

# Zhehai Zhang

☎ (+1) 226-280-8525 | ✉ z2252zha@uwaterloo.ca | 🏠 www.zhehaizhang.com | 🌐 fairnightzz | 🌐 zhehai

## Education

### University of Waterloo (4th Year)

COMPUTER SCIENCE WITH AI AND DIGITAL HARDWARE SPECIALIZATION

Waterloo, Ontario

Sep. 2020 - May. 2025

- 4.0 GPA (90.88%) • René Descartes National Math Scholarship (\$25,000 to less than 10 students)

## Skills

**Languages** Python, C++, C#, C, JavaScript/TypeScript, Go, Java/Kotlin, HTML/CSS, SQL, Bash, Rust, Swift

**Tools** Tensorflow, NumPy, Pandas, GCP/AWS/Azure, Node, GraphQL, React, Flask, Docker, Linux Administration

**Courses** ML(Python), AI and RL (Python), Computer Networks (Python), Real Time (C), Digital Hardware Systems (Verilog), OS (C++)

## Work Experience

### University of Waterloo and Vector Institute

Toronto, Ontario

Jan. 2024 - Present

#### UNDERGRADUATE RESEARCH ASSISTANT UNDER PROFESSOR PASCAL POUPART

- Leveraging **DQN** reinforcement learning algorithms to simulate contextual bandits with **Python** and **Numpy**
- Developed a **universal embedding** encoder in **JAX** using next sample distribution predictions for foundational models

### LinkedIn

Sunnyvale, California

May. 2023 - Sep. 2023

#### SOFTWARE ENGINEER INTERN

- Developed custom **LinkedIn Recruiter** tooling which replaced **90%** of customer facing legacy metric and insight charts
- Simplified chart creation process by **80%** for **100+** engineers by creating reusable components in **JavaScript**
- Implemented chart tooling to enforce universal accessibility and i18n guidelines for **200,000+** customers
- Bundled Ember addon using **Webpack** to automate faster chart integrations on data visualization products

### BitGo

Palo Alto, California

Jan. 2023 - May. 2023

#### SOFTWARE ENGINEER INTERN

- Built core features in Bitgo's Web3 Wallet over Android, iOS using **React Native** and **TypeScript**
- Deployed checklist and watchlist features to production which directly resulted in **10K daily active mobile users**
- Identified and fixed dashboard logic issues on Bitgo's **main product**, unblocking many of Bitgo's important clients

### Splunk

Toronto, Ontario

May. 2022 - Aug. 2022

#### SOFTWARE ENGINEER IOT INTERN

- Worked on a IoT monitoring device over embedded firmware (**Python**), backend (**GraphQL Flask**) and iOS (**Swift**)
- Deployed a status lightring feature to prod which allowed customers to control and determine the state of the device
- Discovered and fixed **security vulnerabilities** with the backend, **improved 20% user interface latency** by threading end-point calls and refactoring code in preparation for Public Beta

### D2L Corporation

Toronto, Ontario

Sep. 2021 - Dec. 2021

#### SOFTWARE DEVELOPER INTERN

- Refactored workflow engine using **Lambda** functions and owned scheduling workflow actions using **Node.js**
- Wrote tools in **JS** to replicate AWS services such as **SQS** and **DynamoDB TTL** locally which reduced development time

## Projects

### Real-Time Operating System for Train Control

C, C++, ARM, RASPBERRY PI

Jan. 2024

- Designed and implemented a threaded real-time kernel for train control, using low-level services and assembly language
- Engineered interfaces in C/C++ to enable message passing, context switching, dynamic memory allocation and scheduling
- Completed a project that manipulates multiple trains using cooperative pathfinding and collision avoidance

### VRIoT - Virtual Reality Manager for IoT Devices

MIT Reality Hacks Winner

MICROPYTHON, C#, RUST

Jan. 2023

- Built VR application in **Unity** to interface with ESP32 running MicroPython in real time, winning **two category prizes**
- Implemented **Rust** backend to proxy **bidirectional traffic** between IoT devices and VR headsets

### InDaBin - Smart Disposal Tracker

Ignition Hacks 2022 Winner

GO, RUST, FLUTTER, RASPBERRY PI, POSTGRESQL, DOCKER

Aug. 2022

- Engineered a hardware garbage sorter with image detection using **OpenCV** and **Go** Backend, which won **First Place**