Nichole Li

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Education

Massachusetts Institute of Technology (MIT), Cambridge, MA [May 2027]
Candidate for Bachelor's of Mechanical Engineering GPA: 4.9/5.0
Coursework: Design and Manufacturing I and II*, Thermal-Fluids Engineering I and II*, Mechanics and Materials I and II, Dynamics and Controls I and II, Electronics for Mechanical Systems, AI and ML for Engineering Design

Skills

Design and Analysis: SolidWorks, Ansys Mechanical (composite and structural), HSMWorks, FEA, DFM, DFA
Manufacturing: CNC/Manual mill, Lathe, FDM & SLA 3D printing, Waterjet, Sheet Metal
Software & Other: Python, MATLAB, MS Office, EC-Lab, Photoshop, Illustrator

Experience

Solar Electric Vehicle Team, MIT
Mechanical Lead [April 2025 - Present]
- Manage late-stage design and manufacturing of mechanical subsystems (suspension, steering, brakes, etc.) for second-generation multi-occupancy solar vehicle, balancing safety, manufacturability, cost, and weight
- Executed the team's first in-depth composite FEA research, applying Tsai-Wu failure criterion in Ansys to model carbon-fiber–honeycomb composites, and refined design to increase chassis safety factor by 10x
- Organize, recruit members, and create project timelines for 15 member team

Brakes and Pedals Lead [July 2024 - April 2025]
- Refined the design of master cylinder mount using SolidWorks, created toolpath using HSMWorks, and manufactured using manual mill, lathe, and vertical CNC mill for 2024 vehicle
- Designed and performed FEA on caliper mounts and rotors, instructed 2 members on mechanical design of pedals
- Performed hand calculations to validate pedal placement, braking deceleration, and custom pedal specifications, ensuring driver safety/comfort and compliance with competition regulations

Varanasi Research Group, MIT Department of Mechanical Engineering [September 2024 - Present]
Undergraduate Researcher
- Used SolidWorks, 3D printing, and laser cutting to iteratively design, create, and test various components of electrolytic cell stack, increasing scale of water processing by 100x
- Researched and performed experiments to determine mechanisms of dye removal and characterize electrode performance to create prototypical process for novel sustainable dye removal method, used Python to analyze data

Juejun Hu Research Group, MIT Materials Research Laboratory [January - September 2024]
Undergraduate Researcher
- Worked in glove box to create solution-processed optical phase change material (O-PCM) solutions, altered annealing and deposition parameters of O-PCM to optimize film surface morphology
- Analyzed O-PCM composition and morphology using FTIR, XRD, SEM, and EDS

Leadership

Private Tutor [September 2024 - Present]
- Created material for and taught high school physics, geometry, and chemistry

Differential Equations Teaching Assistant, Experimental Study Group [September 2024 - March 2025]
- Held office hours and quiz reviews for students, graded problem sets

Projects

Autonomous Knot-Tying Robot, Formlabs Hackathon [January 2025]
- Researched, designed, and manufactured timing pulleys, claw components, and mounts for an autonomous knot-tying robot using SolidWorks, SLA printing, horizontal bandsaw, and drill press

Book-Grabbing Robot, Design and Manufacturing I [February - May 2025]
- Used SolidWorks and manual fabrication tools to iteratively design and manufacture a 1.4 kg robot with a 0.65 kg detachable driven base, capable of moving a 4 kg load in 10 s and completing additional tasks at 1 m/s