Ahnaf Shahriar

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EDUCATION

University of Waterloo — Waterloo, ON
Bachelor of Applied Science in Computer Engineering — *Sept. 2021 – May 2026*

- Recipient of Richard & Elizabeth Madter Entrance Scholarship and President's Scholarship of Distinction
- **Relevant Courses**: Algorithms and Data Structures II, Digital Computers(ARM), Digital Circuits and Systems.

EXPERIENCE

Digital IP Verification Intern — May 2023 – Sep. 2023
NXP Semiconductors Canada — *Kanata, ON*

- **UVM SystemVerilog:** Designed testbench stimulus environment for an IP Block in Dataplane processing.
- **Test Planning:** Created Simulation scenarios for testing IP block features and edgecases.
- **Simulation:** Worked on Simulation Environment programming to reach total functional coverage.
- **Workflows:** Set up documentation and tested Git for Secure Linux Development Environment.

Software Engineering Intern — Sept. 2022 – Dec. 2022
Synapse Product Development — *Seattle, WA*

- **Prototyping:** Leveraged Zephyr RTOS to create a proof of concept on *NRF52 BLE* device.
- **Python APIs:** Developed company specific lab automation software for equipment from *Agilent, Keysight, NI, Tektronik.*
- **Automation:** Streamlined testing and in house procedures using *Python* and *Bash.*
- **Containerization:** Docker containers for Gitlab pipelines to complete test and build jobs.
- **Driver Development:** Designed and implemented *drivers* for the controls of PCB testing Device*(I2C, UART)*

Firmware developer — Jan. 2022 – April 2022
Ford motor Company of Canada — *Remote*

- **Unity/Cmock Test framework**: Lead developer for optimization for unit testing, achieving up to *30% faster* runtime while using *50%* less manually written test cases.
- **Automation:** Improved *Jenkins CI/CD* pipelines to support unit testing automatino using *Python* for Linux server.
- **Embedded Trace Debugging:** Tested logging and interrupt algorithms and debugged on hardware test benches through CAN and Serial.
- Automotive DesignImplemented *AUTOSAR* standard Embedded hardware with *ISO26262 safety design* using *Davinci Configurator.*

Firmware Team Member — Sept. 2021 – Present
UW Midnight Sun Solar Rayce Car Team — *Waterloo, ON*

- **functional Macro:** Helped in abstracting RTOS functionalities through macros for ease of use in embedded programming.
- **Testing:** Programmed smoketesting firmware in C for **STM32** processors in Linux virtual machine using Vagrant **Virtual Box**.
- **CAN API autogeneration:** Implemented C file autogeneration using input yaml files through Python and Jinja2.

PROJECTS

Game Of Life | *C++, Python, OpenGL*

- Implemented all stages of the **Graphics pipeline** to achieve **2+ million polygons** rendering efficiently via triangles.
- Abstracted complex Graphics API code into simpler **game engine API** classes(Shaders, Vertex, Renderer, etc) for more practical **development and debugging.**
- Designed my own testing assert macros to debug Graphics errors in **VS Studio/Xcode Debugger**

LC VM | *C, RISC-V Assembly, Python*

- **Simulated hardware** for registers, operational codes, and Operating system trap protocols with **C dynamic memory allocation**.
- Designed **step-over assembly instruction debugger** to log errors in VM by mapping memory address and operations.
- Analyzed and compared **20+ million** lines of logs using **Python scripts** for CPU instruction optimization.
- Enhanced online solution by effectively **modeling finite machine states** to increase Virtual CPU operation speed up to **50%**

Technical Skills

Languages: Python, C/C++, Perl, Tcl, shell scripting, ASM, VHDL/Verilog
Tools: Quartus, Git, Linux, Qemu, OpenSSL, GNU Tools, Green Hills, Docker, WireShark, Jenkins, UVM, Matlab
Hardware: Oscilloscopes, Logic Analyzer, Circuit Design, TCP/IP, JTAG, Ethernet, CAN, LIN