark.
- Built a real-time interactive UI for parameter adjustments and visual error analysis, optimising **Monte Carlo** performance through **hyperparameter tuning** with **average errors of <5%** between MC and B-S outputs.

**AI Social Media | Product Manager, Client Liaison & Developer (SpaceNXT Labs) | *Python, JavaScript*** *Sept 2023 – May 2024*

- Utilised **Stable Diffusion** (AI image generation), **OpenAI API** (dynamic caption generation) and **Google API** (trend analysis).
- Developed **Vue.js** front-end with back-end API integration for Twitter (X) and LinkedIn automated posting.
- Orchestrated agile development as product manager for a team of 5 and liaised with SpaceNXT Labs CEO.

**Parallelised Game of Life Simulation (AWS Distributed) | *Go, AWS*** *Oct – Dec 2023*

- Optimised a distributed Game of Life simulation using **goroutines**, achieving **16x speedup** across 16 **AWS EC2** nodes with **dynamic load balancing** and **CPU profiling** to identify hardware bottlenecks.
- Enhanced efficiency by reducing cell update complexity from **$O(n^2)$ to O(1)** and **reducing computation time by 25%** with algorithmic improvements, ensuring scalability and **fault tolerance** via a **publish/subscribe model**.

## SKILLS, ACHIEVEMENTS & OTHER EXPERIENCE

**Programming Languages & Frameworks:** Python, Java, C++, C, Go, Haskell, React, TypeScript
**Technical Skills & Frameworks**: Scikit-learn, PyTorch, QuantConnect, Git, Data Structures & Algorithms, AWS, Pandas, NumPy, Architecture, SQL, Linux, Imperative + Functional + Concurrent + Distributed + Object-Oriented programming
**Spoken Languages**: English, Hindi, Urdu
**Other Experience – WeBuyAnyCar Sales Manager (Full-Time):** Consistent **#1 performer** across South-West, Wales and Midlands, leading in car purchases and bonuses. **Lead 6 branches** across Bristol and **trained new recruits**. *Jan - Sept 2022*
**Achievements:**

- **Bloomberg Market Concepts:** Gained foundational knowledge in financial markets (Economics, Equities, Fixed Income etc.)
- **QuantConnect Bootcamps:** Implemented various algorithmic trading strategies for Equities, Forex and Futures with backtesting.
- **Bristol Plus Award**: Top 5% of University of Bristol students for outstanding work experience and extracurricular activities.
- **'Bristol Scholar' & 'Access to Bristol':** Selected by sixth-form as a high-performer in academia for exclusive opportunities.