

# 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.