

Sebastian Mostek

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https://cornell-mae-ug.github.io/fa25-portfolio-smmostek

EDUCATION

CORNELL UNIVERSITY

SIBLEY SCHOOL OF MECHANICAL AND AEROSPACE ENGINEERING

Bachelor of Science in Mechanical Engineering
Magna Cum Laude, Class of 2025

Ithaca, NY
GPA 3.9

UPPER DARBY HIGH SCHOOL

Valedictorian, Class of 2022

Upper Darby, PA
GPA 99/100

RELEVANT COURSEWORK

Advanced Dynamics & Vibrations, Material Mechanics, Fluid Dynamics, System Dynamics, Heat Transfer, Quantum Mechanics, Differential Equations, Electric Circuits, Wave Physics, Mechanical Design, Probability & Statistics

RESEARCH EXPERIENCE

Laboratory for Advanced Materials and Manufacturing

Researcher

Ithaca, NY

June 2025 – December 2025

- Developed a novel nondimensionalized theoretical model of the temperature distribution in the melt pool during Laser Power Bed Fusion with the aim of accelerating the identification of optimal process parameters for different materials
- Utilized advanced mathematical tools such as Finite Element Analysis and Fast Fourier Transforms to numerically evaluate the model
- Preparing a journal article about the model and its advantages over existing predictive models

Independent Mathematics Research

Researcher

Ithaca, NY

September 2022 – June 2025

- Enumerated and classified the equilibrium distributions of n mutually repulsive points confined to the surface of a sphere
- Delved into diverse and advanced mathematical fields including Graph Theory, Group Theory, and Numerical Optimization in the service of evaluating, analyzing, comparing, and visualizing distributions
- Developed an elaborate algorithm to efficiently search for all possible solutions for a given n
- Wrote 2500+ lines of code in MATLAB in the process of solving the problem

LEADERSHIP EXPERIENCE

Upper Darby Robotics and Engineering Team

Team Lead

Drexel Hill, PA

September 2019 – May 2022

- Designed and constructed a robot for the annual VEX Robotics Competition
- Led and rebuilt the team after COVID and virtual-learning caused all other experienced team members to leave
- Competed in the 2020 Eastern Pennsylvania State Championship Tournament

PROFESSIONAL EXPERIENCE

PYE Education Center

Math Tutor

Elmhurst, NY

June 2023 – September 2023

- Led one-on-one virtual tutoring sessions regarding Algebra 2, Geometry, and Pre-Calculus.
- Designed and reviewed SAT practice problems.

SKILLS & INTERESTS

- Professional skills:** Programming in MATLAB and Python; Ansys; Computer Aided Design; Finite Element Analysis; Microsoft Office Suite; LaTeX
- Interests:** Music Theory; Hiking; Soccer; Board Games; Political History and Philosophy; Linguistics
- Languages:** Intermediate German; Beginner French, Arabic, Danish, Russian