Joey Yang

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Profile Summary

Diligent Mechatronics Engineering student possessing 2+ years of working experience in software and simulation development. Passionate about tackling complex problems using software, with proficiency in building innovative software solutions that bridge robotic systems with humans. Critical thinker able to adapt and deliver results in fast-paced agile environments, demonstrated by an excellent track record in industry, academia, and open-source.

Education

B.Eng., Mechatronics Engineering (Co-op) Level 5   Expected Completion April 2021
McMaster University, Dean's Honour List, 3.7 GPA
Undergraduate Teaching Assistant

Relevant Coursework
Robotics, Software Development, Data Structures & Algorithms, General & Real-Time OS, Embedded Systems Design, Predictive & Intelligent Control (Kalman Filters, Particle Filters, SLAM), Networks and Security.

Employment

Freelance Software Consultant   September 2019 to Present
- Building software solutions and automated tools for start-ups and small businesses ranging from mobile apps to purchase order generators.
- Interfacing with clients regularly to understand product needs, provide technical guidance, and convey results.

Software Developer Intern   June 2020 to September 2020
Clearpath Robotics, Inc., Research Solutions
- Led backend development of a web-based GPS navigation tool that allows users to interface with outdoor robots (ROS) and issue missions remotely via satellite map.
- Designed frontend UI components that drew the appeal of sales and engineering managers.
- Setup 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 discrete-event and physics-based simulation software to develop large-scale 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 robot and mission KPIs/metrics.
- Developed automation and data visualization tools to pipeline inputs into and parse outputs out of simulations.
- Performed multiple regression on real robot battery data and improved simulation model accuracy from 57-95%.
- Collaborated with PMs to identify requirement specifications, plan timelines, and present deliverables.

Personal Projects

Autonomous Robot Lawn Mower (Research Project)   May 2020 to Present
- Engineering an autonomous robot able to mow lawns safely and efficiently.
- Implementing sensor fusion of IMU and UWB data to accurately localize robot position in outdoor environments.

BNO055 Linux Hardware Driver (ROS Package)   July 2020 to September 2020
- Developed an open-source software package that interfaces Adafruit's BNO055 9-DoF sensor with any Linux system over I2C and publishes data to ROS.

Guardian Surveillance (Intelligent Surveillance System)   April 2020 to July 2020
- Architected a lightweight and affordable surveillance system on the Raspberry Pi 4 that leverages OpenCV's Haar cascade classifiers on live camera feeds to detect intruders, and ROS to alert users' IoT devices via text and email.

Languages and Technologies

Robotics:	ROS, OpenCV, Simio, Simulink	General-Purpose:	C++, Python, JavaScript
Embedded Systems:	MCU, FPGA, Raspberry Pi	Web Development:	React, Redux, Express/Node, SQLite
Sensors:	IMU, LiDAR, Camera, UWB	App Development:	React Native