Addison **Craik**

UBC Engineering Physics

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Education

University of British Columbia
Engineering Physics, BASc
Vancouver, BC
Sept. 2023 – May 2028

Technical Skills

Design & Fabrication: SolidWorks (CAD + FEA) • 3D Printing • Laser Cutting • Waterjet Cutting • Machining
Electronics & Embedded Systems: STM32 • ESP32 • Raspberry Pi • Soldering • Oscilloscope • I2C/SPI/UART
Programming & Data: Python • C/C++ • MATLAB • Java • MS Office • Git/GitHub • HTML/CSS/JavaScript • LaTeX

Technical Experience

UBC Rocket – Liquid Propulsion Subteam
SolidWorks, FEA, Waterjet Cutting, 3D Printing, Machining
Vancouver, BC
Jan. 2023 – Present

- Designed and manufactured a precision liquid rocket motor mount using inventory materials; performed FEA to validate load tolerances under high-thrust conditions.
- Manufactured components via waterjet and milling to achieve tight tolerances, resulting in reliable performance across multiple hot-fire tests.
- Designed and fabricated a custom mold for casting a lightweight ablative nozzle, improving thermal resistance and reducing manufacturing complexity.

UBC Concrete Toboggan – Braking Subteam
SolidWorks, FEA, Creative Problem Solving, Teamwork, Engineering Drawing
Vancouver, BC
Sept. 2023 – Present

- Re-imagined braking mechanism, replacing a heavy plate with a chassis-based system, reducing weight and improving stopping efficiency.
- Developed in-house manufacturing procedure for unique hinge component, reducing cost and lead time.
- Produced clear engineering drawings to streamline fabrication and ensure consistent build quality.

Notable Projects

Autonomous Robot – Engineering Design Competition
ESP32, I2C, C/C++, Laser Cutting, 3D Printing, Machining, Control Systems
Vancouver, BC
Aug. 2025

- Designed and built an autonomous robot from the ground up for the ENPH 253 engineering physics design competition, ultimately making it to the semi-finals.
- CAD-modeled and fabricated chassis, drivetrain, and a 4 DOF robotic arm using laser cutting, 3D printing, and machining.
- Implemented motor drivers, encoders, magnetometers, OLED displays, and IMUs with custom I2C device-manager on the ESP32 platform.
- Developed a custom handoff protocol for state-sharing between multiple ESP32 devices.
- Coordinated hardware–software integration and tuned control loops for robust performance under time-constrained competition conditions.

ROS-Gazebo Autonomous Robot – Engineering Design Competition
ROS, Gazebo, PyTorch, TensorFlow, OpenCV, Git
Vancouver, BC
Dec. 2025

- Developed and trained a fully autonomous ROS-based agent for the ENPH 353 "Fizz Detective" simulation competition, navigating a complex Gazebo track to identify clues and obey traffic laws.
- Developed a custom Gazebo plugin enabling the ROS agent to act as a drone.
- Implemented a robust perception pipeline, integrating SIFT, OpenCV, and a custom-trained CNN to accurately detect and identify clueboard text.
- Designed the ROS-based communication and state-sharing protocol that allowed multipole ROS agents to communicate.

RC Drone – Personal Project *Coquitlam, BC*
STM32, MPU6050, C/C++, Soldering, Circuit Assembly, Troubleshooting *Apr. 2023*

- Built a custom quadcopter flight controller with STM32 and MPU6050, assembling hardware from scratch.
- Diagnosed and corrected ESC timing issues by analyzing STM32 datasheets, rewiring and reprogramming the drone for stable flight.
- Self-taught soldering and circuit assembly techniques to complete hardware build.

Other Experience

Boathouse Restaurant – Line Cook, Prep Cooke *Port Moody, BC*
Leadership, Teamwork, Organization, Time Management *Sept. 2023 – Aug. 2024*

- Led station operations in a high-pressure environment, ensuring consistent quality of food in a timely manner.
- Trained and mentored new staff while maintaining operational efficiency.
- Developed strong teamwork, communication, and organizational skills under time-critical conditions.

Interests

Outdoor Activities: Hiking • Backpacking • Biking • Phototgraphy
Indoor Activites: Game Development • Chess • Cooking

Awards

UBC Dean's List *2023 – Present*
BC Governor General's Award *2023*
BC Achievement Scholarship *2023*