Guhan Iyer

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EDUCATION

University of Waterloo	Expected Graduation: **April 2028**
Bachelor of Applied Science in Computer Engineering	*Waterloo, Ontario*

- GPA: **3.3/4.0**
- Relevant Coursework: Real-Time Operating Systems, Algorithms & Data Structures, Digital Computers

PROFESSIONAL EXPERIENCE

Nokia	Sept. 2025 – Dec. 2025
Firmware Engineering Intern	*Ottawa, Ontario*

- Built **C++** device initialization service for a new optical transceiver ASIC, optimizing boot sequence control across hardware modules.
- Eliminated packet corruption in a critical **C++** message-passing utility with 128-bit atomic operations, **resolving race conditions** and ensuring data integrity.
- Resolved **10+** major defects in the ASIC SDK by analyzing firmware trace logs, reducing daily crash frequency to **zero**.

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

- Created a modular library in **Python** to simplify and scale testing for an in-vehicle security daemon, reducing reliance on external tooling.
- Refactored a deprecated generator utility to integrate with new **Python** test infrastructure, enabling and enhancing new testing workflows for **100+ engineers**.
- Reworked **30+** legacy tests to utilize the new library, standardizing test structure for **all downstream developers**.

NCR Voyix	May 2024 – Aug. 2024
Software Engineering Intern	*Waterloo, Ontario*

- Integrated an internal **Python** query utility into a new patch management system, enabling automatic device data retrieval.
- Instrumented a service to validate per-device network compliance data for use **organization-wide**.
- Developed a cross-platform patch verification tool serving **10,000+** devices across **10+** platforms.

PROJECTS

wintop | *C, MSVC, Windows API*

- Developed a CLI-based **thread and process inspector** in **C** for **Windows** platforms, exposing detailed per-thread scheduling and runtime information.
- Enumerated processes and threads with **Win32 APIs**, retrieving priority, state, and timing metadata with low overhead.
- Designed a terminal interface to provide **real-time** diagnostic information, emulating *top* and *ps*.

osh: The Open Shell | *C, Linux*

- Created a lightweight **Linux** shell in C supporting built-ins and external programs.
- Implemented pipelines and I/O redirection using **Linux** syscalls and **POSIX** file descriptor semantics.
- Added persistent command history using **readline** to improve interactive usability.

TECHNICAL SKILLS

Languages: C, C++, Python, Rust, Java, Bash, Assembly (ARM, RISC-V)
Libraries & Tools: Valgrind, GDB, CMake, Make, Android Tools (adb, Fastboot), Docker
Technologies & Protocols: Linux, QNX, FreeRTOS, CAN, TCP/IP, UART, I2C, gRPC, protobuf