

Jonathan Distler

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Education

Cornell University – Ithaca, NY May 2027 (Expected)

- Bachelor of Science in Mechanical Engineering with a Physics Minor | GPA: 3.76
- Relevant Coursework: **Math:** Calculus II and III, Differential Equations, Linear Algebra; **Physics:** Dynamics, Mechanics, and Heat, Thermodynamics, Electricity and Magnetism - Honors, Topics in Special Relativity, Waves and Oscillations; **Engineering:** Statics and Mechanics of Solids, Mechanical Design, System Dynamics, Fluid Mechanics, Mechanics of Materials, Robotics Seminar

Experience

Human-Robot Collaboration Project Intern

Cornell University's HRC2 Lab – Ithaca, NY Aug 2025 – Present

- Developed and then solved domain and problem PDDL files (Planning Domain Definition Language) with a fast-forward solver to optimize action-space in a pick-and-place task in under 10 seconds.
- Created a Python library to streamline functionality of *hello robot's* Stretch3 Robot, carrying out the optimized pick-and-place route from the PDDL output.
- Implementing a FUNMAP (Fast Unified Navigation, Manipulation, and Planning) algorithm -a derivation of a SLAM framework- to more robustly carry out solved action-spaces.

Soft Robotic Fish (SoFi) Project Intern

ETH Zurich's Soft Robotics Laboratory – Zurich, Switzerland May 2025 – Aug 2025

- Collaborated in Dr. Robert Katzschman's lab to develop a novel actuation mechanism and autonomous control for a soft robotic fish tail utilizing a Scotch yoke assembly and a novel radio-frequency methodology under \$80.
- Developed a one-to-one MuJoCo simulation with Nelder-Mead optimization, validating results within 10% of experimental measurements.
- Designed and implemented a motor and IMU control class to track fish orientation using Euler angles, integrating a Dynamixel motor and Adafruit IMU with sensor fusion and data wrapping techniques.
- Implemented computer vision with remote filming to measure tail curvature, comparing results with thrust and motor data to optimize tail design and motor actuation rate.

MAGPIE Project Intern

Cornell University's Aerospace Adversary Lab – Ithaca, NY Jan 2024 – Present

- Collaborated on interdisciplinary aerospace and cybersecurity projects funded by the U.S. Department of Defense.
- Utilizing Linux, ROS 2, Gazebo, C++, and Python to develop and test obstacle avoidance strategies for an autonomous 6-degree-of-freedom drone.
- Developed an indoor GPS system with an embedded ROS 2 serial communication protocol to enable accurate indoor telemetry and drone control with mapping precision up to 2 cm.
- Co-authored a systems paper on autonomous drone navigation, submitted for journal publication (*The MAGPIE: Satellite Autonomy for Uncooperative Environments*).

Cornell Hyperloop Project Team Member

Cornell University's Hyperloop Project Team – Ithaca, NY Sept 2024 – Present

- Modeled heat transfer from battery packs to the hyperloop train, calculating the heat exchange rate for a 240W battery system.
- Machined aluminum and steel components to enhance structural integrity, informed by Ansys FEA stress-strain analysis to cut manufacturing costs by over 50%.
- Designed a cost-effective (\$200) 3D-printed and laser-cut battery pack enclosure using SolidWorks, protecting \$2,000+ in electronics while ensuring accessibility and stability.
- Contributed to a PID control system, inducing a current via an empirically derived magnetic force relationship.

Research Intern at the Naughton Lab

Virginia Tech's Biomechanics Laboratory – Blacksburg, VA Jun 2024 – Aug 2024

- Developed an H-Bot control system using MATLAB and serial communication to synchronize ultrasound imaging of octopus movements for enhanced scan accuracy.
- Engineered a soft robotic muscle prototype with controlled expansion and contraction, performing material property analysis and rapid prototyping as part of a research team
- Developed a novel, and entirely soft McKibben-Actuation tendon with an expansion rate greater than 150, costing less than \$20.