

LUXI HUANG

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📍 Chicago, IL

EDUCATION

Northwestern University (NU), Evanston, IL

Expected Dec. 2020

Master of Robotics

University of Maryland (UMD), College Park, MD

Aug. 2015 - Dec. 2018

Bachelor of Science Mechanical Engineering; Mathematics

SKILLS

Robot Skills: ROS, Computer Vision, Machine Learning, Motion Planning, Microcontroller, Bayesian Filters, Version Control (Git), Search Algorithm, Linux, Point Cloud Library (PCL)

Programming Language: C/C++, Python, MATLAB/SimuLink

WORK EXPERIENCE:

Automated Doorway Detection for Assertive Wheelchairs

June 2020 - Sep. 2020

Robotics Software Engineering Intern

Shirley Ryan Ability Lab, IL

- Designed doorway detection algorithm with region-growing clusters on subscribed point clouds from RGBD camera
- Built a perception pipeline in C++ to detect doorway for assertive wheelchairs based on ROS platform.
- Tested three point cloud segmentation methods on multiple wheelchair positions by comparing their detected doorway position and door gap width on simulation (Gazebo) and real-world

Intelligent Ultrasonic Tracking Robot

Jan. 2017 - Dec. 2018

Research Assistance

The Sensor and Actuator lab - UMD, MD

- Code on Launch-F28379D DSP board in C to tracking barriers through sending and receiving acoustic signals with PID control.
- Designed and built a wheel robotic to tracking moved barriers by sending and receiving acoustic signals through metamaterial sonar

SELECTED PROJECTS

Mapping by Sensor Fusion with IMU and Camera - NU

Jan. 2020 - Mar. 2020

- Built Mapping Function with PCL on Intel tracking camera T265 and depth camera D435i individually
- Achieved loop closure property on depth camera by sensor fusion on IMU with RGBD on depth camera, and making the loop closure for tracking camera by sensor fusion on IMU with fisheyes.
- Compared mapping quality of tracking camera and depth camera by comparing camera optometry on simulation and real world.
- Concluded the tracking camera has more accurate odometer than depth camera, but point cloud map on depth camera is more detailed due to its featured RGBD eyes.

Robot Navigation From Scratch on Turtlebot3 - NU

Jan. 2020 - Mar. 2020

- Developed 2D kinematics and navigation library in C++ for wheel robot.
- Wrote circular feature detection algorithm for LiDAR scanner and implemented a landmark-based Extended Kalman Filter (EKF) SLAM algorithm to optimize the path trajectory to avoid obstacles.
- Implement Turtlebot3 navigation using ROS in C++ as the central platform.

ReThink Robot Build Lego - NU

Step. 2019 - Dec. 2019

- Develop a system to control a Baxter (Rethink Robotics) to build Lego
- Programmed whole node on 7-DOF arm trajectory algorithm using ROS MoveIt (in Python) to accomplish motion planning and obstacle avoiding, and control the force on grippers
- The successfully rate is more than 90 percent to build the Lego pyramid.

Quadrupedal Bio-inspired Robotics Project - UMD

Jan. 2018 - May 2018

- Collaborated with a group of 3 students to design, build, and test quadrupedal bio-inspired newt robot
- Analyzed gait and implement Inverse Kinematics to control robotic navigation in MATLAB on Arduino
- Created full technical drawing of robot components on Solidworks