Kailey Smith

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

EDUCATION

Northwestern University, Evanston IL **Dec. 2021**
Master of Science in Robotics

Milwaukee School of Engineering, Milwaukee WI **May 2017**
Bachelor of Science, Mechanical Engineering

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 a 3 person team that installed and programmed a FANUC 6-axis robotic arm, conveyor, 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

- Designing, constructing and controlling 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++

- Used 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 Segmentation
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 segmentation 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