Guhan Iyer

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Skills

Languages: C, C++, Python, Java, Bash, MATLAB, Assembly (x86, RISC-V)
Libraries & Tools: Valgrind, CMake, Make, GDB, Android Tools (ADB, Fastboot)
Technologies & Protocols: Unix (Linux, QNX), FreeRTOS, ARM (STM32, TI), TCP/IP, CAN

Experience

Software Development Intern Jan. 2025 – Apr. 2025
Ford Motor Company *Waterloo, ON*

- Developed scalable infrastructure in **Python** to validate 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.
- Rewrote a deprecated utility in **Python**, using the **Slash** framework to integrate with existing infrastructure.
- Executed sanity tests and managed deployments with **Jenkins**, ensuring **98%** functionality in **3** ECUs.

Systems Software Engineering Intern 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+** device platforms.

Projects

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.

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 with **threads**.

Maze Solving Firefighter Robot | *Altium, BASIC*

- Designed and constructed a robot to solve complex mazes where it must locate and extinguish a lit candle.

Student Design Teams

Firmware Developer July 2023 – Present
UW Orbital — University of Waterloo Satellite Design Team

- Created a thermal monitoring system and essential functions for command & data handling in **C**.
- Developed an **I2C** driver to manage readings from temperature sensors and create telemetry data.
- Leveraged **FreeRTOS** to create a hysteresis event handler, effectively managing over-temperature states.
- Integrated logging and stack overflow handling in **all** interrupt services, improving system resiliency.

Education

University of Waterloo Sept. 2023 – Present
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)