

Shygaan Khalili

UBC Engineering Physics

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— [LinkedIn](#)

— [GitHub](#)

— [Portfolio](#)

Education

University of British Columbia

Expected 2030

B.A.Sc. Engineering Physics, 2nd year

Skills

Mechanical SOLIDWORKS, AutoCAD, Fusion 360, Rhinoceros, 3D Printing, DFM

Electrical KiCad, Arduino, STM32, RP2040/RP2350, ESP32, oscilloscope, function generator, soldering

Software C, C++, Python, Bash, Git, Linux, Java

Certifications and Training

Certified SOLIDWORKS Professional (CSWP)

Certified SOLIDWORKS Associate (CSWA)

Manual machining course (mill, lathe, saw, drill press, plasma cutting, oxy-acetylene welding)

Technical Projects

Sound Localization System

- Designed and built a prototype sound localization system using a microphone array to detect and estimate the direction of transient sound.
- Developed C firmware for the RP2350 microcontroller to sample microphone signals, detect sound onsets, and estimate time differences between channels using time-difference-of-arrival (TDoA)
- Integrated microphones, microcontroller, and 3D-printed mount into a working prototype and tested it with live sound sources at set distances.
- Debugged hardware and firmware to improve signal quality and system reliability.
- Produced documentation covering system behaviour, limitations, and design, and presented findings.
- Achieved 1st place in the cohort with an average full-scale error of 1.46%, outperforming the runner-up by a 45.5% scoring margin.

Quadruped Robot

- Designed and 3D-printed a custom quadruped chassis in SOLIDWORKS to house servos and electronics for a 12 degree of freedom robotic platform.
- Developed C++ firmware for the RP2040 and STM32 microcontrollers to control actuators, implement inverse kinematics, and generate gait patterns for walking and stance adjustments.
- Built a modular control system for servo motion planning, body pose adjustments, and locomotion commands, including standing, crouching, and trot behaviors.
- Designed custom PCBs in KiCad for power distribution and communication, and implemented a Bluetooth interface for wireless robot control.
- Debugged UART communication and actuator integration issues, validating hardware functionality and improving system reliability.

Experience

Full-Stack Web Developer Freelance

Jan. 2025 – Mar. 2025

- Built an e-commerce site with product catalogue, ordering, and authentication backed by MongoDB.
- Worked with business owners to translate operational requirements into polished deliverables.