Trinity Li

+1 (416) 473-6490
trinitycaimanli@gmail.com
LinkedIn

EDUCATION

BASc in Mechanical Engineering, Honors – University of Waterloo   Sept 2019 - June 2024

Relevant Coursework: Autonomous Mobile Robots, Hybrid and Electric Vehicles, Control Systems

SKILLS

- **Languages**: C++, Python, MATLAB, Rust
- **Programs and libraries:** Git, ROS2, Jenkins, Gazebo, Carla
- **Design:** SolidWorks, AutoCAD, FDM 3D Printing

EXPERIENCE

Systems Design Engineer | Christie Digital Systems
Jan 2023 - Apr 2023

- Designed and prototyped a new product for a mobile projector that would adapt to its surroundings and display animations while in motion
- Implemented object detection, robot navigation, and backend server integration for the product on Ubuntu using ROS and Point Cloud Library in C++
- Managed supply, procurement and logistical features to meet functional requirements
- Refactored and containerized point cloud segmentation and object detection libraries to be deployable with Docker on different system architectures to streamline workflow and help with future integration

Embedded Software Developer | Wind River
May 2022 - Aug 2022

- Added support for higher-level languages and modules such as Python and TensorFlow into containers so they could be deployable to a VxWorks platform, enabling new functionality and improving ease of use
- Presented suggestions to modify documentation and add more functionality for software products to customers to make it more accessible for non-embedded developers

Embedded QA Engineer | Ecobee
Sept 2021 - Dec 2021

- Worked closely with staff engineers to implement ADB into the existing stack to automate more tests in Python, cutting down manual testing requirements by 15%
- Integrated a new test device in Jenkins and set up CI/CD pipelines to run automated testing periodically and set up testing devices remotely using ssh, removing the need for manual maintenance
- Developed new tests, refactored test cases, and designed 3D CAD models of test fixtures for an embedded device in an object-oriented test environment

PROJECTS

Self-Localizing Autonomous Robot
Feb 2024 - April 2024

- Implemented a PID controller class for a Turtlebot using ROS2 and Python to create a closed-loop feedback controller that would self-correct based on positional data obtained from sensors and calculated error
- Created a particle filter using LiDAR, odometry, and SLAM mapping by creating a probabilistic motion model for each particle and resampling and weighting the particles using the SLAM occupancy map
- Used ROS Gazebo to run simulations on a Linux virtual machine when physical robots were not available

Behavioral Path Planner Algorithm
May 2023 - Aug 2023

- Worked on the development of a planning algorithm for global, behavioral, and local planning for an ego vehicle
- Developed a mission planner by drawing endpoints from Carla simulator using Python and ROS2
- Used a Finite-State-Machine to create a behavioral planner determining vehicle actions to adhere to traffic laws and output a goal pose for the lower level motion planner to trace a path