

# Christopher Lee

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## EDUCATION

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### University of Waterloo

*Bachelor of Mathematics, GPA: 3.9*

Waterloo, ON

*Sept. 2024 – Aug 2029*

### Wilfrid Laurier University

*Bachelor of Business Administration, GPA: 3.9*

Waterloo, ON

*Sept. 2024 – Aug 2029*

## EXPERIENCE

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### LEE LAW: Barrister, Solicitor, and Notary.

June 2023 – September 2023

*Student Data Intern*

*Toronto, ON*

- Worked on visualizing over 500 case matters using Microsoft Office tools
- Organized and analyzed company filing system and case database which contained over 1000 cases

### FTC Team 19446

June. 2023 – July 2024

*Business Coordinator and Programmer*

*Markham, ON*

- Used my expertise in the field of sponsorship acquisition and programming to aid my team in funding and programming our robot.
- Contributed funding and expertise that led to our team winning regional competitions and achieving an opportunity to compete provincially on the FIRST stage.

## PROJECTS

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### Hidden Markov Model Market Regime Detection in Rust

March 2025

- Developed a Rust-based HMM to identify market regimes (bull, bear, neutral) using historical SPY price data. The model processes log returns and discretizes them into quantiles for state inference
- Implemented the Baum-Welch algorithm for training and the Viterbi algorithm for state prediction, ensuring robust transition and emission probability estimation over n training iterations.
- Produced a research report analyzing the model's performance and visualized detected regimes using price overlay plots, offering insights into market state transitions.

### Monte Carlo and Heston Model Simulations in Rust

March 2025

- A Rust implementation of Monte Carlo and Heston stochastic volatility models for simulating stock price paths and assessing financial risk via Value at Risk (VaR)
- Leverages async processing for efficiency and visualizes results.
- Produced a research report going through my process and iterative research

## AWARDS

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### Philosophy Academic Achievement Award

July 2024

- Award given to the individual who achieved the highest mark in HZT4U1, Philosophy: Questions and Theories. (Achieved: 100%)

### Canadian Senior Math Contest Distinction Award

July 2024

- Award given to individuals who achieved a score in the top 25% on the Canadian Senior Math Contest

## SKILLS & INTERESTS

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**Skills:** Rust, Java, Microsoft Excel, Computational Mathematics

**Interests:** Photography, Philosophy, Statistics and Probability