

Finn Smith

Non-Markovian market microstructure

phd.finnsmith.uk

EDUCATION

University College London, with HSBC

Sep 2026 – Present

Doctoral Research in Financial Mathematics

Near-critical Hawkes estimation and directional inference from best-quote information to inform RFQ and dealer quoting. Supervisors: Dr Alexander Barzykin and Dr Paris Pennesi (HSBC), Prof. Philip Treleaven (UCL).

University College London

Sep 2026

Master's in Computational Finance, Distinction

Dissertation: Detecting Meta-Orders using Hawkes Processes: Event-based inference of latent order flow in FX markets under limited observability.

Supervisors: Prof. Philip Treleaven (UCL), Dr Paris Pennesi and Dr Alexander Barzykin (HSBC), Dr Konark Jain (JPMorgan).

Queen Mary University of London

Oct 2024

Integrated Master's in Finance and Machine Learning, Distinction

Dissertation: Hawkes processes in equity markets, volatility persistence and numerical estimation in latent space.

Supervisor: Dr Richard Saldanha.

RESEARCH

MSc Research, UCL and HSBC

Nov 2025 – Sep 2026

- Using expectation-maximisation for near-critical Hawkes estimation on 97,952 EUR/USD quote events, reaching spectral radius 0.9373 and improving log-likelihood by 1,792.66 over a stalled L-BFGS-B fit; spectral radii spanned 7.5×10^{-5} across 16 initialisations.
- Inferring latent directional pressure under partial observation in a Python/NumPy simulator, with log-space forward-backward inference and Baum-Welch estimation. Across 50 controlled simulations, offline HMM inference achieved mean F1 of 0.831 versus 0.728 for a rate-and-imbalance threshold, scoring higher on 39 seeds.

Numerical Optimisation

Feb 2026 – Apr 2026

- Comparing damped Newton with Armijo backtracking and BFGS with strong Wolfe line search, and solving the soft-margin SVM dual with a Python/NumPy Mehrotra predictor-corrector method, checking convergence, conditioning and KKT residuals.

Joint Quote Research

Sep 2026 – Present

- Extending the MSc model to an eight-type joint bid/ask Hawkes model and evaluating 500 five-second count forecasts against constant-rate benchmarks on a chronological 13/4/5-day training, validation and test split.
- Investigating with Alexander Barzykin how public quote information can inform two-way RFQ pricing.

EXPERIENCE

Agentic Quoting for Profit

Jan 2020 – Present

- Working within latency and quoting constraints for a low-message-rate directional FX system: capped daily requests, fills modelled with up to 200 ms delay, volume-banded costs and no latency arbitrage.
- Converting millisecond bid/ask ticks into Parquet by currency pair and month, with automated gap, spread and outlier checks, tested end to end on synthetic data as the base for research and backtesting.
- Investigating news-aware directional inference that accounts for the activity surge around scheduled macroeconomic releases and turns it into a directional mark for sizing and entry.
- Specifying a dedicated VPS backend with cellular failover and a watchdog that triggers a tiered fail-safe: cancel resting orders, offset exposure through correlated pairs and flatten if the feed stays down, with broker-held stops as the last line.

QMUL Investment Fund

Sep 2023 – Jun 2024

Senior Analyst (Honorary), supervising junior analysts and valuing Sage Group in Bloomberg by comparing normalised excess cash-flow yields with long-term interest rates.

Optiver Trading at the Close, Kaggle modelling project

Sep 2023 – Dec 2023

Modelling the competition target with GLMBoost, reaching test-set MAE of 4.9 and assessing feature importance by permutation.

AWARDS

- Winning team, Jane Street Estimathon at UCL and Bloomberg Trading Challenge at QMUL.
- Four-time national karting champion and Ginetta Cup prize winner, 2016-2019.