

Lucas Jin

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Education

University of Waterloo, Waterloo, Ontario
BCS, Honours Computer Science with Co-op

Sept 2025 - Present
Cumulative Average: 94.8

- **Clubs & Involvement:** Wat.AI ML Engineer, UW Blueprint Project Developer, Hack the 6ix Business Executive

Experience

Software Engineer 📄
Shopify

Ottawa, Ontario
Incoming May 2025

- Selected for a competitive internship program at a high-scale ecommerce platform serving millions of merchants.

Software Developer 📄
STEM-E

Remote
Sept 2024 - July 2025

- Built a volunteer tracking interface for 1000+ volunteers using **React** with **Firestore** for data persistence, and Google Sheets API with **Node.js** for automated timesheet creation.
- Implemented batch spreadsheet creation with dynamic formulas, reducing manual setup by **3 hours** weekly.
- Followed an **agile methodology** with sprint-based development, user stories and DoD to manage project workflow.

Software Team Lead 📄
FRC 8729

Ottawa, Ontario
June 2023 - June 2025

- Led a **19-member** software team in developing autonomous and teleoperated robot systems in **Java**, mentoring junior developers on **Git** workflows, code review practices, and **object-oriented** design patterns.
- Developed command-based subsystems for swerve drive, elevator, and claw mechanisms, implementing PID controllers to improve mechanism response time by **3x**.
- Implemented **AprilTag** detection pipeline using PhotonVision for field-relative localization accurate to $\pm 10\text{cm}$.

Projects

Self Play RL Racing 📄

Independent

- Engineered custom **PPO** implementation and Gymnasium racing environment from scratch in **PyTorch**, achieving **7.5%** shorter racing lines than **Stable Baselines3** models through optimized reward structures.
- Designed automated **curriculum learning** system by maintaining opponent pools, producing emergent strategic behaviors including optimal racing lines with **100%** completion across **50+** procedurally generated circuits.
- Optimized **raycasting** system through **NumPy vectorization**, reducing computation time by **10x**.

Pixel Pets Plugin 📄

Obsidian

- Developed an open-source productivity plugin for Obsidian in **TypeScript** with **2000+** downloads.
- Architected an **object-oriented** animation system with inheritance-based pet classes, dynamic CSS keyframe generation, event-driven state management, and **ESBuild** bundling.
- Built a **RAG-powered** chatbot using **OpenAI embeddings** with custom IndexedDB vector storage, cosine similarity search, chunked document indexing, and LLM-based query reformulation for multi-turn conversations.
- Implemented automated deployment pipeline with **GitHub Actions** for release versioning.

Lips Lips Revolution 📄

Hack the North 11

- Created a real-time lip-sync game in **Next.js** with **50+ users**, implementing Canvas API frame extraction with client-side buffering and **OpenAI** embedding-based semantic similarity scoring.
- Reduced latency from **30** to **7** seconds for video-to-speech inference by reverse-engineering a third-party API and implementing parallel **WebSocket** connections with asynchronous frame distribution.
- Integrated **MongoDB** leaderboard with QR code authentication via HTN's GraphQL API for real-time scoring.

Technical Skills

Languages: Javascript/Typescript, Python, C, SQL

Frameworks/Services: React.js, Next.js, Node.js, Express, PostgreSQL, Firebase, NumPy, PyTorch

Tools/Skills: Github, Git, VSCode, L^AT_EX, Docker, Agile Development, Linux

Awards

- René Descartes National Scholarship and President's Scholarship of Distinction - \$22k
- Overall Track 1st Place - \$1000 (*Hack404 - July 2025*) 📄
- Best Use of MongoDB Atlas & Best Use of Symphonic Labs API (*Hack the North 11 - Sept 2024*) 📄
- (Solo) Best Home Track Project (*Lazy Hacks - Dec 2024*) 📄