Zacch Lines

zaccheus.lines@hotmail.com | +447487821133 | **LinkedIn** | **GitHub**

Experience

Rokos Capital Management | *Market Risk Analytics* Newcastle, UK | Jun 2025 - Present

- Fully embedded within RCM's risk function via Neptune North (a joint venture with Oliver Wyman), contributing directly to risk oversight across global macro portfolios.
- Develop and maintain analytics tools in **Python** and **SQL** to support intraday exposure monitoring, scenario analysis, and control threshold tracking.
- Validate pricing models, volatility surfaces, and portfolio **Greeks** across interest rate, FX, and cross-asset strategies to enhance risk reporting accuracy and transparency.

Aglaia Investment Management | *Quantitative Risk Analyst* Singapore | Jul 2024 - Aug 2024

- Engineered a **GARCH** risk model, enhancing risk assessment across **30** portfolios totaling over **$4B**.
- Automated client portfolio monitoring using **VBA**, cutting processing time by over **90%** (from 3 days to 2 hours) and improving reporting efficiency for **3** portfolio managers.
- Collaborated with traders and risk team to align analytical outputs with real-time trading objectives.

NatWest Group | *Machine Learning Engineer* London, UK | Jul 2023 - Dec 2023

- Contracted via Stellar Omada, embedded within NatWest's Enterprise Engineering division.
- Designed and implemented **Python**-based analytics pipelines to support sustainability-driven risk metrics using embedded **machine learning** models for system-wide test plan evaluation.
- Developed a performant **tree-search algorithm** to extract and compute key metrics across a **12M+** entry **SQL** database, optimising query logic and enabling scalable, automated test data processing.

Education

EDHEC | *MSc Financial Engineering* Nice, France | 2024 - 2025

- ***Grade:*** Distinction
- ***Relevant Modules:*** Advanced Fixed Income and Credit, Advanced Derivatives, Structured Products, Equity Derivatives, Deep Learning, Volatility Strategies, Risk Management, Decentralised Finance.

Durham University | *BSc Mathematics* Durham, UK | 2020 - 2024

- ***Grade:*** 1:1
- ***Relevant Modules:*** Stochastic Processes, Mathematical Finance, Machine Learning and Neural Networks, Probability, Statistical Computing, Numerical Analysis, Statistical Modelling, Calculus.

Skills

Programming & Tools:	Python (TensorFlow, QuantLib), C++ (OpenMP), SQL, VBA, Git, Excel, Power BI, Bloomberg Terminal.
Financial Modelling:	Monte Carlo Simulation, VaR, GARCH, Rough Volatility, NSS, Jump-Diffusion, Sensitivity Analysis, Vasicek Model.
Markets & Products:	Interest Rate Derivatives, FX Derivatives, Credit Derivatives, Swaps, Equity Derivatives, Structured Notes.
Interests:	Sailing, Violin (Grade 8), Chorister, Chess, Award-Winning Podcaster.

Research & Projects

MSc Research Thesis: *Deep Hedging Under Rough Volatility Models* *Python (TensorFlow), LaTeX, FFT*

- Built a **deep hedging** framework to optimise hedge ratios under the **rBergomi** model.
- Applied **optimal control** techniques to minimise risk and transaction costs in dynamic hedging.

Computational Geometry: *Shortest Vector Problem* *C++, OpenMP, Python (testing)*

- Designed a high-performance **OOP** solution for the SVP, focusing on low-latency execution in **C++**.
- Implemented multi-threading and memory optimisation to manage lattices up to **80** dimensions.

Fixed Income: *Yield Curve Construction and Hedging* *Python, LaTeX, Excel*

- Bootstrapped zero curves from **bond** prices and fitted and analysed term structure using **NSS**.
- Computed key rate **durations** and built long-short trading strategies to express curve steepening views.