

Lucas Jin

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Education

University of Waterloo, Waterloo, Ontario Sept 2025 - Present
BCS, Honours Computer Science with Co-op

- Clubs: Wat.AI Machine Learning Engineer, CS Club Web Committee

Projects

Pixel Pets Plugin *Obsidian*

- Developed a custom Obsidian plugin using **TypeScript** that spawns animated pixel pets with **1900+** downloads.
- Engineered **class-based** animation system with custom **CSS properties**, DOM manipulation, and **ESBuild** bundling for sprite sheet compatibility.
- Created a lightweight **vector storage** and **retrieval system** with embedding indexing and similarity search over **IndexedDB** to support a **RAG** chatbot system.
- Implemented a **deployment pipeline** with Github Actions to automate new update releases.

Lips Lips Revolution *Hack the North 11*

- Created a lip syncing game with over **50 users**, using semantic similarity for scoring and maintaining a continuous connection with client side buffering and FPS throttling.
- Reduced latency from **30 seconds** to **7 seconds** by **reverse-engineering** the Mamo API with parallel websockets.
- Utilized **Next.js** for rapid full stack development and QR codes and **MongoDB** for user authentication/tracking.

CNN-Based Chess Bot *ChessHacks*

- Designed residual CNN with SE attention blocks, scaling from baseline to 10-layer architecture with 256 channels and dropout regularization, reducing validation loss by **50%** while achieving **48.9%** move prediction accuracy.
- Engineered chess parser for **6M+ positions**, employing **adaptive sampling** to avoid overfitting early-game states and flip augmentation to double dataset size while preserving game-level training/validation splits.
- Orchestrated **end-to-end ML** pipeline from Modal cloud training to Hugging Face deployment.

Drama Production Manager *OCDSB*

- Built a **PERN** stack web application to automate attendance tracking and scheduling for drama productions, implementing **RESTful** routes following the **MVC** design pattern.
- Led the end-to-end development of the application, including requirements analysis, system architecture design, and production deployment.
- Utilized **Docker** for containerization deployment and **Agile Development** for more efficient collaboration.

Experience

Programming Intern *Remote*

STEM-E *Sept 2024 - July 2025*

- Developed a full-stack application using a **FERN** stack to automate onboarding for 1000+ volunteers.
- Automated timesheet creation for each volunteer via Sheets API, saving **5 hours** of manual setup per week.
- Followed an **agile methodology** with user stories and **DoD** criteria to manage a quality project workflow.

Software Team Lead *Ottawa, Ontario*

FRC Team 8729 *June 2023 - June 2025*

- Led and mentored a **19-member** software team, implementing a command-based robot architecture in Java using **OOP** and design patterns while maintaining version control best practices.
- Integrated **computer vision** pipelines and **PID tuning** in hardware systems, improving response speed by **3x**.

Technical Skills

Languages: Javascript/TypeScript, Python, SQL

Frameworks/Services: React.js, Next.js, Node.js, Express, Firebase, MongoDB, PostgreSQL, 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*) 🔗
- (Solo) Best Pitch (*Terrahacks 2025 - Aug 2025*) 🔗
- Best Use of MongoDB Atlas (*Hack the North 11 - Sept 2024*) 🔗
- (Solo) Best Home Track Project (*Lazy Hacks - Dec 2024*) 🔗