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## SKILLS

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**LANGUAGES:** Bash, C, C#, C++, Java, JavaScript, Perl, Python, RISC-V, Rust, Verilog/SystemVerilog, VHDL

**FRAMEWORKS:** cocotb, CppUTest, Litex, oneAPI, OpenCL, SYCL

**TOOLS:** AWS, Azure, CMake, GDB, Git, Linux, Logic Analyzer, Perforce, Quartus, Soldering, Vivado

## EMPLOYMENT

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### Intel

*IP Design Intern, External Memory Interfaces*

Sept. 2021 - Current  
Toronto, Canada

- Features for Platform Designer (Quartus) and next-gen memory

### University of Waterloo

*Research Assistant (part-time), Configurable Arch. Lab*

May 2021 - Aug. 2021  
Waterloo, Canada

- Investigating area and performance characteristics of Efinix FPGA architecture
- Python and Tcl scripting, OpenCV to extract metrics not available in tool reporting
- Paper planned for FCCM 2022

### Intel

*FPGA Software Engineering Intern, High Level Design*

Jan. 2021 - May 2021  
Toronto, Canada

- Improving performance, usability and code quality of OpenCL and SYCL products for Intel FPGAs
- Implemented USM host allocation use-after-free detection and warning, reset FPGA kernels on host program exit
- Ground-up rewrite of build system for FPGA runtime, using modern CMake, deleting 2.5k lines of Make code
- Addressed release gating issues: error in compiler, installation script shell compatibility and functional errors in SYCL designs
- Used GDB, OpenCL Intercept Layer and VS Debugger; gained knowledge about GCC, LD, MSVC and Quartus
- Group-wide triager for regression test failures in HLD products

### Microsoft

*Explore Intern, OneDrive + SharePoint*

May 2020 - Aug. 2020  
Redmond, WA

- PM and SWE in feature development lifecycle of datetime formatting and boolean rendering features in Microsoft Lists
- Collaborated cross-team to create design (Figma) and PM specs, iterating through user feedback, design critiques, spec reviews
- Implemented new web components using React, Fluent UI and the JavaScript Date API
- Wrote library functions to deal with localization, internationalization and timezone conversions

### University of Waterloo

*Research Assistant (part-time), Intelligent Connectivity Lab*

Jan. 2020 - Apr. 2020  
Waterloo, Canada

- Developed platform for distributed RFID readers, using Raspberry Pi running Windows 10 IoT and .NET framework
- Used Octane SDK for Impinj RAIN RFID reader and Azure services to build batch data pipeline
- Webapp GUI using d3.js frontend and Azure VM running nginx, gunicorn, flask, cronjobs for batch processing

## PROJECTS

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### 6502 📄

Aug. 2021 - Current

- Implementation of MOS 6502-compatible processor using modern digital design tools (SystemVerilog, cocotb testbench)

### Synth 📄

Apr. 2021

- All-digital monophonic square wave synthesizer, using a single clock domain
- 115 200-baud UART TX/RX

### Pong 📄

Feb. 2021 - Mar. 2021

- Pure hardware implementation of Pong on an FPGA board
- 480x640 1-bit VGA controller, 7-segment scoreboard, ALTPLL

## EDUCATION

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### University of Waterloo

Candidate for BAsC Computer Engineering

Sept. 2018 - Apr. 2023

- Dean's Honours List x2
- President's Research Award x2
- Mentor in Tech+, ECE Society; UW Engineering Ambassador
- ECE 327 Hall of Fame (systolic array matrix multiplication on FPGA)