Ray Huang

rayhuang100@gmail.com | +886-972-241-565 | [LinkedIn](#) | [Personal Website](#)

Education

National Yang Ming Chiao Tung University   Feb. 2021 - Mar. 2023, Hsinchu, Taiwan
Master of Science in Electrical and Control Engineering
National Yang Ming Chiao Tung University   Sep. 2017 - Jan. 2021, Hsinchu, Taiwan
Bachelor of Science in Electrical and Computer Engineering

Technical Skills

Programming Languages: C/C++, C#, Python, HTML
Frameworks/Tools: PyTorch, TensorFlow, ROS, ROS2, Gazebo, Docker, OpenCV, PCL, Git, MySQL
Embedded Board: Nvidia Jetson (Xavier, TX2, Nano), Raspberry PI(3B, 3B+), RB5, PXA270

Work Experience

Taiwan Semiconductor Manufacturing Company Limited (TSMC)   Hsinchu, Taiwan
Automation R&D Engineer   Apr. 2024 - Present
- Designed software for production automation, including state machine and scheduling. Concatenating OHT, robot arm, wafer manufacturing machine and designed user friendly interface using C# and MySQL
- Decreased alarm rates by 50% by analyzing tool log and finding the root cause of the alarm in automation system

URSROBOT Inc.   Taipei, Taiwan
Software Engineer Intern   May 2023 - Aug. 2023
- Applied ROS2 navigation pipeline in simulation and real robot with Nav2 and Robot Localization
- Designed software for GPS waypoints navigation with Python, C++ and ROS2. Implemented trajectory recording and following functionalities, and deployed the system on RB5 with Docker and auto bring up (Qualcomm sponsored project)

National Yang Ming Chiao Tung University (NYCU)   Taipei, Taiwan
Research Assistant, Assistive Robotics Group   Mar. 2021 - Mar. 2023
- Utilized TensorFlow to implement curriculum reinforcement learning on unmanned ground vehicle and unmanned surface vehicle, adapting to heterogeneous robot setups with varying sensor modalities and vehicle dynamics
- Applied curriculum reinforcement learning with TensorFlow to stimulate agent to achieve high reward space; dealt with complex tasks including passing narrow gates and interacting with movable obstacles
- Published paper to [IEEE Robotics and Automation Letters 2023](#)

International Competition Experience

Maritime RobotX Challenge   Sydney, Australia
NYCU Team Leader   Jan. 2022 - Jan. 2023
- Achieved 3rd place out of 20 teams as leader of a fifteen-member team, represented team to present technical skills and system architecture to competition organizer
- Developed deep reinforcement learning autonomy system for WAM-V using TensorFlow and Gazebo simulator, resulting in sim-to-real capabilities and achieved 98% success rate for goal navigation and collision avoidance
- Integrated autonomy system with EfficientDet perception module and applied behavior tree to manage the state of WAM-V with Python, C++ and ROS

DARPA Subterranean Challenge: Urban Circuit   Elma, Washington, USA
NCTU Team Member   Sep. 2019 - Mar. 2021
- Built and calibrated sensor system to collect 5000+ synchronized data for contrastive learning and GAN to navigate robot through smoke using millimeter wave radar
- Built movable spherical nodes including mesh WiFi and Xbee with Python and ROS for communication systems, as well as emergency stop system to adhere to competition safety criteria

Selected Projects

Embedded Operating Systems   Spring 2022
- Designed card matching game with PXA270 by socket, semaphore, multi-thread and timer with C++

Search and Rescue with Mobile Robot   Spring 2020
- Implemented a teleoperated robot (LoCoBot) system with mission to detect and localize specific objects in an environment where a map is given via Apriltags by Python, C++ and ROS (won 1st place out of 10 teams in final project competition)