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## EDUCATION

**PhD in Financial Mathematics** – *York University (**Exiting for industry**)* Sept. 2024 – Present

- **Academics:** GPA 3.93/4.00. Systemic risk modeling in financial networks.
- **Awards:** Ontario Graduate Scholarship, Carswell Scholarship in Science, York Graduate Scholarship—totalling $37,000.

**Master of Arts in Mathematics** – *York University* Aug. 2024

- **Academics:** 3.98/4.00. Relevant coursework includes Stochastic Calculus in Finance, Numerical Methods in Finance, Machine Learning in Finance, Probability Models.
- **Awards:** Ontario Graduate Scholarship, George R. and Mary L. Wallace Award—totalling $18,000.

**Bachelor of Science in Mathematics** – *York University* May 2023

- **Academics:** 3.92/4.00.
- **Publications:** *Restricted Invertibility of Continuous Matrix Functions*, Operators & Matrices (DOI 10.7153/oam-2022-16-78).
- **Awards:** Secured nine competitive scholarships and awards, including two NSERC Undergraduate Student Research Awards and four York University Continuing Student Scholarships—totalling $29,000.

## EXPERIENCE

**Researcher** – *Risk and Insurance Studies Centre (RISC), York University* Sept. 2024 – Present

- Formulated share-based risk-contribution models via light and heavy tailed factor sums; characterized joint densities, moments, correlations, copulas, and tail/stochastic dependencies on the simplex; and computed that share-based marginal expected shortfall reduced tail-mean-squared-error by 20-35 %.

**Financial Mathematics TA** – *York University* Sept. 2023 – Present

- Led tutorials and workshops for several financial mathematics courses covering, amortization and sinking-fund calculations, arbitrage pricing theory, forwards & futures, binomial and trinomial option modeling, Black-Scholes formulation and risk-neutral valuation, and yield-curve bootstrapping.

**Mathematics Research Intern** – *York University* May 2021 – Sept. 2021

- Developed squared-convex distance metrics to address change-of-basis challenges in restricted invertibility of continuous matrix functions, collaborating with the Fields Undergraduate Summer Research Program and resulting in a peer-reviewed publication in the journal of *Operators & Matrice*s.

**Mathematics Research Intern** – *York University* May 2023 – Sept. 2023

- Designed high-precision MATLAB algorithms for asymptotic approximation of the lognormal distribution's Thorin measure—facilitating efficient geometric Brownian motion simulations—with ≤1% density error in single-digit millisecond evaluation; presented findings at the Summer NSERC Conference.

## PROJECTS

**Project Name: Hidden Markov Model Approximation of Stochastic-Volatility Models**

- Built R routines to approximate SV0/SVt via Gaussian and t-distribution HMMs on S&P 500 returns to achieve ~36,000-point AIC reduction versus GARCH.

## SKILLS & INTERESTS

- **Programming Languages:** Python, Bash, R, MATLAB.
- **Financial Modelling:** Black-Scholes, Monte Carlo, Stochastic Calculus, Finite-Difference Methods.
- **ML & Data Science:** Pandas, scikit-learn, NumPy, arch, hmmlearn, statsmodels, scipy, Docker, Git.
- **Interests:** Yoga, Music Composition, Films, History & Cultural Anthropology, Emerging Tech.