

# Joey Yang

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## Profile Summary

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Diligent Software Engineer possessing 2 years of professional working experience in software and simulation development, with emphasis in autonomous vehicle and mobile robot technologies. Passionate about building robust and innovative software solutions that seamlessly interface hardware systems with humans and real-world applications.

## Languages and Technologies

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|              |                                             |             |                                            |
|--------------|---------------------------------------------|-------------|--------------------------------------------|
| Programming: | C++, Python, JavaScript                     | Embedded:   | MCU, Jetson, Raspberry Pi, Motors          |
| Robotics:    | ROS, OpenCV, Simulation, Networking         | Sensors:    | LiDAR, Camera, IMU, GPS, UWB, Arms         |
| Perception:  | Kalman Filter, Particle Filter, Graph SLAM  | Tools:      | Git, Linux, Bash, Jenkins, Agile (JIRA)    |
| Navigation:  | Path Planning, Controls, Obstacle Detection | Web/Mobile: | React, React Native, Node, Express, SQLite |

## Employment

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### Software Developer

July 2021 to Present

#### Clearpath Robotics, Platform OS

- Innovate and maintain open-source and proprietary software for ROS 1 and ROS 2 mobile robotic platforms.
- Develop internal software tools and test suites to support integration, client success, and production teams.
- Execute custom software integrations of sensors, manipulators, and networking devices with robots.
- Collaborate with cross-functional engineering teams and PMs to deliver on complex engineering projects.

### Software Engineer

January 2021 to June 2021

#### ARVI AI, Autonomous Driving

- Implemented and demoed localization, mapping, and autonomous navigation on a Polaris GEM electric vehicle.
- Developed middleware for reliable communication between hardware, software, and simulation systems.
- Wrote software drivers to integrate sensors, steering and throttle controllers with real vehicle, simulation, and ROS.

### Software Developer Intern

June 2020 to September 2020

#### Clearpath Robotics, Platform OS

- Spearheaded Node/Express backend development of a web application that allows remote user interface with ROS robots, including manual control and sending autonomous navigation missions via satellite map.
- Built responsive frontend user interface components using React to enhance user experience.

### Simulation Engineer Intern

May 2018 to August 2019

#### OTTO Motors, Simulation Services

- Designed and developed high-level Simio simulation models of autonomous mobile robots in manufacturing facilities, to conceptualize and evaluate material transport solutions for customers.
- Extended internal simulation software library with crucial features, such as key metric trackers for robot missions.

## Personal Projects

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### Affordable Outdoor Localization, Research Capstone

May 2020 to April 2021

- Led engineering design and implementation of a low-cost outdoor localization solution, which fuses low-cost IMU and UWB sensors using a Particle Filter to estimate robot pose.

### Guardian, Intelligent Surveillance System

April 2020 to July 2020

- Architected an intelligent surveillance system on a Raspberry Pi that leverages ROS, OpenCV, and live camera data to detect intruders, and alert users via text and email.

## Education

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Bachelor of Engineering, Mechatronics Engineering (Co-op)

McMaster University, Dean's Honour List (3.8 GPA), Teaching Assistant