

Christopher Molloy, Ph.D.

Quantitative Trading & Options Strategies

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EDUCATION

London School of Economics | *MSc. - Financial Mathematics*

- Coursework: Stochastic Calculus, Credit Risk Modeling, 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, Regression.

WORK EXPERIENCE

Ph.D. Research Associate

Sept. 2020 - Jul. 2024

Linna Research Lab

Kingston, Canada

- Led an international research team with BlackBerry and DRDC to develop predictive systems for cybersecurity.
- Engineered ML models in Python, improving classification accuracy by 14% over industry benchmarks.
- Designed backtesting frameworks with 1M+ real-world samples to validate model robustness.
- Applied statistical modeling and data analytics to benchmark performance against state-of-the-art solutions.
- Presented findings to executives and technical stakeholders at international conferences.

Quantitative Research Analyst

Jan. 2024 - Apr. 2024

RP Investment Advisors

Toronto, Canada

- Engineered a cloud-based signal pipeline for thousands of corporate bonds to improve data quality.
- Enhanced credit risk and spread analysis to support fixed-income investing strategies.
- Built a bond pricing model in Python (TensorFlow) to detect market inefficiencies.
- Reduced prediction error by 26%, improving capital allocation and alpha generation.
- Partnered with portfolio managers to integrate quantitative insights into investment strategies.
- Combined quantitative research with discretionary decision-making to optimize investment performance.

Data Automation Analyst

Sept. 2023 - Dec. 2023

Scotiabank

Toronto, Canada

- Built a Python/MySQL data pipeline to automate Excel-based reporting workflows.
- Eliminated 100% of manual data handling, accelerating decision-making and accessibility for stakeholders.

PUBLICATIONS, RESEARCH, & PROJECTS

Big Data Similarity Analysis

Published in IEEE TSE

- Skills: Custom Backtesting pipeline, Tensorflow, Scikit-learn, NumPy.
- Invented high accuracy (99%) system with applications in data analysis relevant to quantitative finance.

Catch a Falling Knife Trading Strategy

Published on Medium

- Skills: Pandas, Portfolio Optimization, Backtesting, PnL Analysis, Equity Trading.
- Implemented systematic trading strategy for portfolio management during times in increased market volatility.

Derivatives Volatility Arbitrage - Optiver Trading Academy

- Skills: Python, Risk-neutral Pricing, Data Mining, Yield Curve Construction, Hedging Strategies.
- Implemented market-neutral strategies in Python for high-frequency derivatives trading.
- Identified arbitrage opportunities and ranked top 5 in LSE trading challenge based on PnL performance.

AI Entrepreneur/Founder - Mitacs Canada

- Conducted market research and financial analysis on malware detection in capital markets and healthcare.

SKILLS

- **Quantitative Analysis & Trading** Statistical Arbitrage, Factor Modeling, Time-Series Forecasting, Portfolio Optimization (Mean-Variance, Black-Litterman), Alpha Research & Alternative Data.
- **Risk Management & Derivatives Modeling** Fixed-Income Pricing, Yield Curve Construction, Credit Spread Analysis, Risk-Neutral Pricing, Monte Carlo Simulations, Value at Risk (VaR), Hedging Strategies.
- **Programming & Data Science** Python (Advanced: Pandas, NumPy, Scikit-learn, TensorFlow, PyTorch), SQL, Unix/Linux, Backtesting (custom pipelines), Microsoft Excel, Cloud Infrastructure (Azure, AWS).