

Dorothy Zhang

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EDUCATION

Princeton University

Princeton, NJ

Master in Finance, Certificate in Machine Learning

Sept. 2021 – May 2023

- **Anticipated Coursework:** Asset Pricing, Statistical Analysis of Financial Data, Financial Econometrics, High Frequency Trading, Fixed Income Models and Applications, Quantitative Data Analysis in Finance

University of Toronto

Toronto, ON

BASc in Engineering Mathematics, Statistics and Finance, Minor in Artificial Intelligence

Sept. 2016 – May 2021

- **CGPA:** 3.92/4.00
- **Coursework:** Linear Algebra, Probability and Statistics, Multivariable Calculus, Differential Equations, Stochastic Processes, Financial Optimization Models, Computer Algorithms and Data Structures
- **Capstone Project:** Multiperiod Robo-Investment Wizard (used robust MVO, CVaR, PCA, LSTM, HMM)
- **Certificate:** C++ Programming for Financial Engineering with Distinction, Baruch College

PROFESSIONAL EXPERIENCE

Borealis AI

Waterloo, ON

Research Intern

May 2020 – Aug 2020

- Priced callable swaps using Least Squares Monte Carlo simulation and the Vasicek model.
- Used feed-forward neural networks to imitate Monte Carlo pricing, improving efficiency by orders of 10^4 .
- Wrote a technical report conducting literature reviews and detailing methodology and results.

Royal Bank of Canada

Toronto, ON

Data Scientist Intern

Sept 2019 – May 2020

- Identified anomalous behaviour for insider trading using unsupervised KNN, improving efficiency by 10^2 .
- Built credit risk models with logistic regression, random forest, and xgboost.
- Improved AUC of existing models by 10% by applying oversampling techniques to combat imbalanced data.

Bank of Montreal Capital Markets

Toronto, ON

Quantitative Analyst Intern

May 2019 – Aug 2019

- Wrote a predictive trading algorithm based on technical indicators.
- Generated labels using triple barriers and meta-labelling, created features including the Hurst exponent, RSI, and %K, and used combinatorial purged cross-validation to tune a random forest model.
- Identified optimal strategy that had 1.5 times higher Sharpe ratio than the S&P500 index.

RESEARCH EXPERIENCE

University of Toronto Rotman Finance

Toronto, ON

Research Associate

Sept 2020 – present

- Working with Prof. John C. Hull to generate synthetic market data with various deep generative models.
- Using stylized facts for financial time series to measure the performance of variational autoencoders, restricted Boltzmann machines, and generative adversarial networks.
- Hired as research associate upon completion of undergraduate thesis with team.

University of Toronto Engineering

Toronto, ON

Undergraduate Researcher

Sept 2019 – Sept 2020

- Worked with Prof. Chi-Guhn Lee to apply quantum annealing graph algorithms to portfolio management, identifying asset correlations through clustering.
- Compared the speed and quality of quantum and classical optimization algorithms for community detection.
- Created multiplex networks to capture the change throughout time of asset correlations in the S&P500.

SKILLS AND INTERESTS

Languages: Python, C++, MATLAB, R, C, SQL, VBA, AMPL, Git

Clubs: U of T Rotman Finance Lab (Lab Development Specialist), IEEE U of T (Finance Director), U of T Consulting Association (Finance Director), U of T Engineering Finance Association, Engineers Without Borders

Interests: Table Tennis (Bronze Medalist, Canada Winter Games), Chinese Bridge, Collecting/Trading Virtual Dragons