

# Marco Morales

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## Education

Northwestern University	Expected Graduation: Winter 2022
Master of Science in Robotics	GPA 4.0
University of Illinois at Chicago (UIC)	Graduated: May 2021
Bachelor of Science in Mechanical Engineering	GPA 3.88

## Skills

Technical: C++, Python, C, MATLAB, Robot Operating System (ROS), SOLIDWORKS, Simulink, ANSYS, CoppeliaSim, Gazebo, MoveIt!, Manipulation

## Experience

### Argonne National Laboratory, Intern

June 2021– September 2021

- Assisted in developing an autonomous system involving two robotic arms and a movable base to be used in a radioactive environment.
- Created CAD models to be used in Gazebo to simulate the lab the autonomous system will work in.
- Created a model of the system in Gazebo to be controlled with MoveIt in a simulated environment.

### Robotics Lab and Motion Lab, UIC

August 2020-May 2021

- Learned and applied CoppeliaSim software to simulate objects with a current emphasis on simulating the Kinova Gen3 Lite Robot.

### Rehabilitation Robots, UIC

May 2019–March 2020

- A team member on the redesign of an ankle-foot orthosis and goal was to make it more compact, allow different sizes of feet to be tested and make it more comfortable.
- Worked on the development of the ankle foot prosthesis and worked with applying strain gauges as well as the wiring.
- Created an elevated boot to accompany the ankle foot prosthesis due to the elevation caused on the leg wearing the prosthesis.

### Launch-UAS, Iowa State University

May 2019-August 2019

- Used sensors related to aircraft such as airspeed, temperature, pressure, altitude and vehicle orientation to verify functionality.
- Learned how to use ROS to program nodes that run the sensors during hardware-in-the-loop (HiTL) on a test fixed-wing aircraft to simulate real testing environments.

## Projects

### Senior Design, Robotic Arm

October 2020-May 2021

- Participated in creating an autonomous system for radioactive environments sponsored by a Fermilab National Accelerator Laboratory's Katsuya Yonehara.
- Gained professional experience with designing an autonomous system, cost analysis and team collaboration.

### RoboKeeper

November 2021-December 2021

- Collaborated in a team to enable an HDT Adroit to prevent balls from entering a goal using MoveIt!, computer vision and low level controls.
- Developed the computer vision pipeline to detect the ball it has to block using OpenCV.
- Programmed actions for the robot to complete such as picking up a paddle, going to home pose.

### Winter Project

January 2021-Current

- Working with a robot system composed of a Ridgeback and Sawyer arm to place objects as it follows a person around.
- Integrating the Ridgeback and Sawyer arm to communicate with one another to ensure it is able to complete the objectives.