

Yuxiao (Sonia) Lai

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EDUCATION

Northwestern University

M.S. in Robotics, GPA: 3.91/4.00

Evanston, IL

Expected Sept. 2021

Rose-Hulman Institute of Technology

B.S. in Mechanical Engineering, GPA: 3.77/4.00

Terre Haute, IN

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

Independent Project

Evanston, IL

Winter 2021

- Wrote a program to recognize letters written in front of a camera
- Learned PyTorch to train and classify letters using the EMNIST letter dataset
- Trained 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
- Designed workflow to integrate PyTorch letter classifier and OpenCV pen tracker

TurtleBot SLAM

Sensing, Navigation, and Machine Learning for Robotics Course Project

Evanston, IL

Winter 2021

- Showed a TurtleBot's odometry, slam, and real trajectories in rviz with slam and real obstacles
- Wrote ROS nodes to control a burger TurtleBot with a commanded twist
- Designed C++ libraries to perform 2D rigid body transformations, calculate forward and inverse kinematics of a two-wheel-robot, implement Feature-Based Kalman Filter SLAM, and detect landmarks from laser scan information
- Wrote ROS node to simulate noises while running a burger TurtleBot in the real environment with user-specified obstacles

Fast Tower

Group Member, Embedded Systems Final Project

Evanston, IL

Nov. 2020

- Controlled a Baxter robot to stack a fixed number of cups into a tower
- Built 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
- Used ROS Apriltag to detect cups within the workstation and generate coordinate frames in rviz
- Designed a simulated environment in Gazebo for debugging before running the system on the actual robot

PROFESSIONAL EXPERIENCE

W M Technologies Inc.

Automation Component CAD Intern

Shanghai, China

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)