B.Eng., Mechatronics Engineering (Co-op)

McMaster University, Dean’s Honour List, Teaching Assistant, 3.9 GPA

Education

Affordable Outdoor Localization (Research Project) May 2020 to Present

* Led the engineering an outdoor localization solution that fuses low-cost IMU and UWB sensors via a Particle Filter to accurately estimate robot pose; this successful project is currently underway for commercialization.

BNO055 Linux Hardware Driver (ROS Package) July 2020 to September 2020

* Authored and maintaining an open-source software (ROS) package that interfaces the BNO055 IMU with any Linux system over I2C and publishes data to ROS.

Guardian Surveillance (Intelligent Surveillance System) April 2020 to July 2020

* Architected a smart surveillance system on the Raspberry Pi that leverages ROS, OpenCV, and live camera feeds to detect intruders, and alert users via text and email.

Personal Projects

Employment

Software Engineer January 2021 to Present

ARVI AI Inc.

* Implement localization, mapping, and navigation capabilities on an electric commercial vehicle through ROS.
* Integrate LiDAR, IMU, camera, RTK GPS, and controller hardware onto the electric commercial vehicle; develop corresponding ROS drivers and controls for steering and throttle.
* Build software interface between simulation and ROS to test and tune autonomous point-to-point navigation.

Software Developer Intern June 2020 to September 2020

Clearpath Robotics Inc., Research Solutions

* Spearheaded backend development of a web-based GPS navigation tool that interfaces with outdoor robots via ROS, and allows users to issue missions remotely via satellite map.
* Set up test plans and physically tested GPS navigation package on Clearpath Robotics’s Husky UGV.

Simulation Engineer Intern May 2018 to August 2019

Clearpath Robotics Inc., OTTO Motors

* Leveraged simulation software to develop robotic material transport solutions, including a simulation model that played a major role in winning a $8M USD, 100+ robot fleet size deal.
* Extended proprietary simulation software library with functionalities for tracking mission metrics.
* Wrote an automated tool that generates thousands of simulated missions into simulation models.

Languages and Technologies

General-Purpose: C++, Python, JavaScript

Robotics: ROS, OpenCV

Simulation: Gazebo, Simio, Unreal Engine 4

Tools: Git, JIRA, Confluence, Linux

Embedded Systems: MCU, FPGA, Raspberry Pi, LabJack

Sensors: IMU, LiDAR, Camera, UWB, RTK GPS

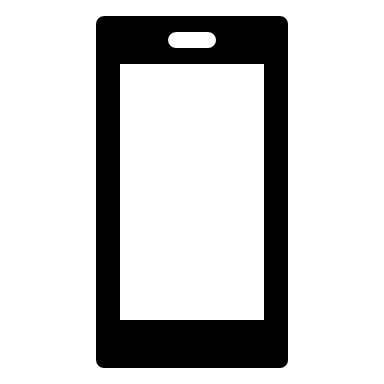
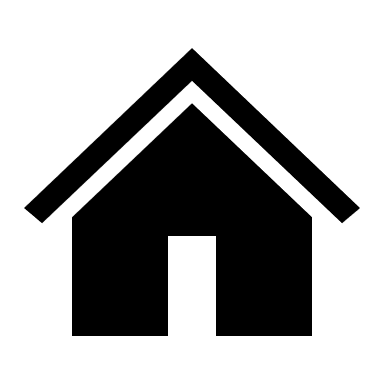
Web Development: React, Redux, Express/Node, SQLite

Diligent Mechatronics Engineering graduate possessing 3 years of working experience in software and simulation development, with emphasis in autonomous vehicle and mobile robot technologies. Passionate about building innovative software and hardware solutions that interface humans with robots; proficient at doing so using ROS. Avid contributor to the ROS open-source community.

Profile Summary

Joey Yang

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