EMILY BUGEJA

Phone: 778-788-0428
Email: emily.bugeja@queensu.ca

EMPLOYMENT

Research Assistant *Offroad Robotics Group, Queen's University* – May-Nov 2021

- Helped develop a robot to autonomously lay fibre optic cable along railways.
- Designed a control system to feed fibre while dispensing glue based on robot base speed.
- Wrote computer vision code to inspect fibre installation and collect other data.

APSC 200/293 TA *Queen's University* – Jan-Dec 2021

Electronics Intern *Nuytco Research Limited* – May-Aug 2020

- Worked on a variety of projects in the sub-sea industry including product assembly and prototyping/research and development.
- Developed an electronically controlled version of a "Prehensor" robotic hand based on an existing mechanical prototype.
- Designed physical prototypes in AutoCAD and used CNC routing, 3D printing and basic shop tools to assemble, designed PCBs in Eagle, used Visual Studio, PIC microcontrollers and servomotors to model and program robotic prototypes.

EDUCATION

Bachelor of Applied Science *Queen's University*

- Studying Electrical Engineering at Queen's University.
    - Coursework: Data structures, electronics and sensors, microcontrollers, probability and statistics, signal processing, machine learning, linear controls.
- Expected graduation May 2022

SKILLS

Programming Languages/Hardware

- *Fluent:* C, C++, C#, Python, ROS, PIC Microcontrollers, MPLAB IDE, Arduino Microcontrollers, Linux/Ubuntu, MATLAB, Simulink, HTML, CSS.
- *Familiar:* OpenCV, Java, Assembly, Raspberry Pi, NIOS II, VHDL, UART protocols.

Other Skills

- Experienced with 3D printing, Laser Cutting, CNC Routing, CAM software (ArtCAM, Inkscape), CAD Design (AutoCAD, SolidEdge), PCB Design (Eagle, KiCAD), Visual Studio, circuit simulation (ADS).

PROJECTS

Fly-Q Monitor – *Kiteboarding Project* – July 2021-Present

- In the process of developing a data acquisition and display device for Formula Kite kiteboard racers using microcontrollers and C++.
- Using LoRa to communicate data to a coach in real time to compare rider speeds and angles of attack.

IoT System to Support Aging in Place – *Hülpr* – July 2021-Present

- Consulted company about client needs and designed an IoT system to support aging in place.

Goose Deterrent Robot – *ELEC 490 Capstone Project* – Sept 2020-April 2021

- Designed, constructed, and programmed a robot that used computer vision and sensors to patrol an area and charge at geese to deter them from congregating.
- Developed a serial communication protocol between a Raspberry Pi (programmed in Python) and an Arduino Mega to communicate computer vision, sensor, and motor data.

OTHER ACHEIVEMENTS AND HOBBIES

National-Level Formula Kiteboarding Racer and Olympic hopeful

- In my spare time you can find me working hard in the gym or on the water training for kiteboard racing! I occasionally train with National Team coaches and am a provincially carded athlete in my home province of British Columbia.