Ryan Li

+1 604-690-0816 | rr2li@uwaterloo.ca | linkedin.com/in/ryan-li-0bab58363 | github.com/rli8145

Technical Skills

Languages: Python, C++, C, R, SQL, JavaScript, Racket
Libraries/Frameworks: NumPy, pandas, matplotlib, Plotly, scikit-learn, PyTorch, FastAPI, FFmpeg, OpenCV, React
Tools: Git, Linux (Bash/Zsh), VS Code, Jupyter, LaTeX, Excel

Experience

WatStreet Design Team Dec 2025 – Present
University of Waterloo

- Working on the 5-Minute Momentum Flag System as a core member of Waterloo's Quant Finance design team.
- Designing and backtesting an intraday momentum trading strategy in Python that identifies momentum continuation "flags" on **5-minute bars** using VWAP and EMA indicators.

UBC Timber Engineering Lab Assistant Jun 2024 – Aug 2024
University of British Columbia

- Supported PhD and postdoctoral researchers in managing and organizing experimental data. Recorded earthquake test measurements in Excel and standardized data for cross-platform analysis.
- Developed Python scripts in pandas and matplotlib to create clear, reproducible graphics visualizing results.

Projects

Weather-Conditioned Music Classification Engine Nov 2025 - Jan 2026

- Co-developed a full-stack web application mapping user-inputted songs to weather categories. Integrated Spotify, ReccoBeats, and OpenWeatherMap APIs and designed pipelines to preprocess training/testing and user data.
- Trained and compared multiple models in scikit-learn (Naive Bayes and Logistic Regression baselines, Random Forest, Gradient Boosting), achieving **0.76 weighted F1** with 5-fold stratified cross-validation.
- Optimized using **permutation feature importance** and **Spearman correlation analysis**. Diagmosed misclassifications through confusion matrices visualized in matplotlib.

Semantic- and Signal-Aware Audio Ad Insertion Engine - UofTHacks Winner Jan 2026

- Developed a full-stack B2B web application and API for natural insertion of human-like sponsor reads into podcasts and songs, integrating OpenAI API for contextual ad generation and ElevenLabs API for text-to-speech, voice cloning, and diarization across a Node.js + Python audio pipeline.
- **Reduced processing latency by 35%** by supplementing LLM-based loudness normalization, rhythm alignment, and audio stitching with FFmpeg/librosa/pydub pipelines. Designed a React.js frontend allowing for previewable and customizable ad placements. Won Best Use of ElevenLabs at UofTHacks 13, placing **1/100+** teams.

Steel Supply Chain Optimization System - MIT Energy and Climate Hack Semi-Finalist Nov 2025

- Built an interactive decision-support dashboard optimizing steel shipping routes from **50+ global manufacturers** to 26 major U.S. industrial hubs. Formulated CO2 emissions/cost/time trade-offs as a multi-objective optimization problem and applied heuristic weighted sums to find most efficent routes.
- Implemented a FastAPI layer linking optimization engines to a React.js frontend. Used pandas to clean and aggregate both dynamic and static datasets and created Plotly visualizations showing emissions, costs, and route trade-offs. Submitted to the 11th **MIT Energy and Climate Hackathon**, placing in the semifinals.

Awards & Scholarships

- **Waterloo National Mathematics Scholarship** ($15,000), Waterloo President's Scholarship of Distinction ($2,000)
- **Governor General's Academic Medal**, Churchill Scholar's Award ($1,250), BC Achievement Scholarship ($1,250)
- International Baccalaureate Diploma 44/45 (**top ∼0.5% worldwide**)
- Notable math contest awards: Canadian Mathematics Olympiad Qualifier, **Fermat Student Champion** (placed 1/19644), 3× American Invitational Mathematics Examination Qualifier

Education

University of Waterloo Waterloo, ON
Candidate for Bachelor of Honours Mathematics *Sep 2025 – Present*

- **95.2% CAV, 98.0% Faculty Average**
- All Advanced Coursework: MATH145, MATH147, CS145, MATH146, MATH148, CS146