

# Elliot Jones

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## SUMMARY

Analytical and results-driven Financial Mathematics graduate with strong quantitative, programming, and modelling skills. Currently exploring both PhD opportunities and quantitative roles, with research experience focused on modelling and detecting asset-price bubbles using stochastic calculus and numerical methods. Proficient in Python, R, SQL, and Excel (VBA), with practical experience in Monte Carlo simulation, derivatives pricing, and algorithmic trading strategies gained through academic projects and industry internships.

## TECHNICAL SKILLS

- |                       |                          |                    |
|-----------------------|--------------------------|--------------------|
| • Python              | • SQL                    | • R                |
| • Excel (VBA)         | • PyTorch                | • QuantLib         |
| • Pandas              | • Git                    | • Option Pricing   |
| • Stochastic Calculus | • Monte Carlo Simulation | • Machine Learning |

## EDUCATION

### University of Bath

**Bath, England**

*Master of Science in Financial Mathematics with Data Science*

30/09/2024-29/09/2025

- **Classification:** Distinction | 72%
- **Dissertation:** Modelling and Quantifying the Martingale Defect in Asset Price Bubbles (79%)
- **Relevant modules:**
  - Advanced mathematics and data science techniques for finance (81%)
  - Mathematics of machine learning (78%)
  - Continuous Time Finance (73%)

### Cardiff University

**Cardiff, Wales**

*Bachelor of Science in Financial Mathematics*

04/10/2021-17/07/2024

- **Classification:** Second Class Honours Division One | 68%
- **Relevant modules:**
  - Trading, Market Design, and Applications (79%)
  - Official Statistics (83%)
  - Multivariate Data Analysis (78%)

### Chartered Insurance Institute

**Cardiff, Wales**

*Regulated Financial Planning Diploma.*

27/08/2022-Present

- **Completed Exams:** Financial Services, Regulation and Ethics (RO1) | Investment Principles and Risk (RO2) | Financial Protection (RO5)

## WORK EXPERIENCE

### Companies House

**Cardiff, Wales**

*Finance Operation Officer*

19/06/2023-Present

- Managed a diverse portfolio of clients' accounts, ensuring the timely collection of outstanding balances and fostering strong relationships with clients while reducing aged debt by 45%.
- Co-ordinated team and sector briefings with up to 200 staff, preparing PowerPoints and summary notes for the finance sector.
- Implemented financial systems and programs including E5, Alteryx, Bankline and Excel to carry out effective management of accounts and analysis of payments.

### Office For National Statistics (ONS)

**Newport/London, Wales/England**

*Analytical Internship*

03/07/2023-03/10/2023

- Used Python, R, and Shiny to build statistical models forecasting future mortality rates from census and population data.
- Applied regression and time-series techniques within a team to compare model performance and quantify forecast uncertainty.

## Self Employed

Mathematics Tutor

Cwmbran\Online

10/08/2024-Present

- Established and operated an independent mathematics tutoring business, building a regular client base and improving my ability to explain complex ideas simply.
- Provided face to face tutoring for GCSE and A-Level students, enhancing their understanding of mathematical concepts.

## ONLINE EXPERIENCES.

### Goldman Sachs

Excel Skills for Business Job Simulation

Online, Forage

02/09/2024

- Completed a job simulation focused on data cleaning, analysis, and Excel automation (VBA macros).

### JPMorgan Chase & Co

Quantitative Research Virtual Experience Program

Online, Forage

10/08/2024

- Completed a simulation focused on quantitative research methods and analysed a book of loans to estimate a customer's probability of default.
- Used dynamic programming to convert FICO scores into categorical features and predict default probabilities.

## RELEVANT PROJECTS.

### Modelling and Quantifying the Martingale Defect in Asset Price Bubbles | 79%

University of Bath

In my master's dissertation I investigated asset price bubbles through strict local martingales, using the martingale defect as a quantitative measure of bubble size under the risk-neutral measure. I investigated both continuous SDE models (e.g. Black-Scholes, CEV) and jump-driven strict local martingale models and implemented them in Python using Monte Carlo and related numerical methods. Option-implied diagnostics, such as deviations from put-call parity and the bubble gap, were then used to detect and quantify bubbles, with results summarised in a small dashboard environment.

### Monte Carlo Methods for Option Pricing | 89%

University of Bath

Implemented and executed extensive Monte Carlo simulations with Euler-Maruyama discretization to price European call options under Black-Scholes and Heston models; evaluated weak convergence rates by varying time-steps and strikes, analyzed standard deviation and bias trade-offs, and implemented control variate techniques to improve estimator accuracy.

### FX Derivatives market maker | 78%

Cardiff University

Within this project I assumed the role of an FX derivatives market maker. This included providing quotes to clients, executing transactions with them, and effectively hedging foreign currency risk exposures. My overall performance of this task including relevant performance metrics such as profit and loss decomposition and risk mitigation using the "Greeks" were recorded, detailing and investigating these within a final report.

### US Equity Market Intraday Trader | 80%

Cardiff University

Within this project I assumed the role of an intraday "high frequency" trader in the US equity market. I partook in designing and backtesting a technical trading strategy for a particular stock, forward testing this strategy through paper trading and analysing the performance. Data collection and backtesting were completed utilizing Python where I coded and tested a trading strategy around the Relative Strength Index (RSI). Leveraging Trader Workstation (TWS), I completed technical analysis and forward testing providing a summary report including detailed statistical analysis and documentation of trades.

### Modelling & Calibration of Interest Rate Models | 82%

University of Bath

Implemented and calibrated the Vasicek and Hull-White interest rate models to real Treasury yield data using the Levenberg-Marquardt algorithm and least squares optimisation. Developed a feed-forward neural network to rapidly infer Hull-White parameters from yield curves, trained on synthetically generated data. Enhanced performance via PCA-based data augmentation. Achieved high accuracy in yield curve reconstruction and evaluated generalisation to CIR-generated data.