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

Digital Systems (Verilog, FPGA), Computer Organization (RISC-V Assembly), Electronics (LTSpice, Circuit Analysis), Programming Fundamentals (C, C++), Signals and Systems (MATLAB, Simulink)

TECHNICAL SKILLS

Hardware: Verilog, Assembly, Quartus Prime, ModelSim, LTSpice, KiCAD, Altium, Oscilloscope, Waveform Generator, DMM, Soldering
Software: C++/Arduino C++, C, Java, Python, SQL, MongoDB, MATLAB, Simulink, VS Code, Eclipse
Manufacturing: Fusion 360 CAD, Prusa Slicer, FDM Printing, Laser Cutting, CNC Routing

EXPERIENCE

PCB Engineering Intern, Jitterware Inc.   January 2025 – Present
Remote   *Ottawa, ON*
- Developed **analog circuit schematics** and a **multilayer PCB** prototype in **KiCAD** for a keyboard with Hall-effect sensor keys controlled by an **STM32 microcontroller** (via micro USB)
- Consulted data sheet and created custom **footprint/symbol** for sensor keys made publicly available via **GitHub**
- Selected/placed peripheral components (USB port, analog multiplexer, programming headers, etc.) in a BOM and optimized board dimensions/routing to reduce PCBA cost to **under $30 CAD**

Research Intern, Water and Energy Research Lab   May 2024 - August 2024
University of Toronto   *Toronto, ON*
- Worked with a PhD student on designing/prototyping an economical, water-resistant sensor device to accurately estimate dissolved solids levels in septic tank wastewater in rural communities
- Prototyped system circuitry using the **Adafruit M0 data logger** and integrated with electronic components including continuous servo motor, rotary encoder, load cell/amplifier, and control switches via protoboard
- Wrote code in **C++** to calibrate load cell, control system motion, and collect sensor data; Utilized the Blues API to transmit sensor data via **I2C** to a cellular card in structured **JSON** format which routes to an **AWS S3 bucket**
- Tested system in simulated wastewater, resulting in a process **reduction time of 24 hours** and a **72% reduction in cost** from the standard APHA 2540 filtration procedure

PROJECTS

Software-Defined Radio (SDR) RX Chain   ECE295 - Hardware Design and Communication
Altium, Git, LTSpice, Waveform Generator, Oscilloscope, DMM
- Developed, manufactured, and tested an RX reciever chain for an SDR operating in the 8-16 MHz bandwidth, prioritizing power efficiency and ease of integration/assembly
- Designed **analog circuits** and created detailed electrical schematics for receiver bandpass filter, limiter circuit, quadrature mixer, low-pass filter, and op-amp amplifier
- Created a **multilayer PCB layout** and routed traces in **Altium**, utilizing **Git** for collaboration
- Tested RX chain against and passed Interface Control Document (ICD) requirements using **LTSpice, waveform generator, oscilloscope**, **DMM**, and unit test scripts in **Python** (using **PyVisa**)

NIOS-V Reversi Simulation   ECE243 - Computer Orginization
C, NIOS-V, Git
- Developed a complete simulation of Reversi in **embedded C** for the **NIOS V** processor on the DE1-SoC board, using **git/GitHub** for 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 and software issues using the DE1-SoC **GDB debugger**, ensuring reliable system performance