

MAXWELL HANKS

Brisbane, QLD

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EDUCATION

The University of Queensland (UQ)

2026 - 2028

Bachelor of Mathematics

Major in Mathematical Artificial Intelligence, Minor in Computer Science

Relevant Coursework: Algorithms & Data Structures, Deep Learning, Object-Oriented Programming, Statistical Inference

PROJECTS

Susquehanna Algothon '26 — *Python*

2026

Placed **161 of 394** in Susquehanna's algorithmic trading competition with a market-neutral statistical arbitrage strategy. Selected cointegrated pairs offline via Engle-Granger and ADF stationarity testing, modeled mean-reverting spreads as Ornstein-Uhlenbeck (OU) processes, and hedged residual market exposure against the ALGO index. Applied volatility-scaled position sizing and validated performance through walk-forward backtesting on unseen out-of-sample data.

Continuous-Time Optimal Execution via HJB & Neural Networks — *Python, MATLAB*

2026

Formulated optimal trade execution as a continuous-time stochastic control problem, deriving the HJB equation for liquidation. Solved the linear-quadratic benchmark case analytically and extended to nonlinear market impact models using neural network approximation, with ϵ -optimality validation against dynamic programming.

Multi-Factor Equity Risk Model (Barra-style) — *Python, NumPy, Pandas*

2026

Built an institutional-grade fundamental factor risk model over a 94-stock US universe: engineered six point-in-time style factors, estimated daily factor returns via cross-sectional WLS (1,200+ regressions), and constructed the asset covariance matrix using EWMA/Newey-West factor covariance with PSD enforcement and shrinkage-stabilized specific risk. Implemented Euler risk decomposition and ex-ante tracking error for portfolio analysis, and validated volatility forecasts out-of-sample via walk-forward bias statistics.

EXPERIENCE

Connect Presenter

2026 - Current

Connect Education

Brisbane, QLD

- Delivered targeted exam-preparation workshops, using IA/EA data to tailor content and close knowledge gaps, guided students through past exam questions to build strong exam technique and align responses with QCAA criteria.

Academic Tutor

2025 - Current

Private, All Access Education, KIS Academics

Hybrid

- Completed 200+ hours of tutoring for high school students across various Australian curriculum, delivering targeted support in study skills, exam preparation, and assignment planning.

EXTRA-CURRICULAR & LEADERSHIP

Science Leadership Development Program, UQ Faculty of Science (2026) selected participant; building leadership and mentoring competencies through structured modules, a leadership panel, and a two-day conference (pathway to the UQ Science Leaders Academy).

QSH Mentor, Previous administration and mentor for a community of over 3500 Year 12s, hosting workshops, masterclasses, and general mentoring for QCE subjects.

Member of: UQPAIN, UQCS (Computing), UQCS (Cyber), UQFinTech, UQMSS, UQMS, UQSO, UQWS, QYS

Activities: IMC Emerging Talent Function, IMC/UQFinTech AlgoJam 3, Jane Street Dinner, Optiver Volatility Lab, Susquehanna/UQFinTech Poker Night

TECHNICAL SKILLS

Languages Python, C, C++, HTML/CSS, Java, JavaScript, Lua, MATLAB, R

Tools Excel, Git, GitHub, Jax, Jupyter, LaTeX, Linux/Unix, Python Libraries, Tensorflow, Vim

Skills DSA, AI/ML, OOP, Mathematical Optimization, Statistical Modelling, Probability/Stochastic Processes