Audrey Cui

audcui@mit.edu | portfolio: https://audreycui.github.io/

EDUCATION

Massachusetts Institute of Technology — **Cambridge, MA**
MS in Mechanical Engineering — *expected May 2025*
BS in Computation & Cognition — *May 2024*
GPA 4.9/5.0

- Select Coursework: **Mechatronics (grad), Medical Device Design (grad), Underactuated Robotics (grad), Dynamics & Controls (grad)**, Design & Manufacturing I & II, Mechanics & Materials I, Electronics for Mechanical Systems I & II, Microcomputer Lab, Machine Learning, Emergent Computations in Neural Circuits, Algorithms, Signal Processing, Probability & Random Variables, Differential Equations, Linear Algebra

EXPERIENCE

Tadesse Lab Graduate Research Assistant — *Sep 2023 - present*

- Working in the Tadesse Lab on optical medical diagnostic devices for point of care deployment
- Designing miniaturized, portable Raman spectrometer for continuous biomarker monitoring
- Designing hardware stack for a high-throughput Raman spectroscopy platform, integrating multiple mechanical and electrical systems using Marlin firmware, Raspberry Pi, & custom PCBs
- Advising four undergraduate research assistants across high throughput submodule development

NVIDIA | Bioinformatics Intern — *May 2022 - Aug 2022*

- Designed, implemented, and benchmarked semi supervised learning frameworks to improve transformer model performance on downstream molecular property prediction tasks

MIT CSAIL Undergraduate Research Assistant — *Sep 2020 - Jun 2022*

Local Relighting of Real Scenes - *https://arxiv.org/abs/2207.02774*
Paint by Word - *https://arxiv.org/abs/2103.10951*

- Worked in the Torralba Lab on generative adversarial network (GAN) inversion, understanding GAN image synthesis behavior & feature representation, dataset generation, and image relighting
- First-authored paper on local image relighting
- Co-authored paper on zero shot image manipulation

MIT 2.678 & 2.679 (Electronics for Mechanical Systems I&II) TA — *Sep 2023 - May 2024*

- Teach intro electronics courses for MechE undergrads, covering circuit analysis/design, bench equipment use, transistors, computer vision, microcontrollers, signal processing, PCB design
- Run weekly office hours, debug circuits and explain concepts during lab hours

Other Teaching

MIT Cascade: Co-taught weekly electronics & microcontroller classes to local Boston area high school students using an original curriculum inspired by MIT's 2.678 course — Oct 2023 - Nov 2023
6.003 (Signal Processing) Lab Assistant: Taught signal processing during office hours — Sep 2022 - May 2023
MIT-Wales Global Teaching Labs: Taught Welsh secondary students how to make a car robot using an original curriculum covering Solidworks CAD, 3D printing, breadboarding, & Arduino programming — *Jan 2023*

SKILLS - see portfolio https://audreycui.github.io/

Mechanical & Design: CAD (Fusion360 & Solidworks), CAM (Fusion360), CNC Milling, Manual Mill & Lathe. Waterjet, MIG/TIG welding, FDM/SLA 3D printing, Lasercutter, Adobe Illustrator & Photoshop
Electronics & Hardware: PCB design (Kicad), PCB milling, 8051 & RISC-V Assembly, C, Arduino, Raspberry Pi, PSOC, Oscilloscope
Machine Learning & Software: Pytorch, Pytorch Lightning, Tensorflow, Python, Java, HTML/CSS/JS, Matlab, ROS, Drake, Numpy, Docker, Git

HONORS

2024 Martin Departmental Fellowship recipient | **2021** NCWIT Collegiate Award Finalist | **2020** Society of Women Engineers Scholarship Recipient | **2020** Equitable Excellence Scholarship Recipient | **2019** MIT THINK Scholars Finalist & overall 2nd place winner | **2018 & 2019** USA Biology Olympiad Top 50 | **2018** AIME Qualifier