Nathan Wolf-Sonkin

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EDUCATION

The Cooper Union for the Advancement of Science and Art — Expected Graduation Spring 2025
Master of Engineering, **Mechanical Engineering** — GPA: 4.0/4.0

New York Institute of Technology — Graduated Spring 2023
Bachelor of Science, **Mechanical Engineering** — GPA: 3.8/4.0
Minor, **Mathematics**

SKILLS

Technical: **Python, C++, MATLAB/Simulink, Solidworks, Creo, Gazebo, Robot Operating System (ROS2)**
Courses: **Bio-Inspired Robotics, Autonomous Mobile Robotics, Modern Control Theory, Industrial Robotics**

WORK EXPERIENCE

JLG Industries | Hagerstown, MD — May 2024 - August 2024
Robotics and Automation Intern

- Undertook development of robotic arm path planning algorithms for automation of dangerous jobs
- Utilized python and C++ to develop automatic tool exchange algorithms for the Sapien 6M robotic arm
- Created a physical simulation of Sapien 6M robotic arm using ROS2 and Gazebo for testing of the algorithms
- Generated an analytical inverse kinematics solver to efficiently guide a robotic arm to a desired end effector position

Core SWX | Plainview, NY — March 2022 - December 2023
Design Engineer

- Created battery casing and charging station designs for high-end camera equipment
- Utilized Solidworks to design for injection molding and sheet metal fabrication
- Resulted in the launch of over twelve new products including the Apex, Renegade, GT8, and Cube

Cox & Company | Plainview, NY — Summer 2018, 2019, 2021
Mechanical Engineering Intern

- Conducted development of a resistive wire laying device to streamline the manufacturing of aerospace deicing systems
- Created an end effector to be retrofitted onto a 3D gantry to automatically adhere resistive wire to a fiberglass mesh

FIRST Robotics Competition Team 7400 | Melville, NY — June 2019 - March 2020
Mechanical Design Mentor

- Guided students in the mechanical design process for projectile intake and launching mechanisms

PROJECTS (Available at nathan.wolfsonkin.com)

Masters Thesis — Spring 2024 - Present

- Conducting research on path planning and trajectory generation algorithms for obstacle avoidance in robotic arms

Autonomous Mobile Robot – Python, C++, ROS2

- Capable of navigating and mapping its surroundings using a combination of odometry and IR sensors
- Planning on implementing a particle filter to localize the robot position after map generation

Robotic Arm Simulation – MATLAB

- Developed a simulation of a three link robotic arm for testing feedforward and optimal control algorithms
- The simulation includes encoders on each joint and initially perturbs the arm to test disturbance rejection
- Effectively generates and tracks a smooth, point-to-point, joint space trajectory with less than 1% tracking error

ADDITIONAL

Awards

- New York Institute of Technology Dean's List - All Semesters
- Boy Scouts of America Eagle Scout – August 2019
- FIRST Robotics Competition World Championship Qualifier – 2018, 2019

Interests – Robotics • Rock Climbing • Chess • Video Games