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. in Biomedical Engineering, Minor in Artificial Intelligence Sep 2023 - Present
Relevant coursework: Biomedical Signals and Circuits, Measuring Instrumentation, Biostatistics, Machine Learning, Biomedical Imaging, Data Structures and Algorithms

RESEARCH AND DESIGN EXPERIENCE

Systems Engineering Intern | BD Advanced Patient Monitoring Jun 2026 - Sep 2026
- Wrote and revised design requirements and engineering documentation for physiological monitoring devices, including continuous blood pressure monitoring cuffs and monitors.
- Conducted early-stage design feasibility testing and summarized experimental findings in technical reports to support device development.
- Performed verification and validation testing and wrote and edited test protocols for patient-monitoring systems, including ClearSight, HemoSphere, and early-stage devices.

Research and Design Engineer | Cast21 Feb 2026 - Apr 2026
- Evaluated the material and mechanical performance of orthopedic medical devices against design specifications to support R&D and product improvements.
- Analyzed experimental data using Python and documented findings to inform engineering decisions and design iterations.
- Refined testing protocols for device durability and functionality and collaborated across teams to improve device performance.

Research Associate | Rogers Research Group, Northwestern University Sep 2024 - Apr 2025
- Fabricated and assembled wearable microfluidic sweat flow-rate sensors incorporating a heater with thermal sensors on either side for physiological monitoring.
- Inspected fabricated devices under a microscope to assess structural integrity and fabrication consistency before downstream testing.
- Operated cleanroom tools including e-beam and thermal evaporators, plasma cleaner, and MLA 150 maskless aligner; documented fabrication procedures to support reproducibility.

SENSOR HARDWARE PROJECTS

Heart-Rate (HR) and Electromyography (EMG) Sensor Projects
- Designed, simulated, built, and debugged sensor circuits using LTspice, breadboards, soldering, oscilloscopes, and printed circuit boards (PCBs).
- Wrote Python and MATLAB scripts to analyze sensor measurements, filter signals, calculate statistics, and visualize experimental results.

TECHNICAL SKILLS

Sensor hardware: Physiological sensing, circuit design and simulation, LTspice, breadboard prototyping, soldering, oscilloscopes, PCBs, Raspberry Pi

Programming and analysis: Python, MATLAB, Excel, signal filtering, statistical analysis, data visualization

Design and fabrication: SolidWorks, Autodesk Fusion 360, cleanroom fabrication, thermal and e-beam evaporation, plasma cleaning, maskless lithography

Engineering methods: Design requirements, experimental design, feasibility testing, failure analysis, verification and validation, technical documentation

LEADERSHIP 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 Team Apr 2024 - Apr 2025
- Organized team events and coordinated communication to support team cohesion.

ADDITIONAL

Honors: National Merit Finalist (2023); Brown Book Award (2023); Rugby All-American Nominee (2025)

Interests: Wearable biosensors, diagnostic and sensing technologies, surgical and interventional devices, prosthetics, soccer, rugby, golf, skiing, Louisville and Northwestern athletics