Jack Moloney

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jackmoloney.cc

Education

University College Dublin (UCD) — Dublin, Ireland
B.E. Electrical & Electronic Engineering — *2029*
GPA: 3.87

- Relevant Coursework: Probability & Statistics, Linear Algebra, Signals & Systems, Programming (Python, C)
- UCD Entrance Scholar

St. Mary's College Rathmines — Dublin, Ireland
Leaving Certificate

- **613** points (5 H1s incl. Mathematics, Applied Mathematics, Physics)
- Awarded **Academic Excellence Award** in both 5th & 6th Year
- Member of Applied Mathematics Competition Team achieving high placement among 30+ local schools

Projects

Monte Carlo Price Prediction

- Implemented Monte Carlo simulations to price European options and estimate Greeks via finite differences
- Analysed convergence behaviour and variance reduction techniques; validated results against Black–Scholes

Risk Analysis & Portfolio Modelling

- Built a multi-asset portfolio risk model using historical equity data sourced via yfinance
- Computed returns, volatility, covariance, Sharpe ratio, and rolling portfolio risk metrics

Random Walk Price Simulation

- Simulated random walk price paths with drift and Gaussian noise using Monte Carlo methods
- Analysed variance growth and terminal price distributions; visualised results with NumPy and Matplotlib

Lennard-Jones Potential Numerical Simulation

- Implemented a MATLAB simulation of intermolecular interactions using the Lennard–Jones potential
- Modelled pairwise energies with mixing rules and visualised particle dynamics in 3D

Leadership

Entrepreneurial Project — EWB Design Challenge — Sep 2025 – Present

- Led a student team to design a waste management solution, shortlisted **Top 10** at UCD

Founder, Physics Society — Oct 2024 – Jul 2025

- Founded and led weekly group tutoring for 15 students whilst actively learning the material

Technical Skills

Programming: Python, C, MATLAB, Excel
Libraries: NumPy, Pandas, SciPy, Matplotlib, yfinance

Interests

University Societies: Investors & Entrepreneurs, Electrical Engineering, EngSoc
Quantitative Finance: Independent study of MIT 18.05 — Intro. to Probability & Statistics
Courses: JPMorgan SWE Simulation; CS50 - Intro to CompSci; Bloomberg Market Concepts
Volunteering: Down Syndrome Ireland; VHI Women's Mini-Marathon Steward
Interests: Aviation, Rugby, Poker, Weightlifting