

Kaeden Monroe

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PROFESSIONAL SUMMARY

Mechanical Engineering undergraduate specializing in embedded systems, controls engineering, and electro-mechanical integration. Experienced in flight control systems design, real-time signal processing, microcontroller programming, and hardware troubleshooting using benchtop testing tools.

EDUCATION

Bachelor of Science in Mechanical Engineering 2024 – 2028
University of Delaware, Newark.

PROFESSIONAL EXPERIENCE

Sector Lead – VIP: Drones AUG 2025 – PRESENT
Vertically Integrated Projects, UD Newark, DE

- Directed electro-mechanical maintenance and hardware repairs for drone fleet using multimeters and soldering tools.
- Implemented sensor fusion techniques during autonomous flight operations to support volume reconstruction and spatial tracking.
- Managed sector-level critical path scheduling, flight controller integration, and Bill of Materials (BOM).

Undergraduate Researcher JUNE 2025 – AUG 2025
Neuromuscular Biomechanics Lab Newark, DE

- Processed complex time-series force data using MATLAB signal processing algorithms for peak detection and segmentation.
- Partnered with researchers to refine mobile/hardware prototypes for real-time mobility monitoring.
- Mapped critical phase transitions to evaluate dynamic sensor performance across extensive data trials.

Intern / Technician Assistant DEC 2024 – JAN 2025
Hanger Clinic Orthotics and Prosthetics Laurel, MD

- Programmed myo-electric prosthetics utilizing EMG pattern recognition for electro-mechanical responsiveness.
- Integrated CNC-machined components and carbon fiber materials with sub-millimeter tolerance precision.
- Conducted hardware specification compliance and quality assurance testing on active medical devices.

PROJECTS

Quadcopter Flight Control System & Digital Twin MAY 2026

- Designed and simulated a custom flight control system for a digital twin quadcopter targeted for physical deployment.
- Configured low-level circuit schematics, motor drivers, and sensor integration routines for real-time control.
- Developed closed-loop control algorithms to ensure dynamic stability and pitch/roll/yaw correction.

Data Center Thermal Management & Control Modeling 2025

- Built comprehensive cooling models using SolidWorks Flow Simulation and MATLAB to simulate thermal dissipation.
- Analyzed dynamic air-side economization response curves to optimize continuous cooling efficiency.
- Modeled Power Usage Effectiveness (PUE) to project energy efficiency improvements in high-density systems.

SKILLS

Embedded & Controls	STM32, RTOS, Microcontrollers, Flight Controllers, Control Systems, Sensor Fusion
Programming & Software	C/C++, Python (NumPy, SciPy), MATLAB/Simulink, Signal Processing
Hardware & Tools	Oscilloscopes, Multimeters, Bench Electronics Troubleshooting, Soldering, EMG Sensors
Mechanical Design	SolidWorks (Assemblies, Parts), FEA, CAD, 3D Printing, Rapid Prototyping