Jerry Liu

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Education

University of Waterloo — Waterloo, Ontario
BASc, Mechatronics Engineering — *2025 – 2030*

- **GPA:** 3.88/4.0
- **Awards:** Arthur F. Church Entrance Scholarship ($10,000) – Awarded to only 1 student in the Mechatronics cohort for outstanding academic and extracurricular achievement.

Skills

Programming Languages: Python, C++, Great Cow Basic, Processing, JavaScript, HTML, CSS, TypeScript
Technical Skills: SolidWorks, AutoCAD, PyTorch, Data preprocessing, Git/Github, Visual Studio Code, Microsoft Excel, Soldering / PCB Assembly, SQL, FastAPI, PostgreSQL, Next.js, React, Supabase, Gemini API

Relevant Experience

Co-Founder, Logistics Lead — Waterloo, Ontario
NeoDev League | Link — *May 2024 – June 2025*

- Co-founded a non-profit organizing large-scale engineering competitions for high school students
- Led logistics for a 10-hour hackathon-style event, managing scheduling, facilities, and technical resources
- Secured $10,000+ in sponsorships by contacting 500+ companies; reached 150 students across 10 schools

Research Assistant — Waterloo, Ontario
University of Waterloo — *August 2024 – June 2025*

- Researched and selected multi-modal sensors (accelerometers, microphones, vibration) for a CNC milling test rig, optimizing signal accuracy and sampling rates for time-series degradation analysis
- Developed Python data processing pipelines for data trials, converting raw sensor data to usable PyTorch files
- Collected and processed high-frequency time-series data to support remaining-useful-life (RUL) prediction research using transformer architectures (Autoformer)

Team Member — Waterloo, Ontario
First Robotics – 2702 Rebels — *October 2022 – October 2024*

- Modelled key robot subsystems in SolidWorks, including drivetrain and intake mechanisms, ensuring structural integrity and manufacturability under competition weight limits
- Prototyped and fabricated components using industry-standard manufacturing tools, translating design concepts into functional assemblies within a 3-month build cycle for the FIRST Robotics Challenge
- Demonstrated adaptability and teamwork under high-pressure competition environments, effectively communicating across subteams and supporting a positive, solution-oriented team culture that led to qualification for the World Championships

Projects

Canopi: Rental Matchmaker| Link — March 2026

- Developed a full-stack rental platform using Next.js, TypeScript, and Supabase, integrating a custom Node.js scraper to aggregate and query real-time housing data across Canada
- Implemented a custom compatibility algorithm to calculate user-to-property match scores and integrated the Gemini API to build an AI chat interface for inferring user preferences through natural language.

ArtistBlend: Automated Playlist Curator — Feb 2026

- Developed a full-stack web application using Next.js and TypeScript that leverages the Spotify Web API to dynamically filter and curate custom playlists from a user's library of liked songs
- Implemented OAuth 2.0 for secure user authentication and engineered logic to handle paginated API requests, enabling the efficient processing of thousands of tracks based on specific artist metadata

Neural Chess Engine | Link — Nov 2025

- Built and trained a 6-layer PyTorch neural network using a custom 12-channel (12×8×8) board encoding on millions of high-ELO games
- Implemented a minimax engine with alpha-beta pruning and deployed the model to Lichess via the lichess-bot API for real-time play

Firefighter Robot | Video — Feb 2025 – June 2025

- Programmed autonomous navigation and fire detection in GCBASIC, integrating wall sensors, phototransistors, and IR flame sensors for real-time control
- Designed and manufactured a custom PCB and 3D-printed chassis; assembled, soldered, and debugged the full system to validate end-to-end performance