

Nathan Wolf-Sonkin

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EDUCATION

Temple University Doctor of Philosophy, Mechanical Engineering	Expected Graduation Spring 2030
The Cooper Union for the Advancement of Science and Art Master of Engineering, Mechanical Engineering	Graduated Spring 2025 GPA: 4.0/4.0
New York Institute of Technology Bachelor of Science, Mechanical Engineering	Graduated Spring 2023 GPA: 3.8/4.0

SKILLS

Technical: **ROS2, C++, Gazebo, Docker, Python, MATLAB/Simulink, Ansys (FEA), Solidworks**

Courses: **Bio-Inspired Robotics, Mobile Robotics, Modern Control, Adaptive Algorithms, Underactuated Robotics**

PUBLICATIONS

Investigating the Influence of Mechanical Configuration on Energy Efficiency in Quadrupedal Robots – IMECE 2025

- Published peer-reviewed paper to ASME IMECE 2025 on modeling energy efficiency in quadrupedal robots
- Built ROS2/Gazebo framework to study how mass distribution affects locomotive cost of transport
- Validated energy models against commercial benchmarks to guide efficient robot design

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 algorithm testing
- Integrated the simulation-based control architecture with the physical robotic system

Core SWX | Plainview, NY

March 2022 - January 2024

Design Engineer

- Designed battery casing and charging stations for high-end camera equipment
- Utilized Solidworks to design for injection molding, sheet metal fabrication, and metal pipe fabrication

Cox & Company | Plainview, NY

Summer 2018, 2019, 2021

Research and Development 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

PROJECTS (Available at nathan.wolfsonkin.com)

Autonomous Mobile Robot – ROS2, Python, C++

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

Intelligent Ground Vehicle Competition Team – ROS2, Python, C++

- Lead a team of students to retrofit a GEM e2 electric vehicle for self-driving capabilities
- Developed navigation stack to solve problems in path planning, obstacle avoidance, and control
- Implemented the ROS2 localization package to generate accurate state data

Optimal Control of a Robotic Manipulator – MATLAB

- Developed a simulation of a three link robotic arm for testing feedforward and optimal control algorithms
- Conducted an energy analysis to confirm the validity of the model under frictionless conditions
- Effectively generates and tracks a smooth, point-to-point trajectory with less than 1% tracking error

Interests – Robotics • Rock Climbing • Video Games • Chess • Cycling