

# Guhan Iyer

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## EDUCATION

<b>University of Waterloo</b> <i>Bachelor of Applied Science in Computer Engineering</i>	<b>Expected: Apr. 2027</b> Waterloo, Ontario
<ul style="list-style-type: none"><li>Relevant Coursework: Real-Time Operating Systems, Algorithms &amp; Data Structures, Computer Architecture, Digital Hardware Systems</li></ul>	

## PROFESSIONAL EXPERIENCE

<b>Nokia</b> <i>Firmware Engineering Intern</i>	Sept. 2025 – Dec. 2025 Ottawa, Ontario
<ul style="list-style-type: none"><li>Built a C++17 abstraction layer to translate ASIC configuration tuples into scalable SDK representations, supporting critical initialization and boot utilities across <b>20+</b> operating modes for <b>50+ engineers</b>.</li><li>Eliminated packet corruption in a critical C++ message-passing utility using 128-bit atomic operations, <b>resolving race conditions</b> and ensuring data integrity.</li><li>Implemented isolated ADC/DAC initialization and configuration, enabling <b>targeted debugging</b> of the ASIC datapath beyond full chip bring-up for <b>all downstream customers</b>.</li><li>Resolved <b>10+</b> major defects in the SDK by analyzing firmware trace logs, reducing daily crash frequency to <b>zero</b>.</li></ul>	
<b>Ford Motor Company</b> <i>Software Development Intern</i>	Jan. 2025 – Apr. 2025 Waterloo, Ontario
<ul style="list-style-type: none"><li>Designed and implemented <b>Python</b> libraries to fuzz ECU access tokens, enabling native security testing of a daemon deployed across <b>all production ECUs</b>.</li><li>Integrated new libraries into automated testing pipelines, enhancing validation workflows and eliminating reliance on <b>external tooling</b>.</li><li>Migrated <b>30+</b> legacy tests to the new libraries and integrated with existing <b>Python</b> infrastructure, standardizing security workflows for <b>100+ engineers</b>.</li></ul>	
<b>NCR Voyix</b> <i>Software Engineering Intern</i>	May 2024 – Aug. 2024 Waterloo, Ontario
<ul style="list-style-type: none"><li>Integrated a <b>Python</b> query utility into a patch management system, reducing manual retrieval time by <b>60%</b> and enabling automation for <b>80+</b> daily requests.</li><li>Instrumented a service to validate per-device network compliance data for use <b>organization-wide</b>.</li><li>Developed a cross-platform patch verification tool serving <b>10,000+</b> devices across <b>10+</b> platforms.</li></ul>	

## PROJECTS

<b>wintop</b>   C, MSVC, Windows API
<ul style="list-style-type: none"><li>Developed a CLI-based <b>thread and process inspector</b> in C for Windows platforms, exposing detailed per-thread scheduling and runtime information.</li><li>Enumerated processes and threads with <b>Win32 APIs</b>, fetching scheduling and timing metadata with low overhead.</li><li>Designed a terminal interface to provide <b>real-time</b> diagnostic information, emulating <i>top</i> and <i>ps</i>.</li></ul>
<b>osh: The Open Shell</b>   C, Linux
<ul style="list-style-type: none"><li>Created a lightweight <b>Linux</b> shell in C supporting built-in commands and external programs.</li><li>Implemented pipelines and I/O redirection using <b>Linux</b> syscalls and <b>POSIX</b> file descriptor semantics.</li><li>Added persistent command history using <b>readline</b> to improve interactive usability.</li></ul>

## TECHNICAL SKILLS

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