NATALIA FURMANCZYK

natalia3.furmanczyk@gmail.com • https://www.linkedin.com/in/natalia-f/

EDUCATION

University of Pennsylvania — Aug 2025 – Present (May 2027)

M.S. in Mechanical Engineering and Applied Mechanics

- Relevant Coursework: Design for Mechatronic Systems, Materials and Manufacturing for Mechanical Design

University of California, Los Angeles — Aug 2021 – Jun 2025

B.S. in Mechanical Engineering

- Summa Cum Laude, GPA: 3.99/4.00

SKILLS

- **Software & Programming:** Python, MATLAB, C++/C/C#, Java, Git
- **Engineering Tools:** SolidWorks, Creo, Autodesk Fusion, Onshape, Tecplot, Ansys Fluent, Arduino, Photoshop
- **Fabrication & Manufacturing:** 3D Printing, Laser Cutting, Composite Fabrication (Carbon Fiber/Fiberglass Layups), GD&T, DFM

EXPERIENCE

Honeywell | *Systems Engineering Intern* — Jun – Aug 2025

- Performed steady-state analysis of aircraft vapor compression cycles using simulations across full flight life cycles.
- Developed a Python-based Graphical User Interface (GUI) with adjustable flight parameters to predict power draw and system utilization, supporting aftermarket strategy development.

Gear Research Center at Technical University of Munich| *Intern* — May 2024 – Jun 2024

- Condu ted experimental testing to characterize flow rates through wet clutches with varying disc-groove geometries.
- Analyzed experimental data in MATLAB to determine wet clutch failure conditions.
- Debugged and modified a Fortran KUPSIM simulation to produce physically realistic output values.

Multiscale Thermosciences Laboratory at UCLA | *Undergraduate Researcher* — Jan 2023 – Apr 2024

- Studied the interfacial phenomenon of flowing CaCl2 beads and predicted flow behavior based on fluid velocity and density by performing simulations in Ansys Fluent.
- Investigated internal droplet flow down string with CFD post-processing and MATLAB.

Stellant Systems | *Manufacturing Engineering Intern* — Jun – Aug 2023

- Optimized traveling wave tube heat shrink manufacturing methods by designing alignment and attachment fixtures.
- Created HTML-based data collection tool to record and visualize shrink-temperature measurements in real time.
- Identified deficiencies in pre-heat shrink measurement protocols and developed a validation system to improve assembly quality and prevent lower-quality products from continuing in production (this was later integrated with product's manufacturing line).

LEADERSHIP & ACTIVITIES

Rocket Project at UCLA| *Recovery Lead* — Oct 2021 – Apr 2024

- Lead a 4–10 person team in testing and manufacturing recovery system for multiple rockets.
- Established a practice of launch-testing for structural and electronics validation by constructing test rockets.
- Designed a 3D-printed electronics pull-pin switch system to improve durability and reduce reliance on store bought elements.
- Achieved the club's first successful recoveries by achieving consistently separation tests and strengthening electronics mounting.

University of Pennsylvania | *Teaching Assistant* — Aug 2026 – Present

- *EAS 5070 (Intellectual Property Strategy and Business Law for Engineers)*
- Leading office hours, monitoring course forum and grading assignments for graduate-level engineering course.

Tau Beta Pi | *Academic Outreach Officer* — Jun 2023 – Jun 2025

- Lead exam review sessions for up to 120 undergraduate students in math and physics; tutored undergraduate engineering students in math, physics, chemistry and computer science.

Penn Biotech Group | *Team Member* — Aug 2025 – May 2026

- Conducted market and customer-needs analysis for a multidisciplinary biotech consulting team, evaluating technical and commercial opportunities to develop actionable recommendations for clients.

PROJECTS

- Motion planning and optimization for 7 DoF Franka-Emika Robot using forward and inverse kinematics (2026).
- Developed combination product (Crutch-chair) with detailed CAD, QFD, product architecture, DFM/DFA and cost analysis (2026).
- ESP32 based autonomous battle bot with PID-controlled differential drive and autonomous/Wi-Fi control (2025).
- Prototyped assistive glasses for paralyzed eyelid movement, with pulley-based mechanism and Arduino control (2025).