Ethan Hawes

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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, Data Structures and Algorithms, Biomedical Imaging

PHYSIOLOGICAL SENSING PROJECTS

Heart-Rate (HR) and Electromyography (EMG) Sensor Projects

- Wrote Python and MATLAB scripts to analyze physiological sensor measurements, filter signals, calculate statistics, and visualize experimental results.
- Designed, simulated, built, and debugged heart-rate and EMG sensor circuits using LTspice, breadboards, and oscilloscopes.

RESEARCH AND DESIGN EXPERIENCE

Systems Engineering Intern | BD Advanced Patient Monitoring Jun 2026 - Sep 2026

- Supported development of continuous blood pressure monitoring devices through design requirements, feasibility experiments, and engineering documentation.
- Conducted early-stage feasibility experiments and analyzed and presented findings to support engineering decisions for physiological monitoring devices.
- 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.
- Used Python to analyze experimental data and communicate results supporting engineering decisions, design iterations, and product improvements.
- 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.

TECHNICAL SKILLS

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

Sensor hardware and prototyping: HR and EMG circuits, LTspice, breadboard prototyping, oscilloscopes, Raspberry Pi

Design and fabrication: SolidWorks, Blender, 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, noninvasive physiological monitoring, music, prosthetics, soccer, rugby, golf, skiing, Louisville and Northwestern athletics