Christopher Lee

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Education

University of Waterloo — Waterloo, ON
Bachelor of Mathematics in Mathematical Finance — *Sept. 2024 – Aug. 2029*

Wilfrid Laurier University — Waterloo, ON
Bachelor of Business Administration in Finance — *Sept. 2024 – Aug. 2029*

Experience

Student Data Intern — June 2023 – Sept. 2023
LEE LAW: Barrister, Solicitor, and Notary — *Toronto, ON*

- Visualized data for over 1,000 case matters using advanced Microsoft Office techniques.
- Streamlined and analyzed a complex filing system to improve data accessibility.

Business Lead & Programmer — June 2023 – June 2024
FTC Team 19446 — *Markham, ON*

- Led sponsorship acquisition and applied programming expertise to support robot development.
- Contributed to securing regional competition victories and advancing to the provincial stage at FIRST.

Projects

Independent Research Project – Financial Viscosity Indicator (FVI) — April 2025

- Built a novel market stability signal inspired by fluid viscosity and spring mechanics.
- Modeled regime fragility using price displacement from mean and smoothed velocity.
- Applied exponential transforms and normalization to detect instability ahead of volatility events.

Alpha Forecasting Using SHAP Feature Attribution | *yfinance, pandas, numpy, scikit-learn* — April 2025

- Developed a multi-class machine learning model using XGBoost to forecast 5-day return ranks for Nasdaq-100 stocks, leveraging engineered technical indicators as predictive features.
- Interpreted model behavior with SHAP explainability tools, identifying key alpha drivers such as volatility, mean-reversion signals, and momentum z-scores.
- Simulated a weekly long-short Q5–Q1 portfolio strategy, achieving a Sharpe ratio of 0.57 and demonstrating statistically meaningful signal extraction from market data.

Sentivest | *Rust (pyO3, scraper), Python (torch, transformers), NLP* — March 2025

- Integrated FinBERT for real-time sentiment analysis of financial news and data.
- Applied the Black-Litterman model to dynamically adjust stock allocations and reduce portfolio risk using the sentiment analysis

Market Regime Detection | *Baum-Welch and Viterbi Algorithm, Rust (ndarray, tokio, plotters)* — March 2025

- Developed a Rust-based HMM to identify market regimes (bull, bear, neutral) using SPY price data.
- Implemented the Baum-Welch algorithm for training and the Viterbi algorithm for state prediction.
- Compiled a comprehensive research report with visualizations detailing model performance and regime transitions.

Awards

Philosophy Academic Achievement Award — July 2024

- Achieved the highest mark in HZT4U1: Philosophy – Questions and Theories (100%).

Canadian Senior Math Contest Distinction Award — July 2024

- Recognized for scoring in the top 25% nationally on the Canadian Senior Math Contest.

Technical Skills

Languages: Python, SQL, Rust, C, Java
Tools: Git, Docker, Google Cloud Platform, VS Code, Vim, Microsoft Office
Libraries: Pandas, Numpy, Matplotlib, Plotters, Torch, Transformers, ndarray, tokio
Interests: Photography, Philosophy, Statistics & Probability