Maxwell Stonham

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Education

Master of Science in Electrical Engineering August 2023 – December 2025

University of Nevada, Las Vegas

  GPA: 4.00
  Focus Areas: Electronics, Signal Processing, Solid-State Electronics & Photonics
  Thesis Title: Quantum Sensing of Magnetic and Thermal Fields Using Nitrogen-Vacancy Centers on Spoof Surface Plasmon Waveguides

Bachelor of Science in Electrical Engineering August 2020 – May 2023

University of Nevada, Las Vegas

  GPA: 3.87 (Cum Laude)
  Minor: Mathematics

Skills

Simulation/Design: LTspice, Altium, KiCad, Cadence Virtuoso, MATLAB, COMSOL, SolidWorks, Arduino, Quartus II

Electronics/Hardware: Oscilloscopes, multimeters, function generators, power supplies, soldering (SMD, through-hole), FPGA boards (Cyclone IV), microcontroller platforms (Arduino, ESP32), network analyzers, RF waveguides

Programming/HDL: C, C++, Python, SystemVerilog, RISC-V Assembly

Optics/Photonics: Optical alignment, fluorescence spectroscopy, 532-nm laser systems

Fabrication/Cleanroom: Maskless photolithography, spin coating, wet etching, e-beam evaporation

Experience

Graduate Research Assistant August 2024 – December 2025

University of Nevada, Las Vegas Las Vegas, Nevada

- Conducted research with Dr. Roman Shugayev on quantum sensing applications using nitrogen-vacancy centers in nanodiamonds, focusing on optically detected magnetic resonance (ODMR) characterization.
- Developed automated data-acquisition and analysis methods in MATLAB to process spectrometer data, implement curve-fitting models, and quantify magnetic and thermal sensitivity.
- Designed and fabricated spoof plasmon waveguides in a Class 1000 cleanroom using photolithography to incorporate NV center nanodiamonds for ODMR enhancement.
- Modeled electromagnetic behavior of waveguide structures using COMSOL Multiphysics to correlate simulated field confinement in fabricated waveguides with measured ODMR contrast.
- Established the initial laboratory infrastructure, including optical bench layout, RF methodologies, data-acquisition systems, anechoic chamber assembly, and standard operating procedures to ensure a scalable workflow used by the entire team.
- Served as the primary technical lead for weekly lab operations, supporting day-to-day experiments, and mentoring incoming graduate researchers on lab procedures, equipment use, and protocols.

Electrical Engineering Intern May 2025 – August 2025

Airspool LLC Las Vegas, Nevada

- Designed and validated inverter-based power electronics for HVAC systems.
- Performed bench-top testing and characterization of hardware using standard electronic lab equipment.
- Prepared detailed technical documentation and reports to support future development.

Electrical Engineering Intern May 2024 – December 2024

Pololu Corporation Las Vegas, Nevada

- Designed multiple voltage regulator PCBs through Altium and reviewed schematics and layouts of other products including current sensor and motor driver boards to support product release and manufacturability.

- Characterized electronics through efficiency testing, thermal profiling, voltage dropout analysis, and quiescent current measurements, documenting results for product verification.
- Contributed to the development and debugging of 3D test fixtures and mechanical assemblies in SolidWorks to improve testing workflow.
- Assisted with PCB test fixture assembly and validation, working with laser-cut components and hardware prototypes.
- Gained hands-on exposure to electronics manufacturing processes, including SMT/pick-and-place workflow, reflow soldering, and design-for-manufacturability considerations used in production hardware.

Lab Supervisor (Electrical & Computer Engineering Department)   January 2022 – May 2023
University of Nevada, Las Vegas   Las Vegas, Nevada
- Managed electronics inventory and equipment checkout for all ECE laboratory courses and senior design teams, including microcontrollers, FPGA kits, prototyping components, sensors, and power electronics.
- Assembled and prepared 200+ student lab kits per semester, ensuring availability of parts and proper configuration for courses involving digital logic, embedded systems, and electronics.
- Maintained, organized, and tested benchtop lab equipment including oscilloscopes, multimeters, function generators, power supplies, and soldering equipment.
- Assisted students with equipment checkout, lab access, and hardware troubleshooting, reinforcing safe and proper use of lab equipment.
- Oversaw procurement and restocking of lab equipment by coordinating purchase orders with the lab director and prevented shortages on high-demand components.

Aerospace Electronics Reliability Intern   September 2022 – December 2022
NASA (National Aeronautics and Space Administration)   Remote (Greenbelt, Maryland)
- Researched reliability of commercial-off-the-shelf (COTS) electronics in CubeSat missions, focusing on power electronics, microcontrollers, and avionics subsystems in Low Earth Orbit (LEO) environments.
- Analyzed success and failure trends of 1000+ CubeSat launches using various datasets to identify systemic failure modes in student-led missions.
- Investigated radiation-induced failure mechanisms affecting COTS space electronics including total ionizing dose, single-event effects, and displacement damage, and surveyed practical mitigation approaches including derating, shielding, and subsystem-level fault tolerance.
- Conducted a risk-assessment study proposing mission-assurance practices for resource-limited CubeSat organizations such as environmental testing, thermal/power budgeting, and integration bottlenecks.
- Presented findings to NASA mentors summarizing COTS evaluation criteria, environmental risks, and subsystem testing considerations for constrained CubeSat platforms.

Projects

Buck Converter Chip Design   Fall 2023
- Designed the circuit schematic and chip layout of a buck converter using ON Semiconductor's C5 0.5um CMOS process through Cadence Virtuoso to convert 4 - 5.5V to 3.125V at 100mA.
- Characterized efficiency, power dissipation, and output at different loads using hysteresis control.
- Implemented and laid out a bandgap, comparator, ring oscillator, latch circuit, and various other logic gates.

Wearable Sensor-Based Knee Rehabilitation Device (Senior Design Project)   Fall 2022 – Spring 2023
- 1st Place Winner for UNLV's Spring 2023 Senior Design Competition.
- Designed a wearable device to use alongside physical therapists for remote rehabilitation for patients with knee osteoarthritis.
- Developed a PCB and 3D model that was fabricated and 3D printed for the device to be operational.
- Integrated the device into a smartphone app for patients to choose exercise routines that monitors and tracks progress.

Flyback Switch-Mode Power Supply Design   Fall 2022
- Designed a flyback converter using LTspice to convert 100-130V (AC) at 60Hz to 5V (DC) at 1A for a USB charger.
- Simulated and optimized efficiency and power dissipation across varying loads and solved switching instabilities.
- Implemented PWM control circuit using COTS parts to regulate 5V output across varying loads.