Lauren Adachi

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ENGINEERING & WORK EXPERIENCE

Blue Origin

Avionics Design Engineer II, Lunar Permanence Avionics — Sept 2022-Present

- Developed successful prototype of Voltage Source Inverter circuit card to drive and control >200V, >100krpm, >2kW motor for Lunar applications from start to finish. Traded circuit topologies, simulated circuits, performed derating calculations, designed schematic, executed high power PCB layout, delivered test plan, executed bring-up test, debugged, performed soldering rework, collected comprehensive functional test data at multiple power levels. Developed python GUI to command, receive, and log data from FPGA.
  - Received Manager-to-Employee Liftoff Award of $150 for exemplary demonstration of Leadership Principles (October 2023)
- Developing flight-like engineering design units (EDUs) for Voltage Source Inverter Card and 3-Phase Disconnect Card. Completed architecture phase, part selection, simulation, derating, and schematic design.
- Serves as Avionics lab manager for program: developed lab from scratch including specifying & managing installation of equipment (high voltage supplies and e-loads, measurement devices, harnessing), & managed development of in-house, safe >200V PCB test capability.
- Led Single-Event Effects (SEE) Radiation testing of >20 electrical components for Lunar applications. Analyzed radiation fault modes, designed test setup for each component, developed schematics, underwent peer review, and executed layout for PCBs in Altium. Supported test and debugging, delivered test boards with no hardware failures that successfully underwent radiation test.
- Delivered FPGA interposer & mezzanine PCBs. Selected parts, designed schematic, underwent peer review, and executed layout.

Avionics Systems Engineer, Space Destinations Avionics — Jul 2022 - Dec 2022

- Responsible Engineer for Remote Input Output (RIO) and Data Acquisition (DAQ) subsystems for Space Destinations Avionics. Owned and managed vehicle electrical interfaces for sensors and actuators, created system architecture and hardware trade studies.
- Led development of new input/output card for New Glenn RIO system including system requirements definition, assisting parts selection, performing obsolescence mitigation and procurement, facilitating radiation and EEE testing, and management of engineering teams

Brown Space Engineering | *Co-president and Avionics Hardware Division Leader* — Aug 2018 – May 2022

- Led team of 30 undergraduates to design CubeSat by defining and managing engineering requirements and goals, liaising with technical reviewers and advisors, and ensuring cohesive integration between satellite subsystems
- Awarded $300,000 in launch services from NASA's ELaNa satellite educational launch program. Wrote technical proposal detail and electronics systems overview and managed power and link budgets for satellite
- Led Avionics Hardware subgroup of 10 undergraduates to create high-level design and prototyping of electronics systems including block diagrams, KiCAD schematics, and board designs for power, radio, and control systems

Sierra Space | *Space Systems Engineering Intern*, Dream Chaser Program — May 2021- Jul 2021

- Designed test connectivity of Dream Chaser's communication system for joint test with ground support hardware and ISS
- Supported Electrical Design Specification Technical Panel by researching and evaluating solutions to electronics noncompliance issues

Pufferfish (Pez Globo) Ventilator | Electrical Design Team Member — May 2020 – Sept 2020

- Led development of the Interface PCB for user interaction with the ventilator. Designed schematic and PCB (KiCAD) and selected parts with constraints from mechanical, clinical, and UIUX teams
- Assembled, tested, and debugged PCBs and Raspberry Pi peripherals with oscilloscopes, function generators, and probes.

Tripathi Biomedical Engineering Group | Firmware Developer — Apr 2020 – Sept 2020

- Implemented firmware updates for biomedical device in product development stage for PerkinElmer
- Wrote code in C for STM32 microcontroller for motor, heating, motor, flash memory, and spectrofluorometer units with FreeRTOS operating system and I2C, SPI, USB, and UART peripheral communication

Brown School of Engineering | Undergraduate Teaching Assistant, Multiple Courses — Jan 2020 – May 2022

- *Analysis and Design of Electronic Circuits* - Assist students with advanced concepts in analog circuits (BJTs, MOSFETs, diodes, amplifiers), laboratory circuit design challenges, and test bench equipment use in electronics lab
- *Digital Electronics Systems Design* - Assist students with digital circuit design challenges involving breadboarding, CPLD/FPGA code

SKILLS

Electronics: Altium, KiCAD, EAGLE, Verilog, LTSpice, ModelSim, Cadence Virtuoso, Breadboarding, Electrical test bench equipment (Oscilloscopes, DMMs, differential probes, power supplies, e-loads), Soldering, Raspberry Pi, Arduino, SOLIDWORKS, 3D-printing
Software: Python, Java, MATLAB, Simulink, C for STM32, git, GitHub, RISC-V, Realterm, TortoiseSVN, Saturn PCB Toolkit, Microsoft Suite
Design Projects:

- Designed & created a single cycle processor in Verilog for FPGA, optimized to 50+ MHz clock frequency, created ModelSim testbench
- Designed, wrote, and tested a RISC-V assembler in Python from scratch
- Breadboarded dual slope and successive approximation analog-to-digital converters
- Programmed CPLD to create 4x4 multiplier, made scrolling message board using Xilinx FPGA
- Wrote 20-page review of spin-based electronics based in quantum physics theory
- Designed dual-lead and PID control systems for a magnetic levitation system in Simulink

EDUCATION

Brown University | Electrical Engineering Sc. B. | GPA: 3.9/4.0 — Aug 2018-May 2022

HONORS & AWARDS

Brooke Owens Fellow, Class of 2021