

# Daniel Zhao

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## EDUCATION

### University of Waterloo

Honours Bachelor of Computer Science (Co-op)

GPA: 4.0/4.0

Sep 2024 – Present

## 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, Kubernetes, Figma, Postman, MongoDB, PostgreSQL, Firebase, GCP, Vercel

## EXPERIENCE

### Cineplex Digital Media

Sep 2025 – Dec 2025

Software Developer

Waterloo, ON

- Built an interactive analytics dashboard with **React**, creating **RESTful API** endpoints using **Flask** and **PostgreSQL** to correlate **1,000+** daily Kinect-tracked physical movements with on-screen ads.
- Created a real-time people counting platform using **Next.js** and **Socket.IO**, utilizing **Python** and a **Random Forest** classifier to track individuals from 2D LiDAR data with under **100ms** latency.
- 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 **SQLite** data handling issues for a user analytics system deployed to over **70** digital signage units across **12** malls.

### 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

### 🔗 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**.

### 🔗 ChordCraft – CRUD Music Notes 🔗

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.

### 🔗 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%**.

### 🔗 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.