

Cameron Dunn

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EDUCATION

Yale University, *BS in Mechanical Engineering (ABET)*, GPA 3.92/4.00

Class of 2028

SKILLS AND INTERESTS

- *Engineering Skills*: Java, C/C++, Python (TensorFlow, PyTorch), MATLAB; CAD (SolidWorks, Onshape, Fusion360); Ansys; NX; Microsoft Office Products; CNC Milling/Turning; 3D Printing
- *Language Skills*: Spanish (Professional working proficiency)
- *Interests*: Aerospace, Applications of Machine Learning in Physical Environments, Metamaterials, and Product Design

TECHNICAL EXPERIENCE

Design and Fabrication of Prototype Rocket Motor

May 2025-Present

- Solo end-to-end design of a ~2 kN ethanol/nitrous pintle injector rocket engine using SolidWorks, Onshape, and simulation software to ensure safety of design
- Performed finite-element analysis and thermal modeling to withstand 260 psi chamber pressure with >2x safety factor informing the use of stainless steel and copper alloys
- Iterated injector geometry using NASA CEA, RPA, and HalfCat Sim software to optimize design
- Coordinated GD&T and machining to ensure manufacturability and quality

Optimizing CNN Architectures for Geometric Deep Optical Sensing

Jan 2025-Present

- Engineered and fine-tuned convolutional (CNN) and generative neural networks (GAN) in Python/TensorFlow/PyTorch to reduce computational overhead, enabling real-time geometric deep optical sensing
- Work with metamaterials including twisted bilayer graphene used as the intelligent sensor
- Used saliency and stride mapping to create lower resolution maps without information loss leading to smaller and comparable accuracy machine learning models
- Received \$5,000 **Yale College First-Year Summer Research Fellowship in the Sciences & Engineering** to fund research

Development of Wheel and Suspension Design for Yale University Rover

Sept 2024-Present

- Directing an 11-member mechanical sub-team for the University Rover Challenge
- Modeled and built wheel and rocker-bogie suspension design in SolidWorks and Onshape that underwent strict static and dynamic load cases in CAD software
- Executed rapid prototyping using 3D printing and the Yale Machine Shop with extensive work CNC milling and lathing
- Collaborating with other teams to refine our rover's system for obstacle navigation, stability, and remote operation

Development of Bio-Inspired Unfurling Solar Panel for Mini-Rover

Jan 2025-May 2025

- Developed self-sufficient, remote-control rover and solar panel system that used servos to maximize solar surface area
- Iterated around spatial constraints of 10cm x 10cm x 20cm volume
- Used and wrote code for Arduino and built custom cable management systems for modular and organized design

Effects of Copper Sulfate on the Nervous System of the *Hirudo Verbana* Leech

May 2023-August 2023

- Received **Third Place Grand Award** at the International Science and Engineering Fair (ISEF)
- Received **First Place Massachusetts Chemistry and Technology Alliance Award** at the Massachusetts State Science Fair
- Conducted neurotoxicity experiments combining proteomics, histopathology and behavioral analytics in MATLAB
- Developed tool to quantify the vitality of the leeches for behavioral studies by tracking the center of mass of each leech after ingesting copper sulfate
- Authored peer-reviewed article published in *Journal of Emerging Investigators*
- Received \$2,500 Mabbet Award Grant from UMass Boston to conduct research

LEADERSHIP EXPERIENCE, EXTRA CARRICULARS, AND VOLUNTEERING

Yale Men's Heavyweight Rowing (NCAA Division 1), Boston College High School Crew

2016-2025

- Raced at the National and International Level, Finished 5th overall at Head of the Charles Regatta

Volunteering

2019-present

- Organized origami workshop for families in the "A Lift Up" homelessness prevention program
- Collaborated with City Mission Boston to coordinate workshops and resources
- Serve food at New Haven's Sunrise Café in New Haven