Ryan Lin

ryanlin.dev | ryanlin5967@gmail.com | github.com/RyanLin5967 | linkedin.com/in/ryan-lin

Education

University of Waterloo — Waterloo, ON
Bachelor of Applied Science - BASc, Management Engineering — *Expected Graduation: 2031*

Experience

Software Developer, Programming Subteam — Sep. 2024 – Jun. 2025
FRC Team 7476, FIRST Robotics Canada — *Ottawa, ON*

- Developed **Java** control code for 3 robot subsystems using **WPILib**, reducing response latency by 33% through PID tuning; managed integration across a 6-person subteam via **Git/GitHub**, resolving 20+ merge conflicts over a 4 month build season.
- Debugged live control and sensor issues across 4 competitions; team advanced through Niagara, North Bay, and Ontario Provincials to qualify for the **FIRST World Championships**.

STEM Mentor & Tutor — Feb. 2025 – Present
Auxilium — *Ottawa, ON*

- Tutor students in computer science, improving average test scores by **15%** through structured study plans and concept breakdowns.

Projects

DeadWeight | *Next.js, Express.js, Puppeteer, Chrome Coverage API* — Hack Club Atlas Hackathon 2025

- Won **1st place out of 30 teams**. Built a web app that scans websites and quantifies wasted resources, identifying an average of **42% unused code** and **850 KB of removable bloat** per site, which is equivalent to 4.2 g CO_2 saved per 1,000 pageviews.
- Engineered a multi-page pipeline using **Puppeteer** and the **Chrome Coverage API**, scanning up to 8 pages in under 30s; auto-detects 15+ bloated libraries with specific replacement suggestions, reducing false positives by 64% vs. single-page analysis.

pic2recipe | *React Native, Expo, TypeScript, FastAPI, PostgreSQL + pgvector, Gemini API, Docker, GitHub Actions*

- Building a mobile app that identifies ingredients from food photos via the **Gemini API** and returns semantically matched recipes from a corpus of **2.2M recipes**, cutting query time by 97% (8s → 150ms) using **pgvector** ANN indexing.
- Reduced peak RAM from 6.4 GB to 50 MB (99% reduction) by implementing **numpy memmap** for the embedding pipeline; set up **Docker**, **GitHub Actions** CI/CD with **Pytest** and **Jest**, and batched inserts cutting DB load time from 4+ hours to 25 minutes.

ForgeFind | *JavaScript, FastAPI, PyTorch, OpenCV, Pytest, Docker, GitHub Actions, Hugging Face Spaces*

- Built a web app serving **1,000+ users** that detects image forgeries using a dual-model pipeline: a **PyTorch U-Net** (92% accuracy on CASIA v2.0) and **OpenCV SIFT**; cut inference time by 46% by running both models concurrently via **ThreadPoolExecutor**.
- Optimized **Docker** image by 62% (2.4 GB → 910 MB) via multi-stage builds, cutting cold-start time by 65%; automated deploys with **GitHub Actions**, reducing release cycles from 30+ min to <2-min.

Technical Skills

Languages: Python, Java, Rust, JavaScript, TypeScript, HTML/CSS, SQL, BASH
Frameworks & Libraries: React, React Native, Expo, Node.js, Express, FastAPI, PyTorch, OpenCV, SQLAlchemy, WPILib, Tailwind CSS, TanStack Query
Dev Tools: Git, GitHub Actions, Docker, Kubernetes, Pytest, Jest, Jupyter, Linux (Ubuntu), VS Code
Databases & Cloud: PostgreSQL, pgvector, MongoDB, Hugging Face Spaces

Honors & Awards

1st Place – Hack Club Atlas Hackathon 2025 – 1st of 30 teams for DeadWeight.

AIME Qualifier – 2025 AMC 12A (105/150, top 10%); 2026 AIME I: 4/15.

Euclid Contest – Distinction (2026) – Score 78/100, top 6.5%.

CSMC – Distinction (2025) – Score 36/60.

QSYS – 2025 – Selected (1 of 200) for the Institute for Quantum Computing program, University of Waterloo.

Hack Club Flavortown – Earned $1,200 CAD for shipping projects.