Ethan Hawes

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linkedin.com/in/ethan-scott-hawes | ethanhawes.org engineering portfolio

EDUCATION

Northwestern University | McCormick School of Engineering Evanston, IL
B.S. Biomedical Engineering; Minor in Artificial Intelligence Sep 2023 – Present

Coursework: Biomedical Signals and Circuits, Measuring Instrumentation, Machine Learning, Biomedical Imaging, Biostatistics, Data Structures and Algorithms

RESEARCH AND DESIGN EXPERIENCE

Systems Engineering Intern | BD Advanced Patient Monitoring Jun 2026 – Sep 2026
Irvine, CA

- Supported blood-pressure monitoring device development through systems requirements, feasibility experiments, and verification and validation testing.
- Wrote and revised design requirements, test protocols, and engineering documentation; summarized experimental findings in technical reports.
- Troubleshot early-stage hardware failures and supported root-cause analysis to inform design decisions.

Research and Design Engineer | Cast21 Feb 2026 – Apr 2026
Evanston, IL

- Conducted structured testing of orthopedic devices to evaluate durability, functionality, and reliability against design specifications.
- Executed and refined test protocols; analyzed test data in Python and documented findings to support design iterations and product improvements.
- Collaborated across engineering teams on device redesign, materials evaluation, and performance testing.

Research Associate | Rogers Research Group Sep 2024 – Apr 2025
Northwestern University | Wearable Sweat Flow-Rate Sensors

- Fabricated and assembled wearable microfluidic sweat flow-rate sensors using a heater with thermal sensors positioned on either side.
- Inspected fabricated sensors under a microscope to assess structural integrity, fabrication consistency, and readiness for testing.
- Operated e-beam and thermal evaporators, plasma cleaner, and MLA 150 maskless aligner; documented fabrication procedures for reproducibility.

ENGINEERING PROJECTS

Esophageal Reflux Sensor | Senior Capstone In development

- Developing a capsule concept integrating pH, impedance, and pressure sensing; modeled capsule components and assembly in CAD.

Raspberry Pi LED Display | Personal Project

- Developing a Raspberry Pi–based LED display system with Python software and controller-driven interactive applications.

TECHNICAL SKILLS

Programming & analysis: Python, MATLAB, Excel, statistical analysis, data visualization
Sensors & systems: Physiological sensing, thermal flow sensing, experimental design, feasibility testing, verification and validation, requirements, failure analysis, technical documentation
Hardware & fabrication: Prototyping, Raspberry Pi, LTspice, SolidWorks, Autodesk Fusion 360, cleanroom fabrication, microscopy, e-beam and thermal evaporation, plasma cleaning

LEADERSHIP & ADDITIONAL EXPERIENCE

President | Lambda Chi Alpha, Alpha Iota Chapter May 2024 – May 2025
Led campus events, service projects, and fundraisers with student organizations and university administrators.

Social Chair | Northwestern University Club Rugby Apr 2024 – Apr 2025
Organized team events and coordinated team communications.

Additional employment: Polo Fields Country Club, Bartender/Server (Jun 2023 – Aug 2025); Chipotle, Crew Member (Feb 2022 – Jun 2023)
Selected honors: National Merit Finalist (2023); Brown Book Award (2023); Rugby All-American Nominee (2025)