Angelica Knudsen

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EDUCATION

Massachusetts Institute of Technology (MIT) Cambridge, MA
Candidate for Bachelor of Science, Mechanical Engineering with Energy Expected May 2026
Cumulative GPA: 4.5/5.0

EXPERIENCE

MIT Researcher - Engineering for Bird Conservation Cambridge, MA
MIT D-Lab Feb 2026 – Present

- Co-designing with partners in the Peregrine Fund a fumigation pole to treat the critically endangered Ridgway's hawk from botfly infestations
- Working to increase the height of pole from 24 to 55+ feet, as well as enabling wireless remote operation of the pump and camera

Geo@MIT Researcher - Geothermal Heat Exchanger System Design Cambridge, MA
MIT D-Lab Sep 2025 – Present

- Designing a small-scale, bench-top heat exchanger system to investigate potential changes in water quality from connecting heat exchangers to water mains
- In partnership with the Cambridge Water Department

MIT Wind Build Lead Cambridge, MA
MIT Edgerton Center Feb 2025 – Present

- Leading the mechanical and electrical subteams on the design of a small-scale wind turbine for the 2026 Collegiate Wind Competition hosted by the US DoE
- Designing a custom radial-flux generator

Hatsopoulos Microfluids Laboratory Researcher Cambridge, MA
MIT Department of Mechanical Engineering Sep 2024 – May 2025

- Measured static and roll-off contact angle of water droplets on hummingbird feathers using a contact angle goniometer
- Examined feather samples' hierarchical structure via scanning electron microscopy
- Fabricated synthetic feathers with UpNano two-photon polymerization 3D-printing, to evaluate and compare mechanical and optical properties with natural hummingbird feathers

PROJECTS

Manta and Remora - Class Project for Engineering Systems Design Sep 2025 – Dec 2025

- Co-designed a seamlessly coupled remotely-operated vehicle (ROV) and unmanned surface vehicle (USV) to increase the cost-effectiveness, time-efficiency, and sustainability of offshore wind farm foundation inspections
- Contributed most to the custom reel mechanism, designed to withstand over 1000N of force and hold 300m of tether for the ROV

2025 Collegiate Wind Competition Scaled Wind Turbine - Build for MIT Wind Jan 2025 – May 2024

- Co-designed a small scale offshore wind turbine as part of the US DoEs annual Collegiate Wind Competition
- Specialized in designing a floating foundation inspired by the spar-buoy, tension-leg platform, and barge designs

ADDITIONAL

Languages: Python, MATLAB, C++, LaTeX, HTML/CSS
Manufacturing: Laser Cutter, Mill, Bandsaw, Drill Press, Lathe, 3D printing, Soldering
CAD: SOLIDWORKS, Autodesk Fusion 360, Rhino, Onshape

I intend to dedicate my life to fighting for climate justice in whichever way I can. I ideally would like to help birds, but anything that helps the climate, which could be in ecological restoration, promoting human-centered public transportation, or in renewable energy, is consistent with what I could see myself working in. This fellowship would be monumental in helping me get my foot in the door of conservation work, especially since I may seek to eventually go to graduate school in bird conservation, a hard pivot from my undergraduate work in mechanical engineering.

I have little official experience in storytelling for environmental issues, but I have written blog posts about trains and the climate injustice of car-centric urban design. I have more experience in collecting data out in the field through many opportunities here at MIT. Namely, I did research one summer on coastal acidification due to climate change and went out to the field to deploy sensors to gather water quality data. I have also gone to the Dominican Republic and assisted field technicians on collecting information of the terrain as well as measurements of palm trees that Ridgway's hawks nested in.

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It is necessary to center marginalized communities in environmental conservation work because they are the communities that suffer the most adverse effects of environmental injustice; environmental justice and social justice are so intertwined that we can't have one without the other.

Libby Hsu, the MIT D-Lab Associate Director of Academics, is the supervisor for my project helping Ridgway's hawks, and she happens to also be a big bird enthusiast, so she recommended that I apply for this position.