ZACHARY TILLER

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EDUCATION

University of Cambridge | *MEng Information & Computer Engineering* — Oct. 2019 - July 2023

4th Year: Masters Project: 'Non-Gaussian Stochastic Processes for Financial & Tracking Applications':
 - Applying Particle Filters to Levy-Process-Driven Stochastic State Space Equations
 Key Modules: Probabilistic ML, DL & Structured Data, Statistical Signal Analysis, Computational Stats & ML
 Societies: Cambridge Jewish Society

3rd Year: Upper Second Class Honours (68%)
 Coursework: Reinforcement Learning to swing-up & control an inverted pendulum (71%)

2nd Year: First Class Honours, ranked **7th** in year. Queens' Foundation Scholar & President's prize
 1st Year Ungraded due to COVID-19

Bancrofts School | *Francis Bancrofts' Scholar* — Sept. 2012 - Sept. 2019

A Levels: A*A*A*A* - Maths, Chemistry, Further Maths, Physics | **GCSEs:** 10A*'s

Awards: Silver Cambridge Chemistry Olympiad, UKMT Kangaroo Award

PERSONAL PROJECTS & CERTIFICATIONS

Snooker Sports Betting Model
- Used power of Tensorflow & GPU to maximise a log-likelihood function to find the optimal player ratings
- Produced an end-to-end sports betting system with a partner. Currently manually executing bets on overall and handicap markets. Planning to automate via Betfair API

Football Predictor Web App - Click For App
- Implemented the Bivariate Poisson distribution in Python to sample (Monte Carlo) football game scorelines
- Created my own formula for the parameters of the distributions (expected goal-rate) to reflect a team's attacking strength & form, gathering data via an API. Turned project into a Web App

Real Time Hedge Calculator
- Developed software (CLI) to quickly examine the Risk/Reward & bet sizes when trading on sports exchanges

Experimental Trading Algorithm
- Used MQL4 to back-test ideas for systematic trend-following algorithms on FX pairs

Machine Learning Specialisation
- Intro to ML and Deep Learning via deeplearning.ai; completed 8+ mini-projects, inc. CNNs, RNNs & NLP

WORK & LEADERSHIP EXPERIENCE

Quantitative Investment Strategy Intern (QIS): Vol Structuring, Macquarie — June 2022 - Aug. 2022
- Implemented a new intra-day PnL Explainer tool within Macquaries' Python libraries. Improved inaccurate Taylor-Series based methods to 8 d.p. precision enabling intra-day analysis on Delta Hedging VRP strategies
- Manipulated tool-output data into simple graphical formats for on-desk PnL analysis and client questions

Machine Learning & AI Intern (Part-Time), Memento VR — Aug. 2021
- Generated 14,800 labelled snaps from a video to use in a multi-output CNN to predict gyroscopic parameters
- Created a sign-language recogniser (CNN), at 70% testing accuracy, using techniques like data augmentation

McKinsey & Co. Spring Intern — April 2021
- Collaborated with McKinsey consultants and peers to construct and present a solution to a mock-case

Jane Street Trading Spring Intern — April 2021
- Practised market making, helping the team finish second place in a simulated open-outcry exchange

Lead Student Consultant, Unlock Consultancy — Oct. 2020 - Nov. 2020
- Directed a global team over 3 time-zones on a tech consulting project for 6 weeks, delivering a 40-slide report
- Leveraged skills in cloud-based software to ease project management and delivery, saving c.10 hours a week

EXTRA-CURRICULAR ACTIVITIES & ACHIEVEMENTS

Academic Mentor and Coach, Universify — Oct. 2020 - July 2021
- Year long coach for two Year 11 students from deprived backgrounds, helping them work toward University
- Led classes of up to 20 students for a week during the online summer school, collaborating with 15 volunteers

Treasurer, CATS Society Cambridge University — Oct. 2020 - July 2021
- Coded a programme to automate managing formal accounts with 100's of transactions a year
- Took initiative to modernise the accounting documents by re-drafting into a clearer format

Sports
- Queens' College Football 2XI. Arsenal FC Fan | Ex-Univeristy Water Polo | Gold DofE | School Swim Captain