# Kailey Smith

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

## EDUCATION

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

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

## WORK EXPERIENCE

**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.

**Electro Motive Diesel** **Jun. 2015 – Aug. 2015**
*Summer Intern*

- Organized 10,000 preventative maintenance metrics based on Trade and Job Plan from MAXIMO.
- Identifying the most frequent and time-consuming inspections to improve productivity.

## ACADEMIC PROJECTS

**Multi-robot SLAM and Autonomous Exploration**
*SLAM Toolbox, Localization, Autonomous Exploration, C++*

- Using simultaneous localization and mapping on multiple robots produce a single, consolidated map.
- Implementing a map merging algorithm in C++ to combine multiple robot maps.
- Developing 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.

**Rapidly-Exploring Random Tree (RRT)**
*Path Planning, Obstacle Avoidance, Python*

- Implemented a RRT path planning algorithm in Python.
- Programmed collision avoidance functionality of randomly placed obstacles in a 2D domain.

## SKILLS

**Programming Languages:** C++, C, Python, 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