

MIRANDA STERN

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EDUCATION

University of Pennsylvania

BSE Mechanical Engineering and Applied Mechanics

MSE Design for Manufacturing (Accelerated Dual Degree Program)

Graduating December 2023

GPA: 3.45/4.00

GPA: 3.50/4.00

EXPERIENCE

Mechanical Engineering Educational Lab, *Injection Molding Lead* | Philadelphia, PA

Spring 2023 - Present

- Investigated 3D printed injection mold tooling to improve front-end part production time by 75%
- Devised validation system to assess molds based on temperature resistance, part resolution, and fatigue cycles

Modular Toddler Footwear, *Research & Development Lead* | Philadelphia, PA

Fall 2022 - Spring 2023

- Conceptualized modular toddler shoe within a team of 4 that would reduce end-user waste by 2.5 kg and incurred cost by 66% by minimizing shoes purchased for toddlers between the ages of 12 - 24 months
- Examined normal pressure distribution and high impact edge cases to inform physical system constraints
- Evaluated thermal properties, materials strength, affordability, and manufacturability to select thermoplastic polyurethane and canvas to create the most cost-effective, durable shoe that could be produced within a year
- Designed validation testing based on ISO standards and on-site availability of test equipment
- Awarded William K. Gemmill Memorial Prize for outstanding creativity in a senior capstone project

Light-driven Microflyer Research, *Resources Lead* | Philadelphia, PA

Summer 2021 - Spring 2023

- Investigated non-motorized flight of millimeter scale drone (flyer) through temperature-driven lift across the surface of a carbon nanotube (CNT) coated mylar disc
- Pinpointed ground effect from points of contact between flyers and the launching surface as detrimental to results
- Validated conductive metals through examining number of cycles until grounding of launch surface was no longer effective in preventing charge being imparted onto discs
- Fabricated over 20 prototypes to optimize material performance, points of contact, and affordability
- Improved input energy efficiency for flyer levitation by over 150% and increased capable flyer diameter to 8 [cm]
- Co-authored "Minimizing the Ground Effect for Photophoretically Levitating Disks" in *Physical Review Applied*

NASA GISS Climate Change Research Initiative, *Lab Assistant (Unpaid)* | Lamont-Doherty, NY

Summers, 2015 - 2018

- Surveyed marsh sites in Connecticut to determine accessibility and quality of potential core samples
 - Supported procurement of sediment cores from Piedmont marsh to be characterize carbon sequestration
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INVOLVEMENTS

Machine Design and Manufacturing Course, *Head TA* | Philadelphia, PA

Spring 2022 - Spring 2023

- Educated over 60 students in manufacturing to develop ANSI/ASME standard parts with tolerance of 0.0005"
- Supervised lab space to ensure proper and safe use of manual and CNC 2.5 axis mills and lathes

ASME UPenn Chapter, *Vice Chair/Senior Advisor* | Philadelphia, PA

Fall 2019 - Spring 2022

- Co-led board meetings to organized chapter initiatives, fundraisers, and student educational seminars
 - Spearheaded outreach to over 100 alumni in industry to facilitate networking between students and graduates
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SKILLS

Languages: MATLAB, C/C++, Python, HTML

Software: SOLIDWORKS, Rhino3D, Simulink, ProtoTRAK, MasterCAM, Fusion360, COMSOL, Microsoft Office Suite

Manufacturing: CNC, Lathe & Mill, Rapid Prototyping, ASME Y14.5 (GD&T), Finite Element Analysis (FEA), Carbon Fiber Layups, Vacuum Forming, Injection Molding, 3D Printing, Laser Cutting, Mold Making, Casting, Arduino, Circuits, Dynamics, Data Analytics