

# Daniel Zhao

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## EDUCATION

### University of Waterloo

Honours Bachelor of Computer Science (Co-op)

GPA: 4.0/4.0

Sep. 2024 – Apr. 2029

## TECHNICAL SKILLS

**Languages:** C, C++, C#, Python, Java, Ruby, HTML, CSS, JavaScript, TypeScript, SQL, Racket

**Technologies:** React, React Native, Rails, Next.js, Express.js, Node.js, Flask, Django, Tailwind CSS, Unity

**Tools:** Git, Bash, Linux, Docker, Postman, Figma, MongoDB, PostgreSQL, Firebase, GCP, Vercel, Ollama

## EXPERIENCE

### Cineplex Digital Media

Sep. 2025 – Dec. 2025

Software Developer

Waterloo, ON

- Developed a media analysis pipeline with **Python**, integrating **Gemini API** and **SAM 3** to automate content tagging, saving **200+ hours** of manual annotation work across hundreds of video and image files.
- Implemented a robust server-upload service in **C#** and resolved key data handling issues for a user engagement analytics system deployed to over **70** digital signage units across 12 malls.
- Built an interactive analytics dashboard with **React** and **Flask**, creating **RESTful API** endpoints to display relationships between on-screen ads and Kinect-tracked physical movements in shopping centers.
- Created a real-time people counting system in **Python** using **2D LiDAR**, integrating clustering and a **Random Forest classifier** to detect and track individuals in open spaces.

### Waterloo Aerial Robotics Group

May. 2025 – Aug. 2025

Autonomy Software Developer

Waterloo, ON

- Developed an autonomous landing module in **Python**, implementing configurable target selection algorithms that enable drones to identify and land on targets with under **2cm** precision.
- Implemented real-time landing pad detection using **YOLOv8** and **OpenCV**, achieving **95%** detection reliability.
- Created unit and integration tests using **Pytest**, reinforcing maintainability and development best practices.

### Waterloo Reality Labs

Sep. 2024 – Apr. 2025

Software Developer

Waterloo, ON

- Designed a context-aware prompting interface in **Unity** using **C#** and the **Meta XR SDK** to capture user gaze, proximity, and object interactions, in order to drive personalized feedback in a VR environment.
- Built a unified integration layer across **4 LLM backends**, allowing seamless switching between cloud-based APIs and local models run via **Ollama** for flexible model evaluation.
- Integrated voice interaction with LLMs by implementing **OpenAI Whisper**, reducing user input time by **5x**.

## PROJECTS

### Q Notation — AI LaTeX Transcription ↗

*React, Ruby on Rails, Gemini API, Docker, GCP*

- Built a **React** app that converts handwritten math PDFs and images into LaTeX using **Gemini API**.
- Implemented LaTeX compilation with a **Ruby on Rails** backend, deployed on **Google Cloud Platform**.

### Q ChordCraft — CRUD Music Sheet ↗

*React, Node.js, Express.js, MongoDB, ABCJS*

- Developed a **React** app with an interactive piano interface that renders sheet music in real time using **ABCJS**.
- Built a **Node.js** backend with **MongoDB** for user authentication and persistent compositions serving **50+** users.

### Q Terra — AR World Building ↗

*C#, Unity, AR Foundation, ARCore*

- Created an **AR mobile app** that allows users to place 3D blocks in physical spaces using **Unity** and **ARCore**.
- Implemented raycasting and touch controls improving object placement precision by **70%**.

### Q MotionWave — Vision AI Harmonization ↗

*Next.js, TypeScript, MediaPipe, Web Audio API*

- Developed a gesture-controlled music app with **Next.js**, using **MediaPipe** for real-time hand tracking.
- Integrated a **WebAssembly** neural network for SATB harmony generation, maintaining **60FPS** UI performance.