

OZAYR RAAZI

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EDUCATION

University of Waterloo

Honours Computer Engineering

Sept. 2022 – April 2027

Waterloo, ON

SKILLS

Languages: C, C++, Python, ARMv7 Assembly, VHDL, Bash

PCB/Embedded: Cadence OrCAD X, KiCAD, STM32, Arduino, DediProg, Fusion Digital Power, PowIRCenter

Protocols: I2C, PMBus, Segment-Routing, MPLS, L2VPN

Other: Linux, Windows, macOS, Git, GDB/LLDB, Logisim, Quartus Prime, OpenOCD

EXPERIENCE

Untether AI

Firmware Engineer (Co-op)

May 2024 – Aug. 2024

Toronto, ON

- Developed firmware for an **AI Accelerator Card** (PCIe Gen5 x16), enabling key features such as power sequencing, temperature sensing, power monitoring, and fan control, using the **I2C** and **PMBus** protocols
- Brought-up first batch of cards by writing firmware, conducting hardware checks, flashing PMICs, power sequencers and ASICs, and debugging issues, achieving fully booted cards in **under 3 days**
- Researched and proposed switching a voltage rail from single-phase to dual-phase, potentially reducing power loss by **46%** and increasing efficiency by **10%**

Ciena

Embedded Software Engineer (Co-op)

Sept. 2023 – Dec. 2023

Ottawa, ON

- Accelerated iteration and testing of a Segment-Routing module by developing an **event-based** client for simple user interfacing and by configuring CMAKE to enable independent compilation
- Improved error-detection of a TCP-transport library by creating **C++ GoogleTest** unit tests, allowing for send and receive functionalities to be tested concurrently using **multi-threading**
- Increased thread safety of **C code** and protected internal data structures by converting APIs to signal-based

Dell Technologies

Software Engineer (Co-op)

Jan. 2023 – April 2023

Ottawa, ON

- Enhanced security of a PCIe card by implementing Trusted Boot features such as allowing binary signing without access to private RSA keys
- Improved testing capabilities by increasing the number of automated tests running in **Docker** containers, creating new **Robot Framework** software robots
- Boosted software security by enabling fast discovery of potential vulnerabilities by creating **Jenkins** CI pipelines to run code analysis using **Coverity**

Waterloo Rocketry

Software/Electrical Member → Software Lead

Sept. 2022 – Sept. 2024

Waterloo, ON

- Contributed to a team of 60+ students for the annual development and launch of a rocket to 30,000 ft
- Spearheaded development on Omnibus, a **Python** data collection and visualisation system
- Managed the software subsystem by onboarding new members, breaking down projects into individual issues, creating and maintaining timelines, supporting developers, and reporting progress to team leads

PROJECTS

8-Bit CPU | Logisim, Assembly, Python

Nov. 2023 – Dec. 2023

- Designed and simulated a simple CPU with an 8-bit data bus, 4 registers, a 7-function **ALU**, and a 256-byte **RAM** block, built from the ground up with **logic gates** following a Udemy course
- Created a custom **instruction set** with 34 instructions, implemented a 6-cycle fetch and execute process in the CPU's control section, and created an assembly language based on the instruction set
- Wrote a Python script to convert **assembly code** into hexadecimal to load and run on the CPU, successfully calculating and storing the result of 5×5 in 16 instructions