

# Kailey Smith

---

Chicago, IL • (815) 514-1043 • kaileysmith2021@u.northwestern.edu  
Portfolio: <https://gingineer95.github.io/> • Github: <https://github.com/gingineer95>

## EDUCATION

**Northwestern University**, Evanston IL  
Master of Science, 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*

- Independently researched vision-based simultaneous localization and mapping for the purpose of applying a solution on an autonomous lawn mower.
- Evaluated and tested open source Visual SLAM algorithms to determine functionality outdoors.

**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

**Micromouse Robot From Scratch**

*Mechatronics, C, PCB Design, Solidworks, EAGLE*

- Designed, constructed, and controlled a wheeled robot comparable to the Micromouse Competition.
- Modeled behavior for various pager and brushed DC motors then compared their performance to mouse data to determine viability.
- Created a library, schematics, and PCB layouts for a 46cm x 34cm footprint using EAGLE.

**Multi-robot SLAM and Autonomous Exploration**

*SLAM Toolbox, Localization, Frontier Exploration, C++*

- Utilized simultaneous localization and mapping on multiple robots then 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 merging 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.
- Created a ROS package in Python with custom nodes, launch files, topics, and services which were used to detect the locations of different sized circles and create/execute motion plans.
- 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:** C++, C, Python, MATLAB

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

**Robotics:** Robot Operating System (ROS), SLAM, Robot Manipulation, Motion Planning, Gazebo, Path Planning, Computer Vision, OpenCV

**Mechanical:** Autodesk, SolidWorks, 3D printing