


# ZACHARY TILLER MENG (CANTAB)

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## EDUCATION

**University of Cambridge** | *MEng Information & Computer Engineering*

Oct. 2019 - July 2023

**4th Year:** Merit, Upper Second Class Honours

**Masters Thesis:** "Non-Gaussian Stochastic Processes for Financial & Tracking Applications": Implementing Sequential MCMC Particle Filters on Levy-Process-Driven Stochastic State Space Equations on FX data. Derived new modelling parameterisations & closed-form filtering equations

**Key Modules:** Probabilistic ML, Deep Learning & Structured Data, Statistical Signal Analysis, Computational Stats & ML: Kalman Filter, Linear Algebra & Regression, Neural Networks, Time Series Forecasting (AR, ARIMA, HMMs etc.), Stochastic Modelling, Bayesian Inference

**Achievements:** Ranked **7th** in Year 2 | Queens' Foundation Scholar | Presidents Prize | GPA: 69.8%

**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

## WORK EXPERIENCE

**Quantitative Analyst/Researcher**, Smartodds

October 2023 - Present

- Research & develop statistical and ML models in R & Python for the sports betting markets to generate alpha
- Conducted EDA on 1+ million football games for model ideation. Targeted specific nuances, behaviours and correlations in the data to derive 6 bespoke PMFs boosting predictive accuracy metrics by over 30%
- Lead greenfield MMA capstone project: data collection, cleaning and storage (SQLite). Model design, training and evaluating, via statistical and deep learning methods and feature engineering to predict fight outcomes

**Quantitative Investment Strategy Intern (QIS): Vol Structuring**, Macquarie

June 2022 - Aug. 2022

- Integrated an improved PnL Explainer tool (Python) into the intra-day analytics suite for S&P and Eurostoxx strategies, requiring quick understanding of Macquarie's codebase. Presented to 50+ colleagues
- Refined Delta Hedging PnL calculations from 3 d.p to 8 d.p accuracy & analysis of Greeks for any time horizon
- Wrote Python scripts to visualise the PnL breakdown of the VRP algorithmic strategies for the desk & clients

**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
- Built a sign language recognizer (CNN), using dropout, regularisation, and data augmentation techniques

**Jane Street · McKinsey & Co**, Spring Intern

April 2021

## PERSONAL PROJECTS

**Snooker Sports Betting Model [Live]**

- End-to-end Tensorflow model with automatic data collection, retraining schedule, live bet suggestions, and user interface. Developed with project partner to make 10% ROI in 2 months

**"Mark Mate": AI Marking Assistant**

- Collaborated with a stranger to build a full-stack (React, JavaScript, Python) app in 36 hours at a hackathon, utilising LLMs, NLP & prompt engineering, to provide teachers with an AI-driven marking assistant

**Experimental FX Trading Algorithm**

- Used MQL4 to back-test ideas on combining indicators for systematic trend-following strategies on FX pairs

**iOS/Android App Development [Ongoing]**

- Creating a product to innovate outdated Football "Survivor" games played in WhatsApp chats of 300+ people
- Leveraging Firebase for back-end scalability, optimising interactions for API-cost efficiency, and implementing advanced features (custom hooks, cloud functions) for improved user experience and secure data handling

## EXTRA-CURRICULAR ACTIVITIES & ACHIEVEMENTS

**Mentor and Coach**, Universify

Oct. 2020 - July 2021

- Year long coach for 2 Year 11 students from disadvantaged 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 (Python) to automate managing formal accounts with over 200 transactions a year
- Took initiative to modernise the accounting documents & database by re-drafting into a clearer format

INTERESTS | Arsenal FC, Scuba Diving, (Amateur) Poker, Football (Queens College 2XI), Hiking (Gold DofE)