

Alec Marshall

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EDUCATION

University of Wisconsin-Madison

May, 2026

BS, Mechanical Engineering

4.0 GPA

- Recognized on the Dean's List for all semesters, pursuing a certificate in Engineering for Energy Sustainability.

WORK EXPERIENCE

University of Wisconsin-Madison, Engineering Department

Madison, WI

Mechanical Systems and Analysis Engineer

May 2024 – Present

- Planned and executed a complex facility upgrade on a room-scale two phase annular flow loop involving pipe routing, LabVIEW, PLC, and C++ programming, as well as rapid prototyping to improve our pump flow by over 50%.
- Developed a tool to spatially resolve liquid film thickness around an obstacle using laser interferometry.
- Conducted rigorous CFD and FEA analysis to validate the maximum pressure limits of in-house components.
- Partnered with Marianne Fairbanks from UW-Madison's SoHE department to analyze and enhance the thermal properties of hemp fiber-mycelium composites for innovative and sustainable insulation solutions.
- Engineered a budget-friendly 150W 3-phase resistor load bank for educational labs, utilizing natural convection cooling and laser-cut acrylic enclosures to achieve high performance and a professional appearance.

University of Wisconsin-Madison

Madison, WI

Mechanical Engineering Instructor

September 2022 – Present

- Directed multiple lab sections weekly, enhancing student's skills in engineering problem-solving and design through a hands-on team based design challenge.
- Championed an inclusive and diverse learning environment while ensuring students grasp complex concepts with clarity.

Flugen, Inc

Madison, WI

Equipment Development and Maintenance Engineer

May 2019 – Apr 2024

- Acted as a contract engineer to develop specific machines or parts for protocols and assay-specific purposes.
- Executed comprehensive low and high level equipment repairs on a wide variety of lab equipment ranging from centrifuges to autoclaves, encompassing board-level repair and detailed mechanical part replacements.

LEADERSHIP EXPERIENCE

Badger Solar Racing

Madison, WI

Mechatronics Team Lead

August 2021 - September 2024

- Spearheaded the integration of electrical and mechanical subteams, with a comprehensive understanding of all car systems.
- Onboarded and mentored 4 new mechatronics team members, providing personal training in Siemens NX and advanced design for manufacturing principles with a focus on industrial SLS printing.
- Engineered a robust battery, as well as high and low voltage electronics enclosures for Solar Car 1 and 1.5, prioritizing safety, repairability, accessibility, and optimized manufacturability.
- Delivered innovative waterproof vehicle harnessing solutions under tight deadlines and resource constraints.

SKILLS & INTERESTS

- **Skills:** SOLIDWORKS, AutoCAD, Siemens NX, Excel/Microsoft Office, LabVIEW, Click Programming, C++, embedded software development, Python, Matlab, additive and subtractive DFM, soldering, harnessing, electrical design.

PERSONAL PROJECTS - Please visit alecmarshall.com for a more comprehensive overview

Universal Ampacity Chart for Wire Sizing

- Developed a wire size calculator in Excel enabling precise selection of AWG values for high-efficiency applications.

Tormach ZA6 Pen Plotter Module

- Partnered with a peer to create an open-source, pressure-sensitive drawing module for Tormach ZA6 robotic arms.