

RICHARD ZHU

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EDUCATION

University of Waterloo

Sep 2022 - Apr 2027

Bachelor of Computer Science (AI Specialization) and Statistics, **3.93 GPA**

EXPERIENCE

Undergraduate Research Assistant

Ongoing

University of Waterloo, Department of Electrical and Computer Engineering

Waterloo, ON

- Conducted research on **ML** applications in image compression and super-resolution under Prof. Zhou Wang.
- Used **PyTorch** to evaluate and benchmark state-of-the-art machine learning models on medical imaging datasets.

Software Engineering Intern

Sep 2024 - Dec 2024, Jan 2024 - May 2024

Jitto

Toronto, ON

- Developed a pipeline using **AWS Lambda** that integrated string matching, **vector embeddings**, **RAG**, and **LLMs** to update items in a database from supplier price list information, reducing weekly manual effort by **90%**.
- Refactored **AWS DynamoDB** schema using **Python**, resulting in a **99% reduction** in monthly AWS costs while ensuring scalability through a transition from relational to non-relational structure.
- Built admin portal backend using **AWS Lambda** and **AWS CloudFormation**, leading to a company-wide productivity increase of **60%** by automating order management and document generation.
- Wrote a **Selenium**-based Google Maps and Yellow Pages scraper to improve customer outreach, surpassing a previous scraper's coverage by **40%**, reducing its runtime by **50%** and data extraction failures by **30%**.
- Built an internal component library with RadixUI, reducing **React** bundle size by **90%** and load times by **45%**.

Software Developer Intern

May 2023 - Sep 2023

Gelenk Networks Inc.

Markham, ON

- Led the development of an AI Travel Planner, automatically generating and deploying itineraries as distinct webpages with a UUID-based URL, resulting in a **20% improvement** in SEO engagement.
- Developed multiple full-stack tools with **Vue** and **Node**, constructing RESTful APIs, integrating **CouchDB** for greater flexibility in data management, and utilizing Vuetify to create user-friendly frontends.
- Built an interactive chat application using **React**, **Node**, and **Socket.IO**, integrating with existing web interface to facilitate real-time communication and enhance user engagement.

PROJECTS

Interactive AI 2048 Player

- Built AI models using **PyTorch** to play the game 2048, experimenting with algorithms like **DQN** and **NEAT**.
- Deployed to a web application using **Flask** and **React**, allowing users to watch the AI play in real time.
- Implemented real-time communication using **WebSockets** to synchronize gameplay updates with the frontend.

Hackathons

- ConUHacks - **Overall 2nd** - Trained a **CNN** model using **TensorFlow** for emotion and attentiveness detection, integrating it with virtual call platforms to provide actionable insights in a video call.
- MetHacks - **Cohere Challenge 1st**, **Overall 2nd** - Used **OCR** to extract text from images, used Cohere API to implement text-to-speech and fine-tuned advanced features like translation and summarization.
- uOttHack - **Noibu Challenge 1st** - Scraped Amazon reviews and used **NLP** to display keywords and ratings.

SKILLS

Languages	Python, TypeScript, JavaScript, C++, Kotlin, C#, C, SQL, R, HTML, CSS, Go, Java, Bash
Tools	AWS, Google Cloud, Microsoft Azure, MongoDB, PostgreSQL, CouchDB, MySQL, Vercel, Linux, Git
Libraries	React, Flask, Next.js, Node, Vue, Django, Selenium, Redux, TensorFlow, PyTorch, Pandas, Matplotlib
Concepts	Distributed Systems, OOP, Data Structures, Algorithms, Machine Learning, Reinforcement Learning