

# Michael Matsuda

michael.matsuda@queensu.ca | Personal Website | LinkedIn | Github | (647)-703-0023

## Education

### Queen's University

Sep 2023 - May 2027

BASc, Applied Mathematics and Computer Engineering (3.6 cGPA)

Kingston, ON

**Awards:** Dean's Scholar (2023-2025), 1st Place - Queen's Engineering Competition 2023, Finalist - Ontario Engineering Competition 2024

## Professional Experience

### Undergraduate Research Assistant

May 2025 – Aug 2025

Queen's University

Kingston, ON

- Predicted material behavior of tailings using regression models in Python, identifying key performance indicators for experimental studies and achieving **60%+** accuracy on a diverse dataset
- Improved model accuracy by 55%+ by developing preprocessing pipelines (feature engineering, normalization, outlier detection) in **Python** (scikit-learn)
- Reduced experimental setup time by **90%+** and boosted reproducibility by engineering modular MATLAB automation scripts

### AI Engineer

May 2024 - May 2025

Outlier AI

Remote

- Boosted AI model accuracy by **18%** through optimizing 200+ prompts for real-world content generation and summarization
- Conducted 50+ rigorous A/B tests in collaboration with AI research teams, applying statistical analysis and experimental design to validate optimization and contribute to **1.5 standard deviations** improvement on key performance benchmarks
- Optimized AI interactions and user experiences by 10% through comprehensive performance analysis and iterative model refinement, implementing data-driven evaluation frameworks for sustained optimization

## Projects

### Options Pricing Dashboard | Python, Streamlit, Pandas, NumPy, scikit-learn

Aug 2025

- Built interactive derivatives pricing application using Python and Streamlit, implementing Black-Scholes and Binomial Tree models with real-time Greeks calculations for comprehensive options analysis
- Achieved **99.9%** pricing accuracy by validating binomial tree model against Black-Scholes analytical solutions across 72 diverse options contracts (MAPE <0.1%)
- Programmed automated Greeks calculation system using NumPy and scikit-learn, delivering precise risk metrics through Streamlit's interactive interface for professional options trading analysis

### Concrete Compressive Strength Machine Learning Model | Python, scikit-learn, Pandas, NumPy

Jul 2025

- Developed and compared multiple regression models to predict concrete compressive strength from raw material features, achieving robust predictions using gradient boosted trees, demonstrating an R-squared of 0.9342, RMSE of 4.1162, and a MAE of 2.8881
- Generated comparative visualizations including actual vs. predicted, residual, and Q-Q plots, and model error comparison bar chart to communicate findings with supervisors

## Leadership & Extracurriculars

### Co-Director of Investment Strategy

Mar 2025 – Present

Queen's University Business and Engineering

Kingston, ON

- Directing a **\$2M+** student-managed portfolio, leading a team of 30+ analysts to deliver a 30 % return over 6 months through consistent, data-driven investment strategies
- Oversee industry research and financial analysis, guide portfolio managers with structured training on valuation methods, and produce detailed investment recommendations

## Technical Skills

**Languages:** Python, C, C++, HTML, CSS, Java, Assembly, VHDL, MATLAB

**Tools & Frameworks:** Excel, pandas, NumPy, Matplotlib, scikit-learn, Streamlit

**Interests:** Bodybuilding & Fitness, Pure & Applied Mathematics