Tom Guo

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EDUCATION

University of Waterloo **Waterloo, ON**
Honors Mathematics Co-op Program *Sept 2021 – April 2026*

- Candidate for Bachelor of Mathematics, Mathematical Finance and Statistics Double Major.
- Courses: Measure Theory, Quantitative Risk Management, Stochastic Process, Statistical Forecasting, Linear Models.
- Involvement: Vice President of Statistics Club, Varsity Badminton Team Member

WORK EXPERIENCE

Onex Corporation **Toronto, ON**
Quantitative Risk Management Intern *May 2025 – Aug 2025*

- Monitored fund- and portfolio-level exposures using Bloomberg, analyzing VaR, beta, and sector concentration to guide investment decisions and strengthen portfolio risk management strategies.
- Conducted equity research with Bloomberg/BQuant, building automated screening tools, highly valued at the portfolio management level, to identify high-performing metrics across global equities and support systematic idea generation.
- Designed Python-based quantitative models to analyze relative value, historical trends, and cross-sectional market data, translating data-driven insights into actionable investment strategies.
- Implemented scenario analysis and stress-testing frameworks to quantify potential performance and assess portfolio resilience under macroeconomic shocks such as interest rate shifts, economic downturns, geopolitical risks.

NEXT Insurance **Palo Alto, CA**
Reserving Actuary *Jan 2025 – Apr 2025*

- Automated reserving workflows by integrating SQL queries, Python scripts, and Excel macros, streamlining monthly claims data processing (emergence curves, development triangles), improving efficiency and accuracy in loss ratio calculations and reserve forecasts.
- Developed Python/SQL benchmark tools for claim pulls and development factor interpolation, enhancing efficiency of pricing, risk assessment, and financial forecasting initiatives across actuarial, finance, and data science teams.

McMaster University **Hamilton, ON**
Machine Learning Research Intern *May 2023 – Aug 2024*

- Researched and implemented advanced machine learning methods to analyze hundreds of retinal images, emphasizing statistical pattern recognition and predictive modeling for disease diagnosis.
- Designed and deployed a Python/PyTorch pipeline that standardized image quality, increasing dataset reliability and improving diagnostic model accuracy by 30%.
- Collaborated with researchers and clinicians to validate model outputs, ensuring alignment between computational predictions and medical relevance.

PROJECTS

CNN Crypto Imaging | *Python, TensorFlow, NumPy, SciPy*

- Implementing convolutional neural network models to forecast cryptocurrency price trends, drawing on methodologies from Bryan Kelly's *Reimagining Price Trends* to apply cutting-edge academic research to financial markets.
- Classifying directional price movements on a rolling quarterly basis using historical OHLC return data, extracting predictive signals and evaluating their statistical validity.
- Developing and backtesting systematic trading strategies informed by model outputs, assessing profitability, risk-adjusted returns, and practical applicability in a real-market context.

Stock Forecasting | *Python, Quandl, pmdarima, Matplotlib, scikit-learn, pandas*

- Utilized stock price data to train and validate ARIMA/SARIMA models for time series analysis and financial forecasting.
- Automated model selection for both seasonal and non-seasonal data, achieving improved predictive accuracy and plotting results to visualize model performance against actual stock prices.

INTERESTS

- **Academic/Analytical**: investing, sports statistics, probability statistics, video game analytics, machine learning
- **Recreational**: poker, board games, strategy board and video games, badminton, volleyball, NBA, NHL