

Abhishek Tiwari

 GitHub |  LinkedIn |  abhishekt282001@gmail.com

SUMMARY

Quantitative finance researcher focusing on market microstructure and stochastic control. Skilled in Hawkes-based modeling of self-exciting order flow and optimal execution under transient impact. Experienced in building adaptive execution strategies and high-frequency trading simulations.

RESEARCH INTERESTS

Optimal execution, market microstructure, stochastic control, Hawkes process modeling of order flow, limit order book dynamics, and algorithmic trading systems.

WORK EXPERIENCE

Research Assistant, University of Liverpool, UK

Oct 2023 – Sep 2024

- Built stochastic-process models and simulation engines applicable to market microstructure and execution research.
- Implemented quantitative analysis pipelines in Python, including time-series modeling, calibration procedures, and Monte Carlo simulations.
- Assisted in preparing research manuscripts involving stochastic modeling, optimization, and data-driven methodologies.

PROJECTS

Cross-Venue Hawkes Process Model

[GitHub Link](#)

Designed a multivariate Hawkes process model with cross-venue graph structure for high-frequency order flow prediction. Implements real-time particle filter calibration and GNN-based excitation modeling, with profitability demonstrations on multi-exchange tick and order book data.

Quantum-Inspired Portfolio Optimization Platform

[GitHub Link](#)

Built a research-grade framework applying quantum algorithms (QAOA, VQE, Quantum Annealing) to portfolio optimization. Benchmarked against classical models (Markowitz, Black-Litterman, HRP) with extensions to multi-objective, cardinality, and transaction cost optimization. Includes scalability and noise-resilience studies.

Neurologicx Terminal (Neurosymbolic AI)

[GitHub Link](#)

Developing a modular, terminal-style neurosymbolic reasoning system with Python backend and Streamlit deployment. Combines NLP parsing, symbolic program synthesis, and interpretable reasoning pipelines.

Multi-Regime Climate-Financial Risk Transmission Engine

[GitHub Link](#)

Developed an econometric engine modeling climate-financial risk transmission using Hamilton's Markov regime-switching model with climate extensions. Includes 9+ years of empirical data, interactive dashboards, and reproducible code for real-time stress testing and risk analysis.

EDUCATION

2022 – 2023	University of Liverpool , United Kingdom	
	Post Graduate Diploma in Finance & Investment Management	GPA: 3.65/4.00
	Dissertation: <i>The Impact of Mergers and Acquisitions on Firm Financial Performance: A Quantitative Analysis Using Mathematical Modeling and Python</i>	
2018 – 2021	G.C. University , India	
	Bachelor of Business Administration (BBA)	GPA: 3.80/4.00
	Dissertation: <i>Mathematical and Computational Approaches to Financial Performance Analysis: An Empirical Study Using Python</i>	

PUBLICATIONS

1. Abhishek Pankaj Tiwari. *Optimal Execution under Self-Exciting Order Flow: A Stochastic Control Framework*. Manuscript in preparation. (under peer-review).

- **Methodological novelty:** Develops a stochastic control framework that integrates Hawkes process-based self-exciting order flow with optimal execution models, capturing endogenous market impact and feedback effects in high-frequency trading environments.

SKILLS

Programming	Python (NumPy, pandas, PyTorch, statsmodels), C++ (high-performance simulation), R (econometrics), MATLAB, Git
Quantitative Finance	Optimal execution, market microstructure, algorithmic trading systems, liquidity modeling, limit order book dynamics, execution cost modeling, intraday trading strategies
Stochastic Processes	Hawkes processes (self-exciting order flow), point-process modeling, diffusion and jump-diffusion models, stochastic calculus (Ito, SDEs), marked point processes
Stochastic Control	Dynamic programming, HJB equations, optimal execution under transient impact, adaptive trading policies, continuous-time control, stochastic optimization
Econometrics	Time-series analysis, GARCH models, MLE, state-space models, filtering, panel-data methods, volatility modeling, hypothesis testing
Simulation	Market microstructure simulation, Monte Carlo methods, agent-based modeling, order-flow generation, simulation-based calibration (Hawkes & impact models)