

ADAM CRESPI

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EDUCATION

University of British Columbia

September 2022 – 2026

Engineering Physics - 3rd Year

Vancouver, BC

Engineering Physics is UBC's most competitive and academically challenging undergraduate specialization. This program pairs honors-level math and physics with electrical and computer engineering

- **Relevant Coursework:** Signals and Systems, Algorithms and Data Structures, OOP, Machine Learning
- Provincial Champion: Varsity Track and Field and Cross Country Athlete
- Achieved CGPA of 4.00, receiving Dean's Honour List

PROFESSIONAL EXPERIENCE

IRDI System

January – April 2024

Embedded Software Intern

Vancouver, BC

- Performed system-level firmware verification for infrared receiver, ensuring 100% J2799 compliance for hydrogen refueling. Used JTAG Debugger to identify critical CRC issues in edge cases, enhancing product reliability.
- Developed PCB and firmware compatible with NDEF standard for bidirectional P2P NFC communication to research viability of future product-line
- Designed and built ultra-cold temperature cycling system using robotic arm to simulate hydrogen refuelling process between -60C to 20C in just 4 minutes, quadrupling daily cycle count to support robust 24/7 operation

PROJECT EXPERIENCE

SLAM Jetson Orin Nano Robot

November – Present 2024

- Designed and implemented a SLAM navigation system for a Jetson Orin Nano robot to autonomously locate BLE beacons in rooms and navigate to them
- Implemented sensor fusion techniques in embedded Linux, combining BLE, IMU, and LiDAR in ROS2
- Tested and validated navigation algorithms in NVIDIA Isaac Sim to simulate real-world environments, ensuring robustness before physical deployment.

Neural Network Based Reactive Lighting System

August – September 2024

- Designed lighting control system using ESP32 with FreeRTOS implementing task scheduling for concurrent audio processing and LED control
- Trained NN using TensorFlow Lite to receive verbal commands, adjusting lighting accordingly
- Created custom PCB to integrate ESP32 S3, I2S microphone, and supporting components, optimizing the system for compactness

UBC Autonomous Robot Competition Prize Winner

July – August 2024

- Worked in a team of 4 to design and build two fully autonomous robots to assemble burgers
- Integrated ESP32 with over 10 sensors and actuators including H-Bridges, rotary encoders, micro-switches, and power circuitry for reliable autonomous control
- Collaborated in writing extensive code-base in C and used ESP-NOW for live communication between robots

SKILLS

Embedded Systems

- JTAG, Linux, Assembly
- UART, SPI, I2C
- Kicad PCB

Languages

- C, C++
- Python
- Java

Tools and Frameworks

- Oscilloscope, VNA
- Git
- TensorFlow, OpenCV