Mason Deal

Raleigh, NC • (252) 245-0609 • mdeal871@gmail.com • masondeal.dev

SUMMARY

Computer engineering senior seeking a Summer 2027 internship in hardware, embedded systems, applications, or validation engineering.

EDUCATION

North Carolina State University | Raleigh, North Carolina GPA: 3.61
B.S. Computer Engineering, expected May 2027
Accelerated B.S./M.S. Program

TECHNICAL SKILLS

Programming Languages & Software: C/C++, Python, Verilog, Java, Git, SSH

Hardware: Embedded Systems (MSP430/ARM), PCB Design, FPGA/ASIC Design, Microarchitecture, Microelectronics

Tools & Simulation: Vivado, Synopsys, Questa, Altium Designer, KiCad, SPICE, Oscilloscopes, Logic Analyzers

Operating Systems: Windows, macOS, Linux (Ubuntu and Debian)

EXPERIENCE

Texas Instruments | Dallas, Texas May 2026 - August 2026
Applications Engineer Intern (Battery Gauge Products)

- Diagnosed and resolved application-level hardware, firmware, and system-integration issues for industrial and consumer-electronics customers, closing 26 customer support cases without further escalation.
- Developed an embedded Linux kernel driver suite for a TI battery-gauge architecture, enabling I²C communication, device configuration, and system-level integration across 2 gauge platforms.
- Designed and validated a custom PCB in Altium with integrated ESD-protection circuitry, maintaining reliable data communication during contact-discharge testing exceeding 15 kV.

North Carolina State University Libraries | Raleigh, North Carolina January 2025 - *Present*
Student IT Technician

- Support an environment of more than 1,000 computing systems, diagnosing hardware, software, and network failures to maintain workstation availability across university libraries.
- Resolve approximately 70 tickets per semester through configuration analysis, system imaging, component replacement, and troubleshooting.
- Provide customer-facing technical support to students, faculty, staff, and large campus events, including technology setup and live troubleshooting for events ranging from 10 to 100+ attendees.

Superior Concrete of NC Inc. | Greenville, North Carolina (Hybrid) February 2021 - *Present*
Assistant Estimator

- Prepared material takeoffs, prequalifications, and bid documentation for concrete construction projects, supporting project planning and competitive bidding.
- Designed and implemented a digital project archive and expanded server capacity by 5 TB, improving long-term record retention and retrieval.
- Designed and launched a new company website and resolved select business-critical software, storage, and network issues in-house, avoiding outside IT escalation.

LEADERSHIP & INVOLVEMENT

Alpha Phi Omega National Service Fraternity | Education Vice President

IEEE Student Branch | Treasurer; former Web Development Lead (1st Place Website, IEEE SoutheastCon 2026)

Apple Next-Gen Innovators Mentorship | Mentee

IBM-NCSU Pathfinder Mentorship | Mentee

HONORS & AWARDS

Eagle Scout; University Honors Program; Dean’s List (Spring 2025, Spring 2026); 2026 NC State University Libraries Student Assistant of the Year; TI Engineer Your Future Participant; SECU "People Helping People" Scholarship

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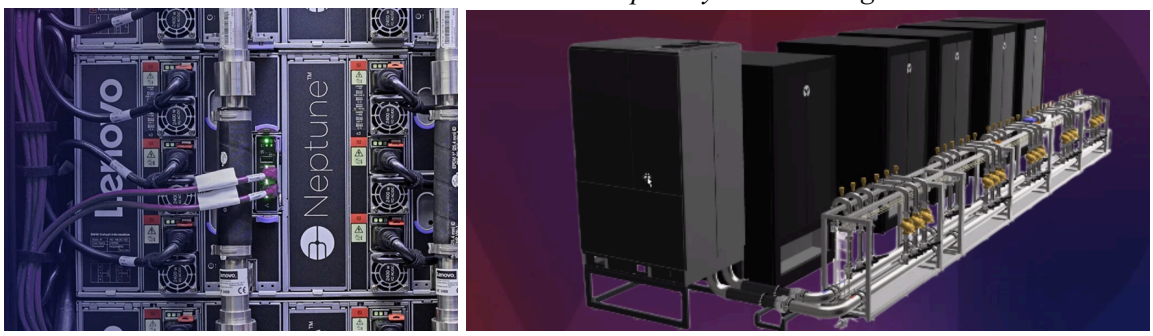
Automated Datacenter Liquid Cooling System Testing (in progress)

Lenovo / NC State - *Multidisciplinary Senior Design*



Lenovo public product imagery

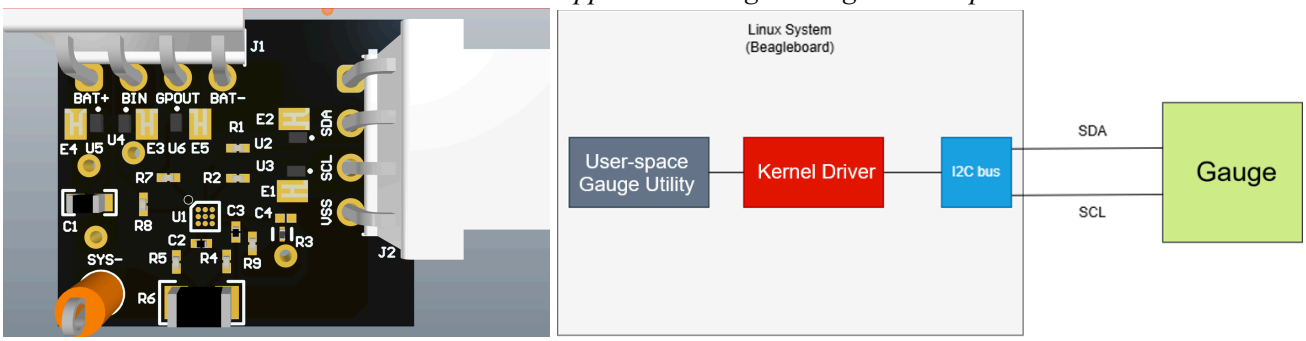
Overview:
Developing an automated testing system for Neptune liquid cooling systems used in Lenovo enterprise/datacenter server racks in collaboration with Lenovo's manufacturing organization. I am a Technical Project Manager responsible for coordinating system engineering efforts across electrical, mechanical, and industrial engineering disciplines.
Planned Technologies: Linux, Python, SQLite, sensor integration, automated data logging, and closed-loop test control.
Technical Focus:

- System integration and test automation
- Hardware/software interfaces
- Cross-disciplinary engineering

Current Status: Completed sponsor discovery and initial requirements definition; currently developing the system architecture and design plan.

Battery-Gauge System Integration & ESD Protection

Texas Instruments - *Applications Engineering Internship*



Overview:
Developed embedded software and custom hardware to improve the integration and electrical robustness of TI battery-gauge devices for embedded Linux systems and customer hardware. The work connected device-level communication, system configuration, PCB protection, and bench validation.
Technologies: Embedded Linux, C, I²C, Altium Designer, PCB layout, ESD protection, and hardware validation.
Technical Contributions:

- **Embedded Linux Driver Suite:** Developed a Linux kernel driver and companion user-space utility supporting I²C communication, device configuration, telemetry retrieval—including state of charge, voltage, and temperature—and gauge firmware programming across two battery-gauge platforms.
- **ESD-Protected PCB:** Designed and validated a custom PCB with integrated ESD-protection circuitry, maintaining reliable data communication during contact-discharge testing exceeding 15 kV.

Future Improvements:

- Validate driver behavior across additional Linux distributions and supported gauge configurations.
- Add automated regression tests for device configuration, communication errors, and recovery behavior.

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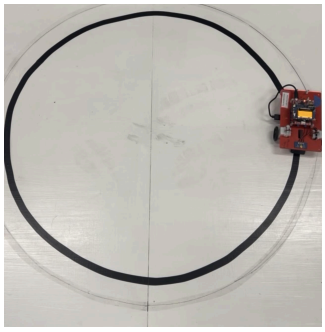
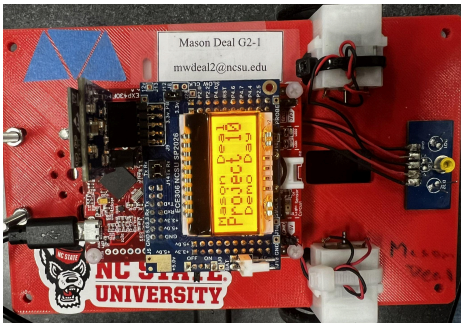
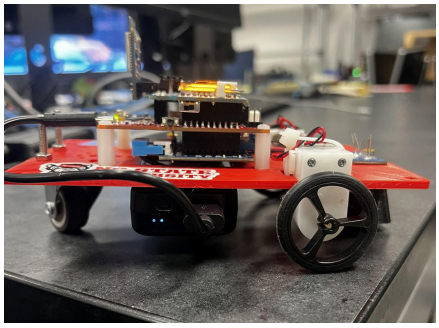
Embedded Autonomous & Wi-Fi Remote Controlled Car

North Carolina State University - *Introduction to Embedded Systems*



Overview:
Engineered a dual-mode autonomous and Wi-Fi-enabled vehicle utilizing the Texas Instruments MSP430FR2355 microcontroller. Redesigned the power delivery system by migrating from AA batteries to a rechargeable lithium-ion solution, significantly enhancing system stability and operational uptime. Through testing and adaptive PID control algorithms, the vehicle completed a combined autonomous and Wi-Fi-controlled course on its first attempt.
Technologies: MSP430FR2355, embedded C, Wi-Fi, PID control, timers, interrupts, serial communication.
Technical Contributions:

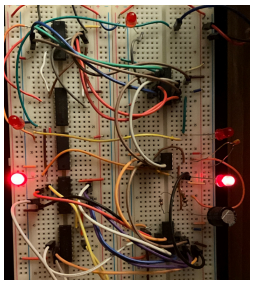
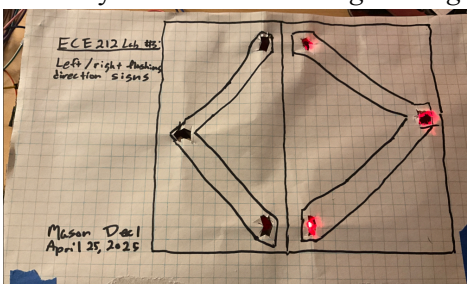
- Developed low-level firmware to manage peripheral integration, including hardware timers, interrupts, and serial IoT communication protocols.
- Managed complex hardware-software integration by interpreting schematics, debugging electrical systems, and working extensively with component datasheets.

Future Improvements:

- Explore DAC-based voltage control for more precise speed regulation.
- Implement software-defined low-power sleep modes to improve energy efficiency and extend battery life.

LED Road Sign CMOS State Machine

North Carolina State University - *Introduction to Logic Design*

Overview:
Designed and breadboarded a sequential logic circuit to emulate a curve-warning road sign, adhering to the full engineering design lifecycle from schematic design to physical demonstration.
Technologies: CMOS logic, finite-state machines, clock circuits, flip-flops, breadboarding, and SPICE.
Technical Contributions:

- Designed and constructed two concurrent finite-state machines (FSMs) to process asynchronous user inputs and generate multiple flashing sequences.
- Synchronized complex logic timing by troubleshooting and stabilizing the integrated clock circuit.

Future Improvements:

- Integrate additional logic states to support synchronized "hazard" flashing modes.
- Optimize physical layout and wire routing to minimize interference and improve long-term reliability.