Christopher Molloy, Ph.D.
Machine Learning & Quantitative Research

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EDUCATION

London School of Economics | *MSc. - Financial Math* **Sept. 2024 - Present**
- Related Coursework: Asset Valuation, Black and Scholes Theory, Portfolio Optimization.

Queen's University | *Ph.D. - Machine Learning* **Sept. 2020 - Jul. 2024**
- Related Coursework: Bayesian statistics, Time Series Analysis, Data Mining, Deep Learning.

RECENT AWARDS & CERTIFICATIONS

Doctoral Scholarship, NSERC: Awarded $\$63,000$ for groundbreaking machine learning research. 2023
Scholarship, Lab2Market: Awarded $\$15,000$ for anti-malware engine with applications in fintech. 2023
Best Research Paper Award, IEEE CSR: €700 prize awarded for excellence in research. 2022

RECENT EXPERIENCE

Optiver Trading Academy **Oct. 2024 - Nov. 2024**
London School of Economics **London, England**
- Designed and implemented quantitative hedging strategies (such as Delta-hedging) in Python to optimize risk management and enhance performance in high-frequency derivatives trading.
- Applied risk-neutral pricing to identify futures and options arbitrage, leveraging Optiver's simulated order book to develop and refine algorithmic trading strategies.

Portfolio Management Data Research Intern **Jan. 2024 - Apr. 2024**
RP Investment Advisors **Toronto, Canada**
- Engineered a robust data pipeline for bond signals, improving data quality and enabling more accurate forecasting to support fixed-income trading strategies.
- Built a neural network in Python with TensorFlow to detect bond market inefficiencies, reducing prediction error by 26% and driving alpha generation.
- Collaborated with portfolio managers to incorporate quantitative insights into investment decisions, facilitating clear communication of complex models to diverse teams.

Ph.D. Researcher **Sept. 2020 - Jul. 2024**
Queen's University **Kingston, Canada**
- Developed Deep Learning model using TensorFlow to classify complex datasets of malware and demonstrated a 14% increase in performance compared to existing solutions.
- Conducted empirical experimentation on developed solution against existing state-of-the-art using statistical modelling and data analytics on 1M+ data samples to prove the efficacy of the discoveries.
- Presented work at international conferences to non-technical stakeholders using Microsoft PowerPoint.

SKILLS

Programming Languages Python (advanced), C++, C, Bash, MySQL, Unix, Linux, Windows.
Software & Libraries TensorFlow, NumPy, pandas, scikit-learn, Git, Microsoft Office, Microsoft Azure.
Technical Statistical modeling, Time Series Forecasting, Communication to non-technical stakeholders.
Quantitative Methods Stochastic Calculus, Monte Carlo, Portfolio Optimization, Risk-neutral Pricing.