

CATHERINE MAGLIONE

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EDUCATION

Northwestern University, McCormick School of Engineering

MS Robotics | expected 12.2025

Columbia University, Fu Foundation School of Engineering and Applied Science

BS Operations Research | 5.2022

SKILLS

- **Programming:** Python, C++, C, Jekyll, SQL
- **Robotics:** ROS2, Feedback/Control Systems, Embedded Systems, MoveIt, OpenCV, RVIZ, Gazebo, CoppeliaSim
- **Software:** Linux, Git, CMake, Unit Tests, Visual Studio
- **Hardware:** C/Microcontrollers, PIC32

PROJECTS

Turtlebot and Human Improv Dance Light Show | Winter 2025

- Currently designing and programming a symbiotic interaction between a TurtleBot3 and a human dancer, leveraging process design skills to integrate spatial awareness, human-robot collaboration, and machine learning for analyzing illuminated pathways and enabling dynamic, responsive movement

7-DOF Robot Arm for Autonomous Pool Game | Fall 2024

- Collaborated with a team to write a Python ROS2 package for a Franka 7-DOF robot arm to autonomously play pool, integrating AprilTag calibration, MoveIt motion planning, and force control
- Developed a computer vision system using OpenCV and an Intel RealSense D435 camera to detect and track ball positions and colors, ensuring effective gameplay coordination.
- Created algorithms for shot planning, trajectory generation, and gameplay execution, enabling precise and repeatable robot performance

Mobile Manipulation Pick and Place with Kuka youBot | Fall 2024

- Simulated a pick-and-place task for a 5-DOF mobile manipulator in CoppeliaSim, using modern screw theory for end-effector trajectory generation and odometry equations for robot kinematics
- Implemented and tuned a feedforward + PI controller to minimize error between actual and reference trajectories, leveraging an ODE for physical simulation

EXPERIENCE

Planned Parenthood of Illinois

Business Operations and Data Intelligence Analyst | Chicago, IL | 9.22- 5.24

- Communicated effectively across teams to conduct comprehensive data cleansing procedures, eliminating patient duplicates and ensuring seamless interoperability between two electronic health record (EHR) software platforms.
- Played a pivotal role in transitioning between EHR systems by writing complex SQL queries. This strategic approach maintained data integrity and facilitated consolidation of patient data, ensuring a smooth transition and optimal system performance

ThredUP

Industrial Engineer Summer Intern | Atlanta, GA | 6.22- 8.22

- Optimized inbound automation system, strategically applying queueing theory techniques, resulting in an 8% reduction in reprocessing rates, enhancing system efficiency in handling incoming inventory
- Managed the execution of a new pallet storage and tracking system as the sole industrial engineer in the warehouse, overseeing the project from planning to implementation and ensuring successful optimization of inventory management and distribution operations.

Operations Summer Intern | Atlanta, GA | 6.21-9.21

- Directed the rollout of thredEX, an internal merchandise re-distribution plan at thredUP, overseeing and coordinating a thirty person shift team to execute the project successfully. Surpassed business expectations by reducing pick, pack, and load times, exceeding order processing goals, and enhancing overall operational efficiency.
- Demonstrated effective leadership by designing thredEX station layout and managing and training thredEX shift teams. Ensured seamless coordination and execution of internal merchandise re-distribution plan, contributing to increased productivity and a streamlined operational workflow.