GORDON FOUNTAIN

Mechatronics Graduate, Robotics Enthusiast, & Cellist

gfountain@uwaterloo.ca (226)-505-1576 gordon-fountain-mte

EXPERIENCE

Robotics Software Control System Developer

Impossible Metals May 2023 – Sept 2023

- Wrote multiple drivers for USBL, radio module, and Doppler Velocity Log sensors for a multi-ton subsea vehicle using ROS2 in Python.
- Brought up a serial network for multi-computer sensor interfacing.
- Built multiple custom Foxglove Studio interface panels for telemetry and waterproof housing statuses.

Firmware Developer

University of Waterloo Aerial Robotics Group Feb 2021 – April 2023

- Architected and created the System Manager module to manage thread operation, inter-thread communication, and flight mode selection for an autonomous VTOL and fixed-wing hybrid drone.
- Designed, modeled, and built the pre-flight, takeoff, and landing system for use with a computer-vision controlled precision-landing system.
- Created a new Firmware Training Bootcamp with documentation for new firmware team members, giving practical experience with SPI communication, schematics, and component interfacing.

Robotic Software Intern

Kindred Robotics Sept 2022 – Dec 2022

- Ran unit, functional, and system level testing of development code on lab robotic arms that was deployed to in-production robotic stations.
- Created a data recording system using Python, C++, Go, and SQL querying to gather data for use by multiple other teams.

Embedded Development Intern

Skygauge Robotics May–Aug 2021 & Jan–April 2022

- Improved communication robustness between drone microcontrollers by building a no-loss acknowledgement system to maximize flight control.
- Wrote a real-time state system to read and fuse sensors to allow stable drone-to-surface contacts and ultrasonic measuring.
- Created a QT based desktop app from scratch to display video feeds, ultrasonic data, and flight statistics through a UDP network system.

Roboticist (Mechanical and Firmware)

2unify Feb 2021 – May 2021 (Part-time)

- Invented a rotation-actuated scoop system for a 6 DoF robotic arm.
- Wrote Python controls and processes for a student-usable arm interface.

ADDITIONAL EXPERIENCE

OSCAR Autonomous Marine Rescue Vehicle

- Designed and coded the architecture, sensor drivers, and controllers for an autonomous multi-mode marine rescue robot.
- Designed gasket and O-ring enclosure waterproofing.
- Fabricated wire splices, PCB assembly, and electrical circuit design for a power distribution system and optocoupler and relay isolation system.

Class Wellness Representative

- Managed deadlines, ran events, and addressed teaching issues to improve class morale and help individual students.

SKILLS & TOOLS

Rapid Prototyping | Design for 3D Printing | Circuit Design | Sensor Integration | Communication Protocols | Actuator Control | Controller Design

C++ | Embedded C | Python | Bash | Docker | ROS2 | Arduino | MatLab | VS Code | Git | LaTeX | AutoCAD | SolidWorks | MS Office Suite

AWARDS

Norman Esch Pitch Winner

- Pitched in and won the Norman Esch Pitch Competition for OSCAR | 2024

Mechatronics Best Overall Capstone Project Award

- Won the Best Overall Capstone Project Award for OSCAR | 2024

Capstone Design Analysis Winner

- Won the UWaterloo MME Engineering Capstone Design Analysis Competition for OSCAR | 2024

Engineering Iron Pin Designer

- Designed the UWaterloo Engineering Ethics Iron Pin | 2023

WEC Design Competition Champion

- Selected to represent UWaterloo at the Ontario Engineering Competition for OSCAR | Innovative Design 2023
- Created a dual-ended scoop and plow RC robot. | Sr. Design 2022
- Designed and created a modular optical marble sorter. | Sr. Design 2021
- Created a physics simulator-based aqueduct water transport system. | Jr. Design 2020

OEC Jr. Design Champion

- Created a long-distance martian material transport zip-line device | 2020-2021

HOBBIES

Cello | Music Recording | Rock Climbing | CAD Design | D&D | 3D Printing

EDUCATION

B.A.Sc. in Mechatronics Engineering

University of Waterloo Sept 2019 – June 2024