

MATTHEW J. HEERING

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY
Bachelor of Science, Mechanical Engineering
GPA: 3.79

Expected May 2027

SPECIALIZED SKILLS

Design: SOLIDWORKS 3D CAD, Autodesk Fusion 360

Coding: Proficient in MATLAB and Python

Manufacturing: Manual mill & lathe machining (Red Apron Machine Shop Trained)

Relevant Courses: Fluid Mechanics; System Dynamics; Mechanics of Engineering Materials; Dynamics; Statics and Mechanics of Solids; Waves and Quantum Physics; Thermodynamics; Differential Equations; Intro to Mechanical Design; Computing

PROJECTS

Trash Drone, Millstone, NJ

May 2025 – Present

Independent Engineering Project

- Designed and prototyped a quadcopter drone for cleaning plastic pollution from dangerous terrain or water
- Modeled the frame in Fusion 360 to reduce vibrations and 3D-printed components with 40% infill PETG for integrity
- Soldered 7 electrical components to produce a 2.4 kg thrust drone with a 12-in servo-powered sweeping arm

Cornell University Solar Boat Project Team, Ithaca, NY

Aug 2024 – Present

Drivetrain and Steering Technical Lead & Member

- Led calculations to discover an ideal pitch ratio of 0.83 (pitch/diameter) for the sprint propeller based on the motor output, resulting in a 50% increase in acceleration, using MATLAB
- Assessed 4 local marinas to test low-cost yet efficient outboard propellers for the specialized 7 hp motor
- Directed 11 members of the Drivetrain and Steering subteam in designing, assembling, and testing the drivetrain
- Collaborated on designing and assembling a manned solar-powered 14 ft boat with 41 members across 5 subteams

CSalt, Ithaca, NY

Aug 2024 – Present

Mechanical Subteam Member

- Developed a Wave Energy Conversion System (WEC) to sustainably desalinate ocean water for clean drinking water
- Modeled a 29 m × 19 m flap for the WEC to deliver enough energy to pump 0.011 m³/min of water, using Fusion 360
- Tailored the WEC dimensions and materials based on the wave climate including tidal speeds on the coast of Guam
- Awarded best technical design in the U.S. Department of Energy's Marine Energy Collegiate Competition in Oregon

OpenUp, Ithaca, NY

Feb 2025 – May 2025

Engineering Project

- Prototyped 5+ CAD iterations of a clamp-style split water bottle, achieving a sleek and easy-to-clean design
- Optimized a \$379 budget across two iterations of 3D printing and sourcing with a Bill of Materials and a Pugh matrix
- Conceptualized switching to insulated stainless steel, improving lifespan 10+ years and cutting carbon footprint ~20%

PROFESSIONAL EXPERIENCE

Sunset Farmstead, Mansfield, NJ

Jun 2023 – Aug 2025

Agricultural Assistant

- Built a new above-ground piping and sprinkler system to automate the watering process and connect plots of crops
- Collaborated with co-workers to pot 72,000 plants per summer, building an ecosystem for bees and monarch butterflies
- Operated heavy machinery and tractors to prepare new batches of soil and streamline the transportation of materials

EXTRACURRICULAR EXPERIENCE

Lambda Chi Alpha, Ithaca, NY

Jan 2024 – Present

House Manager & Risk Manager

- Oversee repairs and maintenance, coordinate city inspections, and ensure compliance with fire safety regulations
- Attend weekly meetings to confront pressing issues regarding finances, house management, social events, and policy
- Coordinate with vendors, security companies, and officials to ensure safety for events with over 300 attendees