Languages and Technologies

Profile Summary

Education

Personal Projects

Employment

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

McMaster University, Dean’s Honour List, Teaching Assistant, 3.8 GPA

Affordable Outdoor Localization, Research Project May 2020 to April 2021

* Led the engineering design of an affordable outdoor localization solution that fuses low-cost IMU and UWB sensors via a Particle Filter to estimate robot pose.

Guardian Surveillance, Smart Surveillance System April 2020 to July 2020

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

Software Developer July 2021 to Present

Clearpath Robotics, Platform OS

* Innovate and maintain open-source and proprietary software for Clearpath Robotics’ mobile robotic platforms.
* Execute complex software integrations of sensors, manipulators, and networking devices with robot platforms.
* Develop internal software tools to assist cross functional teams and expedite production processes.

Software Engineer January 2021 to June 2021

ARVI AI, Autonomous Driving

* Implemented localization, mapping, and navigation on an electric vehicle by leveraging ROS.
* Integrated perception sensors and steering and throttle controllers onto the electric vehicle to enable autonomy.
* Developed middleware to ensure reliable communication between hardware, autonomy software, and simulation.

Software Developer Intern June 2020 to September 2020

Clearpath Robotics, Platform OS

* Spearheaded backend development of a web application that allows users to interface with ROS robots remotely and send autonomous navigation missions via satellite map.
* Built frontend components for the web application’s user interface to enhance user experience.

Simulation Engineer Intern May 2018 to August 2019

Clearpath Robotics, Simulation Services

* Designed high-level simulation models of autonomous mobile robots in customer facilities to conceptualize and evaluate material transport solutions.
* Extended simulation software library with custom objects and metrics for tracking missions.

General-Purpose: C++, Python, JavaScript, Bash

Robotics: ROS, OpenCV, SLAM

Simulation: Gazebo, Simio, Unreal Engine

Embedded Systems: MCU, Raspberry Pi, Jetson, LabJack

Sensors: IMU, LiDAR, Camera, UWB, GPS

Tools: Git, JIRA, Confluence, Linux

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 end-to-end software solutions that interface complex hardware systems with humans and human tasks; proficient at doing so using Linux and ROS. Avid contributor to the open-source robotics community.

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Joey Yang

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