Christopher Molloy, Ph.D.

Quantitative Researcher | Trading & Fixed-Income Strategies

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EDUCATION

London School of Economics | *MSc. - Financial Mathematics*
- Coursework: Stochastic Calculus, Credit Risk Analysis, No-arbitrage Pricing, Portfolio Construction.

Queen's University | *Ph.D. - Computer Science*
- Coursework: Bayesian statistics, Time Series Analysis, Data Mining, Deep Learning.
- Awards and Scholarships totalling $80,000 for groundbreaking research.

Queen's University | *BSc (Hons) - Computer Science & Mathematics*
- Coursework: Probability Theory & Statistics, Optimization Methods, Linear Algebra.

WORK EXPERIENCE

Quantitative Trader (Bootcamp) — Oct. 2024 - Nov. 2024
Optiver Trading Academy — **London, England**
- Researched and implemented market-making and statistical arbitrage strategies in Python to optimize risk-adjusted returns and manage market exposure in high-frequency derivatives trading.
- Applied risk-neutral pricing to identify volatility arbitrage opportunities in proprietary simulated derivatives trading environment.
- Collaborated with team in fast-paced trading challenge, executed market-neutral algos to exploit derivative mispricings, ranked top 5 among LSE participants based on PnL performance.

Ph.D. Research Associate - Machine Learning — Sept. 2020 - Jul. 2024
Linna Research Lab — **Kingston, Canada**
- Led international team of researchers collaborating BlackBerry and DRDC to develop predictive models in Python to classify complex datasets and outperformed industry benchmarks by 14%.
- Conducted backtesting on developed solution against existing state-of-the-art using statistical modelling and data analytics on more than 1 million real-world data samples to validate model performance.
- Delivered technical presentations at international venues to stakeholders using Microsoft PowerPoint.

Quantitative Research Analyst — Jan. 2024 - Apr. 2024
RP Investment Advisors — **Toronto, Canada**
- Engineered a cloud-based signal generation pipeline tailored to thousands of corporate bonds, improving data quality and enhancing credit risk and spread analysis to support fixed-income trading strategies.
- Built a bond pricing model in Python (TensorFlow) to detect market inefficiencies, reducing prediction error by 26%, improving capital allocation, driving alpha generation and investment performance.
- Partnered with portfolio managers to integrate data-driven insights into investment strategies, combining quantitative research with discretionary decision-making.

Data Automation Analyst — Sept. 2023 - Dec. 2023
Scotiabank — **Toronto, Canada**
- Built a Python/MySQL data pipeline to automate Excel-based reporting workflows, eliminating 100% of manual data handling, accelerating decision-making, and increasing accessibility for stakeholders.

RESEARCH & PUBLICATIONS

- **Mecha** Invented Machine Learning system with applications in pattern recognition and large-scale data analysis relevant to quantitative finance. Published in IEEE TSE (Journal Impact Score: 6.5).
- **Heterogeneous Data** Developed a multi-modality learning model achieving high accuracy in identifying noisy data with applications in risk analysis. Published in IEEE ICDM (Flagship conference on data mining).

SKILLS

- **Quantitative Analysis** Alpha Signal Research, Market Microstructure, Monte Carlo, Value at Risk, Risk-neutral Pricing, Factor Modeling, Portfolio Optimization, Technical Communication, High-Frequency Trading.
- **Software & Libraries** Python (advanced), SQL, R, C++, C, Microsoft Excel (XLS), VBA, Microsoft Office, Java, Pandas, NumPy, Unix, Linux, data visualization tools, Docker.
- **Investment & Finance** Discount Cash Flow Modeling, Risk Management, Investment Management.