Owen Leather

Engineering Student | Software Developer | Robotics Enthusiast

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SKILLS

Programming – Kotlin, Java, Python, C++, C#

ROS2, OpenCV, Open3D, Eigen, Gazebo, Lanelet2, CARLA, ActiveMQ

DevOps – Git, Gradle, CMake, Docker, Ansible

Controls – PID, State Space, Motion Control, Model Predictive Control, Kalman Filtering, Pose Estimation

Game Engines – Unreal Engine

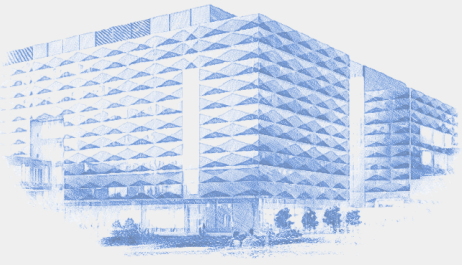
Manufacturing – Solidworks, Fusion 360, CAD/CAM, 3D Printing

AWARDS

FIRST Robotics Innovation in Controls Award - 2022

FIRST Robotics Autonomous Award - 2021

FIRST Robotics Autonomous Award - 2019



EXPERIENCE

Robotics Engineering Intern, Toronto, ON — *Quantum Robotic Systems*

January 2023 - April 2023

Skills: C++, Python, ROS, OpenCV, PID, Motion Control

- Led development of ROS2 infrastructure for existing mobile robot platforms to expand target market.
- Derived and tuned control laws and motion profiling for various robot subsystems to sharpen motion tolerances by 80%.
- Developed computer vision software in C++ using OpenCV for pose estimation and marker-based localization to within 1 cm.

Tech Lead, World Modeling, Waterloo, ON — *WATonomous*

December 2023 - Present

Skills: C++, ROS, Docker, Autonomous Vehicle, Occupancy Grid, Lanelet2, CARLA

- Designed software architecture of world modeling code to implement motion forecasting, point cloud segmentation, and a dynamic voxel grid.
- Led a team of 8 core members in the development of world modeling software using C++ and ROS2.
- Collaborated with other leads to coordinate development timeline, ROS and CARLA pipelines, and overall architecture of codebase.

Software Engineering Intern, San Francisco, CA — *iMetalx*

August 2021 - August 2022

Skills: Kotlin, Python, C++, C2 Messaging, OpenCV, ActiveMQ, Gazebo Simulator

- Worked on command and control messaging, tactical edge networking, simulation, and edge computation for UAVs.
- Developed simulation tools using Gazebo for HITL (Hardware in the Loop) software testing and demonstrations for clients.
- Led development of ATAK (Android Team Awareness Kit) integration to increase interoperability with government software infrastructure.

PROJECTS

Pendulum Controls | *Python, MPC, State Space*

2022

- Applied controls project to control an inverted pendulum on a cart using linear state space control and nonlinear model predictive control

Turret Lock | *Java, Computer Vision, Kalman Filter, PID*

2021

- Developed software to control a turret mechanism such that objects can be scored into a target while the robot is in motion.
- Controls turret based on estimated pose, trajectory calculations, and future predicted motion.

EDUCATION

University of Waterloo, Waterloo, Ontario — *BASc Mechatronics Engineering*

September 2022 - April 2027