Yuxiao (Sonia) Lai

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EDUCATION

Northwestern University **Evanston, IL**
M.S. in Robotics, GPA: 3.91/4.00 *Expected Dec. 2021*

Rose-Hulman Institute of Technology **Terre Haute, IN**
B.S. in Mechanical Engineering, GPA: 3.77/4.00 *Aug. 2016 - May 2020*
Minor in Robotics, GPA: 4.00/4.00; Computer Science, GPA: 3.70/4.00; Japanese, GPA: 3.83/4.00

Selected Courses: Robotic Manipulation, Embedded Systems in Robotics, Machine Dynamics, Sensing Navigation and Machine Learning for Robotics, Electrical Systems, Mechanical Systems, Control Systems, Mechatronic Systems, Data Mining, Introduction to AI, Machine Learning

ACADEMIC EXPERIENCE

Handwriting Camera **Evanston, IL**
Independent Project *Winter 2021*
- Write a program to recognize letters written in front of a camera
- Learn PyTorch to train and classify letters using the EMNIST letter dataset
- Train an OpenCV Haar Cascade model to track the tip of a customized green pen so that the pen's trajectory can be written on the screen
- Design workflow to integrate Pytorch letter classifier and OpenCV pen tracker

TurtleBot SLAM **Evanston, IL**
Sensing, Navigation, and Machine Learning for Robotics Course Project *Winter 2021*
- Show a TurtleBot's odometry, slam, and real trajectories in rviz with slam and real obstacles in the environment
- Write ROS nodes to control a burger TurtleBot with a commanded twist
- Design C++ libraries to perform 2D rigid body transformations, calculate kinematics of a two-wheel-robot, implement Feature-Based Kalman Filter SLAM, and detect landmarks from laser scan information
- Write ROS node to simulate noises while running a burger TurtleBot in the real environment with user-specified obstacles

Fast Tower **Evanston, IL**
Group Member, Embedded Systems Final Project *Nov. 2020*
- Control a Baxter robot to stack a fixed number of cups into a tower
- Build a system with Baxter ROS Interface and ROS MoveIt to plan and execute fast and stable arm motion to grab and place cups with random or specified locations
- Use ROS Apriltag to detect cups within the workstation and generate coordinate frames in rviz
- Design a simulated environment in Gazebo for debugging before running the system on the actual robot

PROFESSIONAL EXPERIENCE

W M Technologies Inc. **Shanghai, China**
Automation Component CAD Intern *June - July 2019*
- Participated in designing a base mount to help stimulate collaboration between workers and a robot arm during assembly and packing controllers
- Created CADs of parts and assemblies for manufacturing
- Defined tolerances and roughness in drawings so that controllers could be assembled within allowable position uncertainties and the design would function properly without wearing too quickly

SKILLS

Technical: Git, Linux, ROS, SolidWorks, MATLAB, Gazebo, MPLAB, Arduino, MongoDB, Firebase
Programming: Java, JavaScript, HTML, CSS, Kotlin, XML, Python, C/C++
Languages: Chinese (Native), English (Fluent), Japanese (Intermediate), French (Entry Level)