

# Guhan Iyer

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## SKILLS

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**Languages:** C, C++, Rust, Python, Java, Bash, MATLAB, Assembly (ARM, RISC-V)

**Libraries & Tools:** Valgrind, CMake, Make, GDB, Android Tools (ADB, Fastboot)

**Technologies & Protocols:** Unix (Linux, QNX), FreeRTOS, ARM (Cortex-M, STM32, TI), I2C, UART, TCP/IP, CAN

## EXPERIENCE

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### Firmware Engineering Co-op (Fall 2025)

Sept. 2025 – Dec. 2025

*Nokia*

*Ottawa, ON*

- Developing real-time **digital signal processing firmware** and **control systems** for fiber-optic ASICs.

### Software Development Co-op

Jan. 2025 – Apr. 2025

*Ford Motor Company*

*Waterloo, ON*

- Developed scalable infrastructure to validate **embedded software services** across in-vehicle systems.
- Created a modular library in Python to **simplify and scale testing** for a universal security component.
- Migrated **30+** legacy tests to utilize the new library, standardizing test structure for future development.

### Systems Software Engineering Co-op

May 2024 – Aug. 2024

*NCR Voyix*

*Waterloo, ON*

- Utilized **Python** to integrate an internal query utility into a newly-initiated patch management project.
- Individually developed a service to validate device compliance data for use **organization-wide**.
- Developed a patch verification tool to serve over **10,000** devices across **10+** platforms.

## PROJECTS

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### osh | C, Linux

- Created a rudimentary system shell in C for **Linux** systems, with support for various commands.
- Utilized **Linux system calls** to implement piping ( | ), redirection (<, >) and custom shell built-ins.
- Improved responsiveness by adding a persistent command history and parallel execution.

### wintop | C, MSVC, Windows API

- Developed a Windows **thread and process inspector** in C with detailed scheduling information.
- Leveraged **Win32 functions** to create process snapshots, retrieve active threads and their metadata.
- Designed a terminal interface to provide **real-time diagnostics**, emulating **top** and **ps** in \*nix systems.

### Tiny-TPU | Verilog, Python, Raspberry Pi

- Collaborated in a group of 4 to create an **IP core** for a simplified **tensor processing unit (TPU)**.
- Implemented a **weight FIFO** and a **custom module** to interface with Raspberry Pi I/O with **Verilog**.
- Performed sub-block evaluation and system integration, using **Python** and **CocoTB** to verify designs.

## EDUCATION

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### University of Waterloo

Expected Graduation: April 2028

*Candidate for Bachelor of Applied Science in Computer Engineering*

- **Relevant Coursework:** Systems Programming & Concurrency (C), Digital Computers (RISC-V Assembly), Embedded Microprocessor Systems (Verilog, C), Integrated Circuit Design & Tapeout (Verilog)