

# Tom Guo

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## SUMMARY OF QUALIFICATIONS

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- **Languages:** Python, R, SQL, TypeScript, JavaScript, C, HTML/CSS, Racket
- **Technical tools:** React, MongoDB, Excel, Node.js, PyTorch, MATLAB, NoSQL, Figma, Microsoft Power BI, LaTeX

## EDUCATION

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### University of Waterloo

*Honors Mathematics Co-op Program*

**Waterloo, ON**

*Sept 2021 – April 2026*

- Candidate for Bachelor of Mathematics, Mathematical Finance and Statistics Double Major, Computing Minor.
- VP of Statistics Club, Former Varsity Badminton Team Member, Member of Serve Volleyball Club

## PROJECTS

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### Option Price Modeling and Trading Strategies | Python, NumPy, SciPy, yfinance

- Developed and implemented a variety of option pricing models and trading algorithms, including statistical arbitrage, hedging, and portfolio diversification strategies to optimize returns.
- Utilized in-depth statistical analysis and understanding of hedging, smoothing, and arbitrage concepts to apply advanced insights into market behavior, enhancing risk management practices and trading decision-making.

### 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 with for both seasonal and non-seasonal data, achieving improved predictive accuracy and plotting results to visualize model performance against actual stock prices.
- Enhanced my ability to preprocess financial time series data, apply forecasting models, and evaluate predictive accuracy.

## WORK EXPERIENCE

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### Full-Stack Developer

*Audioworks Technologies*

**Mississauga, ON**

*Jan 2024 – April 2024*

- Spearheaded the development of a music-centric social media platform as a full-stack web and mobile developer, leveraging **Node.js**, **TypeScript**, and **React/CSS** technologies.
- Engineered robust backend logic for initializing API calls, specifically handling trending posts and artists, ensuring efficient data retrieval and processing.
- Revamped data storage efficiency by optimizing the **User** type in **MongoDB**, resulting in streamlined operations and improved database performance.
- Innovated the notification system by introducing notification stacks and implementing advanced pagination logic, improving user interaction and information management.

### Machine Learning Research Intern

*McMaster University*

**Hamilton, ON**

*May 2023 – August 2024*

- Conducted in-depth research on a cutting-edge project centered around utilizing machine learning algorithms for diagnosing eye diseases, involving comprehensive analysis of retinal images.
- Played a key role in conducting thorough data analyses, producing detailed summaries and reports crucial for supporting project development and decision-making processes.
- Designed and deployed a robust machine learning model using **Python**, **PyTorch**, and **Pandas**, aimed at standardizing retinal images and accurately assessing their quality, thus contributing significantly to the project's success.
- Collaborated closely with a multidisciplinary team of researchers and project staff, actively participating in refining the machine learning model's performance and aligning efforts with overarching research goals.

### Software Developer

*CYNORIX*

**Waterloo, ON**

*Sept 2022 - Dec 2022*

- Led full-stack mobile application development for an investment-focused social media project, driving the creation of features like a dynamic feed, seamless authentication process, and intuitive profile setup pages for a cross-platform mobile app. **React Native** and **TypeScript** were used for front-end development, and **Node.js** for back-end development.

## INTERESTS

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