Hisham Kaleem

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EDUCATION

University of Toronto   Toronto, ON, Canada
Bachelor of Applied Science (BASc) in Computer Engineering + PEY Co-Op   *September 2023 – April 2027*

Relevant Coursework
*Computer Fundamentals (C), Programming Fundamentals (C++), Operating Systems (Linux),
Computer Organization (RISC-V Assembly), Digital Systems (Verilog, FPGA)*

TECHNICAL SKILLS

Software: C++, C, Python, Kotlin, FreeRTOS, ESP-IDF, MATLAB, Simulink, Git, Android Studio, VS Code
Hardware: Verilog, RISC-V Assembly, ModelSim, Oscilloscope, Waveform Generator, UART/SPI/I2C/CAN

EXPERIENCE

Firmware Engineer, UofT Super Mileage Team (UTSM)   June 2025 - Present
University of Toronto   *Toronto, ON*

- Developed high-performance **C/C++ firmware** for UTSM vehicle subsystems and peripherials with **CAN bus** communication, implementing interrupt-driven routines and real-time control loops to achieve deterministic control across subsystems
- **Introduced and spearheaded** migration from the Arduino IDE to **ESP-IDF** with built-in **FreeRTOS**, utilizing task scheduling/prioritization and hardware timers for seamless communication and hardware resource allocation between **4 MCUs** connected to **20+ I2C/SPI/UART devices**

Software Intern, Water and Energy Research Lab (WERL)   May 2025 - August 2025
University of Toronto   *Toronto, ON*

- Optimized micro-controller firmware in **C++** using **data abstraction** to send septic tank device data to a cloud database via LTE, **reducing transmitted bytes/packet by 46%**
- Built an end-to-end data pipeline with device events packaged and sent as **HTTP** POST requests to an API endpoint routed to an AWS S3 bucket, fully integrated with a serverless **Python** AWS Lambda function equipped with **try/except** error handling
- Created **Python** scripts with the Plotly library to locally generate detailed, interactive 2D/3D data plots, utilizing **OS** and **sub-process** commands to save/display plots
- Wrote and managed **structured, comprehensive documentation** to guide current and future PhD students within the WERL lab and used **Git/Github** for precise version control/progress updates

PROJECTS

Light-Weight Android Adhan Widget   Personal Project
Kotlin, Java, C++, Android SDK/NDK, Git

- Developed a lightweight, standalone Adhan widget using the **Android SDK/NDK**, targeted towards Muslim Android users looking for simplicity/minamilism
- Implemented a **Native C/C++** backend with an optimized **JNI bridge** to automatically fetch user location and compute complex prayer times quickly, accurately and fully offline
- Engineered power-efficient widget refresh **classes/objects** in **Kotlin** using Android system broadcasts, alarms, and **RTC wakeups** - minimizing CPU wake cycles and battery consumption

NIOS-V Reversi Simulation   ECE243 - Computer Orginization
C, NIOS-V, Git

- Developed a complete simulation of the game "Reversi" in **embedded C** for the **NIOS V** processor on the DE1-SoC board, using **Git/GitHub** for team code collaboration
- Implemented **memory-mapped I/O** to capture real-time user input from a **PS/2 mouse** using NIOS-V **polling**
- Structured gameboard state management with a two-dimensional array and utilized continuous **single-buffering** to dynamically render board graphics on a **VGA display**
- Diagnosed and resolved hardware/software issues using a **GDB debugger**, ensuring reliable system performance