Aidan Matson

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EDUCATION

Valparaiso University Bachelor of Science, Mechanical Engineering

Aug 2022 – May 2026

Cumulative GPA 3.4

EXPERIENCE

Quad Plus Joliet, IL Engineering Intern

June 2022 – Present

- Installed, programmed, and commissioned automation systems using Allen-Bradley and Siemens PLCs, integrating motor drives, sensors, and HMIs for production control.
- Delivered on-site automation and controls service across heavy industrial environments, including steel mills, paper mills, recycling facilities, and concrete plants.
- Conducted 13.8 kV power testing and verification on E-Fracking systems, interpreting electrical schematics and ensuring compliance with safety standards
- Diagnosed and resolved faults in control systems, including wiring defects, logic programming errors, and hardware failures in complex manufacturing lines.
- Practiced OSHA 10 and NFPA 70E electrical safety procedures, including lockout/tagout during high-voltage operations.

PROJECTS

Custom PLC Development

- Designed and built a custom automation PLC based on an STM32H7 microcontroller to replace expensive, difficult-to-program commercial controllers.
- Developed firmware in C with Ethernet, RS485, and USB interfaces for communication and programming.
- Engineered hardware with 24 V opto-isolated inputs, eight 80 W MOSFET-driven outputs, and over 100 3.3Volt I/O pins.
- Integrated 16-bit ADC and DAC for high-precision analog control and high-power PWM outputs.
- Designed, assembled, and tested the custom PCB by hand, including component selection and layout.

Homemade Rocket Engine

- Designed and tested KNSU-propelled rocket engines
- Used MATLAB for nozzle optimization and constructed a test stand to measure impulse
- Experimented with aluminum, steel, and resin nozzles, and cast custom brass versions for testing.

10 kW Induction Heater

- Designed and built a 10-kW induction heating system for quicker metal melting in casting and prototyping applications.
- Designed and assembled the power electronics and custom PCB controller, handling high-frequency switching, current feedback, and thermal management.

Microcontroller-Based Motor Control (Valparaiso University Research)

- Developed a microcontroller system to control a motor-driven flywheel with adjustable movement via encoder feedback.
- Designed control loops to allow for precise real-time adjustments to the wheels motion.

ACTIVITIES

Valpo Aviators Club Cofounder and Copresident

December 2024 – Present

- Founded the Valpo Aviators Club to foster interest in aerospace among engineering students at Valparaiso University.
- The club started with 5 initial members and an executive board, growing to 15 active members through outreach.
- Used personal experience in aircraft design and building to mentor members in aviation-related projects.

SKILLS

- Software: SolidWorks, Autodesk, MATLAB, OnShape
- Manufacturing: Machining, 3D printing, Equipment service
- Automation: PLC programming, Microcontroller systems, Controls
- Certifications: OSHA 10, NFPA 70e
- Personal: Leadership, Problem-solving, Collaboration, Adaptability