Tristan Ko

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Education

University of Waterloo — Waterloo, ON
Bachelor of Applied Science (BASc), Management Engineering (3.7 GPA) — Sep 2024 – Apr 2029

- Relevant Coursework: Data Structures & Algorithms, Probability & Statistics, Statistical Modeling, Optimization

Experience

Technical Analyst — Jan 2026 – Present
Ontario Ministry of Transportation — *Toronto, ON*

- Redesigning the Fraud Control System by performing software analysis and mapping workflows to identify bottlenecks and improve detection logic
- Building a centralized database to streamline Alternate Work Arrangement (AWA) tracking, moving the ministry from manual spreadsheets to an organized, accessible data repository
- Performing end-to-end testing and debugging for internal applications to ensure stability and validate fixes before deployment

Supply Chain Intern — May 2025 – Aug 2025
Iovate Health Sciences International Inc. — *Oakville, ON*

- Developed an **Excel** buying tool to calculate reorder timing and quantities across **800+** active SKUs, aligning purchases with Days of Supply targets to reduce manual planning and decision time by **90%+**
- Built a Python script with **Pandas** to automate **ERP** uploads, eliminating manual entry and data entry errors
- Designed a **Power BI** dashboard centralizing key supply metrics, cutting report searches and boosting visibility by **70%**
- Analyzed warehouse deviation data using **Excel** to identify systemic issues, reducing fulfillment errors by **35%**

Firmware Developer — Jan 2025 – Apr 2025
UW Orbital — *Waterloo, ON*

- Developed CubeSat firmware and GNC systems for the Canadian Satellite Design Challenge, integrating real-time control, telemetry, and hardware synchronization across **3+ subsystems** to enhance responsiveness and stability
- Programmed and optimized embedded C/C++ modules for sensor fusion, actuator control, and fault detection, implementing interrupt-driven scheduling to reduce command latency and test cycle times by **20%**
- Designed a watchdog system to detect and recover from communication faults, improving reliability and uptime by **30%**

Projects

Stock Market Classification Model | *Python, Pandas, NumPy, Scikit-learn, XGBoost, yfinance* GitHub

- Built classification models for SPY, QQQ, DJI & IWM to predict 1D, 5D and 20D price direction with ∼**53-57%** accuracy
- **Automated** an **ETL** pipeline using yfinance to ingest data, update features, and generate daily price predictions
- Validated model performance using time-based cross-validation and **F1-score** to ensure stability across market regimes

Code Ranch | *Next.js, React, TypeScript, Tailwind CSS, PostgreSQL* Live

- Developed a gamified syntax typing game for programmers using **Next.js** and **TypeScript** with multiple modes and stats
- Implemented **real-time multiplayer** duels using Supabase Realtime to sync code and live progress with **<100ms** latency
- Designed a **normalized PostgreSQL** schema and implemented Supabase **RPC** to manage relational data for social systems, online presence, and user metrics

Toronto Housing Price Predictor | *Python, Pandas, NumPy, Scikit-learn, XGBoost, PostgreSQL* GitHub

- Built a housing price forecasting pipeline on **5.78M+** rows from **StatsCan** and Valet API data for Toronto real estate
- Developed an **XGBoost** regression model using economic and housing features across multiple forecast horizons
- Structured separate models for 1M, 3M, 1Y, and 2Y horizons, achieving ∼**7-9% MAPE** at the 1-year horizon

Skills

Languages: Python, SQL, JavaScript/TypeScript, Java, R, C/C++
Libraries: Pandas, NumPy, Scikit-learn, XGBoost, Matplotlib, Plotly
Frameworks & Tools: FastAPI, PostgreSQL, React, Git, Power BI, VBA