Mohammed Zain Mughal

Zainmughal77@outlook.com | +44 7810101334
London | Portfolio | LinkedIn: */mughalzain*

Education

Imperial College London – *Physics MSci* **Oct 2022 - Jun 2026**

- Predicted 1:1 (First Class Honours).
- Comprehensive study of Differential Equations, Probability Analysis and Distributions, Monte Carlo methods, Regression Analysis, Multivariate Statistical methods, Data Science and Machine Learning.
- Imperial BPES modules: Accounting & Finance completed; Business Economics ongoing

Bishopshalt School **Sep 2020 - Aug 2022**

- Achieved 3 A*s at A-levels in Maths, Physics, and Computer Science.

Rosedale College **Sep 2015 - Aug 2020**

- Achieved 13 GCSEs with grades 9 to 8 including Maths and English, and 2 Distinctions.
- Valedictorian, recognised for academic excellence and leadership qualities.

Professional Experience

Personal Trader – *Portfolio Manager* **Feb 2020 - Present**

- Developed a diversified portfolio using quantitative strategies, achieving an average annual return of 18%, outperforming major benchmarks through a combination of data-driven analysis and systematic risk management.
- Engaged in short-term algorithmic trading by leveraging technical indicators and predictive models, attaining a 75% success rate in trades, with emphasis on volatility exploitation and rapid market adaptation.

Tutor – *Private Tutoring / Cherry Hill Tuition* **Sep 2020 - Present / Jun 2023 - Aug 2023**

- Improved students' STEM grades by 15-20% through customized learning plans developed from diagnostic assessments.
- Increased student engagement by 30% and maintained a 95% client satisfaction rate through interactive workshops and regular progress updates, ensuring alignment with the goals of both students and parents/carers.

Projects and Leadership Experience (See Portfolio)

Enhancing Black-Scholes volatility – *BSc Project Lead* **Oct 2024 - Jan 2025**

- Enhancing the Black-Scholes Model with adaptive volatility, targeting a 15% reduction in pricing error through further volatility models (GARCH, SABR, Heston, Lévy) and multiple predictive machine learning models.
- Designing Monte Carlo simulations to stress test model robustness, aiming for a 30% increase in pricing response accuracy to extreme market/fat-tailed events, enhancing realistic pricing to volatility shocks.
- Publishing a thesis comparing model performance, targeting up to a 25% error reduction over standard Black-Scholes.

MarketSeer – *Project development lead* **Mar 2024 - Present**

- Leading the development of a machine learning forecasting tool using an ARIMA-GAN-LSTM TensorFlow model, achieving 58% forecast success rate for market time-series data, with ongoing optimization targeting 67% precision.
- Designing a real-time dashboard that visualizes predictive insights and risk metrics, enabling data-driven investment decisions and risk reduction across portfolios.

Portfolio Risk Management System – *Project Manager* **Apr 2024 - Present**

- Constructing a C++ platform to accurately calculate key financial risk metrics, such as VaR and CVaR in real-time, providing quantifiable risk insights, improving portfolio risk management by 20% during market stress simulations.
- Integrating a backtesting framework that simulates historical market conditions, validating risk models and allowing for better asset allocation strategies, minimising exposure to volatile market fluctuations and optimising risk-return ratios.

Algorithmic Stabiliser – *Project Lead* **Apr 2023 - Jun 2023**

- Engineered a camera stabilisation system utilising accelerometer data and Lagrangian mechanics, enhancing image stability by 14% over competitors, through optimised gyroscope adjustments based on dynamic platform movements.
- Refined a predictive feedback model to adjust the motor-driven gyroscope, further optimising the Python dampening algorithms to react to variations in real time, resulting in consistently improved stabilisation performance.

Skills

Technical Proficiencies: Python (advanced), C++, Js, SQL, Git, D3.js, React, Flask, TensorFlow, PyTorch, SKlearn, Bloomberg.
Hard Skills: Financial Modeling, Machine Learning, Statistical Analysis, Risk Assessment, Backtesting, Volatility Models.
Soft Skills: Communication, Critical Thinking, Problem-Solving, Collaboration, Leadership, Time Management.
Languages: English (Native), Urdu/Punjabi/Hindi (Fluent).

Activities and Interests

Networking Events: S&P Global Insight day - Gained insights into each business segment and the intricacies of markets.
Sports: School Basketball Team Captain, Gold medallist in Borough Badminton Championships.
Hobbies: National RC Car Racing Champion (U18), Gym, Mountain Biking, Community Volunteer, Reading (psychology).
Further Academics: Self-taught in Financial Mathematics, Stochastics, Options pricing, volatility trading, Algorithmic Trading, Machine learning, Technical & Fundemental analysis and Financial Valuation & Modelling.
Affiliations: SEO London, Investment Society (Securities Education Certificate course, modeled on CFA levels 1 & 2), Finance Society (Investment Banking Training Programme), AlgoTrading Society (AlgoCourse).