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

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 with a Python serial communication system to enable accurate indoor 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
• Contributed to the structures subteam in designing a magnetic levitation system for high-speed hyperloop propulsion.
• 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.

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.

Stormwater Maintenance Personal Assistant
Storm Water Solutions – Blacksburg, VA .....Aug 2019 – Aug 2024
• Applied civil and environmental engineering techniques to maintain bioretention ponds and mitigate local flooding as part of the Blacksburg Town Council's Stormwater Initiative.
• Enhanced existing bioretention ponds to ensure full compliance with all town-sanctioned inspections, achieving a 100% compliance rate.
• Created a locally hosted HTML website to improve customer experience, showcasing Storm Water Solution's licenses and certifications, and providing examples of previous work, with included price-estimates.