

Kailey Smith

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Portfolio: <https://gingineer95.github.io/> • Github: <https://github.com/gingineer95>

EDUCATION

Northwestern University, Evanston IL
Master of Science in Robotics

Dec. 2021

Milwaukee School of Engineering, Milwaukee WI
Bachelor of Science, Mechanical Engineering

May 2017

WORK EXPERIENCE

The Toro Company

Jun. 2021 – Aug. 2021

Summer Intern - Robotics

- Led the perception pipeline for future autonomous lawnmowers.
- Evaluated and applied open source vision-based simultaneous localization and mapping and sensor fusion algorithms to determine functionality in various outdoor environments.

Spraying Systems Co.

Jun. 2017 – Aug. 2020

Project Engineer

- Led team that installed and programmed a FANUC 6-axis robotic arm and ancillary equipment.
- Used an upstream camera to classify different moving products, no matter the placement.
- Adjusted robots' EOA nozzle to coat each product according to identification and orientation.

ACADEMIC PROJECTS

Mircomouse Robot From Scratch

Mechatronics, C, PCB Design, Path Planning, C++, Solidworks

- Designed, constructed, and controlled a wheeled robot comparable to the Micromouse Competition.
- The robot acts as a predator trying to discover, chase, and corner mice in a convoluted environment.
- Executes high speed maneuvers without collisions by aggregating IR sensor information with path planning data.

Multi-robot SLAM and Autonomous Exploration

SLAM Toolbox, Localization, Autonomous Exploration, C++

- Utilized simultaneous localization and mapping on multiple robots; produced a single, consolidated map.
- Implemented a map merging algorithm in C++ to combine multiple robot maps.
- Developed a multi-robot exploration algorithm to guide map merge generation.

Baxter Recycling

MoveIt!, Robot Manipulation, Motion Planning, Computer Vision, Python

- Collaborated with a team of 4 to program a Baxter robot to recycle bottles and cans separately.
- Implemented computer vision algorithm using OpenCV for real-time location detection and classification of randomly placed objects.
- Used MoveIt! for pick and place operation by picking bottles and cans from a surface and dropping them into their respective recycling bins.

SKILLS

Programming Languages: Python, C++, C, MATLAB

Developer Tools: Linux, Version Control (Git), Unit Test, CMake

Robotics: Robot Operating System (ROS), SLAM, MoveIt!, Robot Manipulation, Motion Planning, Gazebo, Computer Vision, OpenCV, Machine Learning

Mechanical: Autodesk, SolidWorks, 3D printing