

Rohan Susarla

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EDUCATION

University of Wisconsin-Madison

Jan 2024 – Dec 2027

B.S. Electrical Engineering

Madison, WI

GPA: 3.64/4.00 | Dean's Honor List (Spring '24, Spring '25, Fall '25, Spring '26)

EXPERIENCE

Researcher (Grant-Funded)

Aug 2025 – Present

Wisconsin Power Systems Group (Prof. Bernard Lesieutre)

Madison, WI

- Selected as an **Alvarado Scholar** (faculty-interviewed research cohort) and awarded a competitive **ECE SPARK** fellowship (\$7,000) for full-time summer research.
- Partnered with the federal agency operating the Pacific Northwest power grid to build a MATLAB signal-processing pipeline over a proprietary 1.8 TB dataset, resolving data center load behavior at 2 kHz across five months.
- Characterized periodic sub-Hz power oscillations driven by GPU-intensive machine learning workloads, identifying spectral signatures with the potential to excite inter-area and torsional resonance modes in the transmission grid.
- Developed a frequency-domain algorithm correcting current-transformer phase error in instantaneous three-phase power calculations, eliminating a systematic bias affecting 230,000+ minute-long measurement files.

Researcher

Dec 2025 – Present

Energy Transport & Conversion (ETC) Lab (Prof. Eric Tervo)

Madison, WI

- Conducted research on commercially scalable nanogap thermophotonic devices that convert low-grade waste heat into usable power (NSF/DARPA-funded).
- Led lab outreach, designing an exhibit at the **Wisconsin Engineering Expo** to showcase energy transfer for K-12 students.

Undergraduate Teaching Assistant

Jan 2026 – Present

UW-Madison

Madison, WI

- TA for ECE 203 (Signals, Information and Computation), *Spring '26, Fall '26*.
- Helped teach an intro to signal processing covering complex sinusoids, Fourier series and the DFT, sampling, digital filters, and **MATLAB** labs in an active-learning classroom of **100+** students.

PUBLICATIONS AND PRESENTATIONS

R. Susarla, M. D. Sinclair, S. Venkataraman, L. Roald, and B. Lesieutre, "Examining Patterns in Data Center Power Usage," *2026 North American Power Symposium (NAPS)*, Oct. 11–13, 2026.

PROJECTS

Rack-Scale GPU Energy Characterization | *Python, C++, MATLAB*

- Collaborated with **Prof. Matt Sinclair** and the **Heterogeneous Architectures Lab (HAL)** on a U.S. **Department of Energy** project characterizing power draw and energy efficiency of **AMD** and **NVIDIA** GPUs for AI and scientific computing.
- Comparing power signatures of **inference** versus **training** workloads to assess their potential effects on grid stability.

3 ω Thermal-Conductivity Instrument (ETC Lab) | *MATLAB, Python*

- Designed a 3 ω measurement system to test semiconductor thermal conductivity, applying current at ω to produce Joule heating at 2 ω and measuring the resulting voltage response at 3 ω .
- Built the 3 ω measurement system around thin-film heating elements made in a cleanroom using lithography, electron-beam lithography, and thermal deposition.

LifeVision: Drowning Detection from Pool Cameras | *Python, PyTorch, OpenCV*

- Built a photorealistic pool simulation in **NVIDIA Isaac Sim** (261 labeled frames) and fine-tuned **YOLO11n** and **RF-DETR** with ByteTrack, raising submerged-person recall from 16% to 95% and 98%.

TECHNICAL SKILLS

Languages: SystemVerilog, C, C++, Assembly, Java, Python, TypeScript, Swift, MATLAB

Relevant Coursework: ECE 427 (Electrical Power Systems), ECE 330 (Signals and Systems), ECE 203 (Signals, Information and Computation)