Qing(Jim) Huang

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EDUCATION BACKGROUND

Duke University | Master of Science in Mechanical Engineering | Expected Graduation in May 2025

Worcester Polytechnic Institute | Bachelor of Science in Robotics Engineering | 2021-2023

Core Courses: *Unified Robotics, Control Engineering, Advanced Engineering Design, Industrial Robotics, Medical Robotics, Data Science & ML App…*

PROFESSIONAL EXPERIENCES

F1 Tenth | Duke University, Durham, NC 09/2023-Present

- Developing a self-driving 1:10 scale RC car, integrating a Jetson board for code-based control to enable precise maneuvering and remote operation.
- Implementing an adaptive cruise control system using PID control and ultrasonic sensors to ensure safe and efficient navigation in dynamic environments.
- Utilizing LiDAR and the A* algorithm to enable Simultaneous Localization and Mapping (SLAM), enhancing the car's autonomous mapping and navigation capabilities.
- Employing Model Predictive Control (MPC) and Machine Learning techniques to optimize path planning, aiming to achieve improved race performance and strategic decision-making.

Non-Invasive Continuous Blood Pressure Monitoring | WPI, Worcester, MA 08/2022-03/2023

- Collaborated on a NASA and NIH-funded research project in partnership with the Neural Systems Group BME Lab at Massachusetts General Hospital and Harvard Med.
- Developed a medical device to measure ICU patient blood pressure by positioning it around the superficial temporal artery, controlling extrusion pressure, and using applanation tonometry pressure sensors.
- Utilized the Arduino platform to control a diaphragm air pump for generating varied pressures and processing data.
- Contributed to the project by designing the device's shell, pressure control system, and controller, and providing support in circuit construction.

Room Exploration and Mapping Robot | WPI, Worcester, MA 10/2022-12/2022

- Applied A* path planning algorithm within the ROS framework, visually representing the paths in Rviz.
- Created smooth ROS node communication using ROS services for efficient algorithm coordination.
- Successfully guided a robot through an uncharted maze, recording the explored map, and employed AMCL for accurate localization and navigation within the recorded map.
- Enhanced Turtlebot's capabilities to autonomously reach specified destinations by utilizing C-space calculations, A* path planning, and efficient navigation strategies.

Robotic Pick and Place System | WPI, Worcester, MA 08/2022-10/2022

- Utilized MATLAB to control a 3-degree-of-freedom robotic arm operated in Linux OS for automatically tracking and classifying objects of different colors.
- Adopted Hephaestus V2 robot arm to support joint control, forward kinematics, inverse kinematics, trajectory planning, and differential kinematics.
- The robot is designed to undertake warehouse tasks.

Internship | Guangdong Zhengchao Electric Co., Ltd., Shantou, Guangdong, China 07/2020-10/2020

- Conducted circuit testing and validation for businesses.
- Diagnosed and repaired electromechanical assembly issues.
- Assessed temperature monitoring system performance under varying conditions.
- Fabricated and tested experimental circuit boards through soldering.

Skills & Interests

Professional Skills: C++ | Python | MATLAB | GitHub | ROS | MS Office | SolidWorks | ABB IRB 1600| PLC

Languages: Chinese (Native) | English (Advanced)