LUXI HUANG

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WORK EXPERIENCE

Robotics Software Engineering Intern **Jun. 2020 - Sept. 2020**
Shirley Ryan AbilityLab *Chicago, IL*

- Rewrote and update autonomous wheelchair behavior packages in C++ with ROS
- Updated 3D object detection packages for doorway detection, ramp detection, and wheelchair desk-docking
- Wrote test plans to test software on actual hardware
- Generated a final report in IEEE paper format and an end-of-internship presentation

Research Assistant **Jan. 2017 - Dec. 2018**
The Sensor and Actuator lab - UMD *College Park, MD*

- Development of code and experimental platforms, running experiments and analyzing data in C and Matlab
- Implemented data-driven algorithms for sensing and control of robotic platforms
- Conducted research into wheeled robotics track moving barriers using ultrasonic signals

SELECTED PROJECTS WEBSITE

Automated Doorway Detection for Intelligent Wheelchairs - NU **June. 2020 - Sept. 2020**

- Built perception pipeline to locate doorways for intelligent wheelchair in ROS and C++
- Designed and implemented doorway detection algorithm by analysis 3D point clouds data from RGBD Camera
- Tested multiple doorway detection algorithms on various wheelchair positions by comparing their detected doorway position and door gap width in simulation (Gazebo) and in real-world

EKF SLAM on Turtlebot3 - NU **Jan. 2020 - Mar. 2020**

- Developed 2D kinematics and navigation library in C++ for wheel robot on ROS platform
- Generate circular feature detection algorithm for LiDAR scanner
- Implemented a landmark-based EKF SLAM algorithm to optimize the path trajectory and avoid obstacles

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, and accomplished loop closure on tracking camera by sensor fusion on IMU with fisheyes
- Designed experiments to compare mapping quality between tracking camera and depth camera

ReThink Robot Build Lego - NU **Sept. 2019 - Dec. 2019**

- Collaborated in team of 4 to develop a system in controlling a Baxter (Rethink Robotics) to build with Legos
- Programmed 7-DOF arm navigation algorithm using ROS MoveIt (in Python) to accomplish motion planning, obstacle avoiding, and control the force on grippers
- Wrote script to test success rate and the result was greater than 90 percent to build a Lego pyrimid

SKILLS

Robot: ROS, Gazebo, Moveit, Robot Manipulation, Computer Vision, Machine Learning, Motion Planing
Libraries: Point Cloud Library (PCL), Eigen, OpenCV
Programming Languages: C/C++, Python, MATLAB/SimuLink
Others: Linux, Version Control (Git), Unit Test, CMake, PyTorch, gdb, AWS, Docker, WebGL

EDUCATION

Master of Science in Robotics **Dec. 2020**
Northwestern University (NU), Evanston,IL *GPA:3.6/4.0*
Courses Focus: Computer vision, Perception, Robotics Manipulation, Deep Learning, Navigation, SLAM

Bachelor of Science in Mechanical Engineering; Mathematics **Dec. 2018**
University of Maryland (UMD), College Park, MD *GPA:3.3/4.0*