

# 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, Oscilloscopes, 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 **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**

### Embedded Systems Engineer, UTRA Autonomous Rover Team

September 2024 – Present

*University of Toronto*

*Toronto, ON*

- Developed a software/hardware-based control system to improve the rover's soft braking for optimal performance in the annual Intelligent Ground Vehicle Competition (IGVC)
- Programmed rover's motor control Arduino and 4-channel motor relay module/BLD750 motor drivers - including speed calculations/conversions - in a singular **Arduino C++** file to implement braking system
- Modified rover's Raspberry Pi driver nodes in **Python** for system to efficiently receive/utilize rover's brake signal

### 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 probe to accurately estimate dissolved solids levels in septic tank wastewater in rural Indian 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
- Soldered 20+** data logger headers/intermediate connections for voltage sources and debugged using **DMM**
- Wrote code in **Arduino C++** to calibrate load cell, control system motion, and collect sensor data
- 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 receiver chain for an SDR operating in an 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** to minimize heat dissipation and power/signal loss, utilizing **Git** for collaboration
- Tested RX chain against and passed Interface Control Document (ICD) requirements using **LTSpice, waveform generator, oscilloscope**, and **DMM**
- Wrote and executed unit test scripts in **Python** (using **PyVisa**) to automate testing of RX receiver stages