

## EDUCATION

M.S. Electrical Engineering | Focus: Circuits & Systems | UC San Diego

2023 – 2025

Curriculum: biomedical circuits, data networks, 5G transceiver architecture, CMOS VLSI, robotics sensing, estimation & control, analog amplifiers, RF fundamentals.

B.S. Electrical Engineering, Studio Art Minor | Focus: Machine Learning & Controls | UC San Diego

2018 – 2022

Curriculum: E & M fundamentals, analog & digital circuits, engineering probability, digital signal processing, estimation statistics, processor architecture.

## EXPERIENCE

Quartus Engineering | Electrical Engineer II

2021 – 2023, 2025 – Present

- Delivered MIL-SPEC electrical system designs: field-deployable LiDAR application FPGA-based timing C2 boards capable of sub-100 ps jitter for sub-cm resolution ranging; AS50881-compliant rugged cable harness and MIL-DTL-38999 bulkhead connector assemblies; MIL-STD-464-compliant grounding schemes; frequent customer presentations including PDR and CDR milestones.
- Designed in Altium ARM-based custom PCBs running RTOS for motion and environment controls; firmware written in C/C++ for embedded IC SPI/I2C and remote HTTP server communications.
- Utilized Beckhoff and Click PLC platforms for industrial automation.
- Co-designed with mechanical and optics teams in SolidWorks: enclosure design, cable routing, fitment check, PCB thermal optimization.

UCSD Integrated Electronics and Biointerfaces Laboratory | Electrical Engineer

2023 – 2025

- Contributed hardware and firmware design for NIH grant UG3NS123723, led by Dr. Shadi Dayeh, to realize a portable, high-density neural interface using depth and surface electrodes.
- Enabled scalable neural recording with 4096 analog electrode channels interfaced by Intan RHD/RHS electrophysiology amplifier chips with 16-bit SAR ADCs, operating up to 20 kS/s, over parallel LVDS SPI lanes.
- Developed a multi-board, up to 16 impedance-controlled layers, on-person module integrating AMD Zynq Ultrascale SoM with SerDes, battery power management, memory devices, FTDI USB to UART/JTAG debug bridge, Wi-Fi 6E PCIe module, BLE module, USB Gen 3.2, and various other peripherals, enabling 5+ Gbps data links.
- Designed FPGA Verilog control and data plane design to interface with custom SPI interfaces verified using simulation and timing analysis of Vivado design flow.
- Maintained and contributed to existing OpenEphys codebase in C++ serving as a surgeon-friendly graphical interface capable of signal processing and recording; wrote backend firmware and off-person software to implement HTTP-based client-server control plane and Redis-stream-based data plane.
- EMC tested prototype devices under IEC 60601/61000, FCC part 15/18 as part of FDA approval for human clinical trials.
- Validated prototypes in acute and semi-chronic animal cases where stimulation induced localized spatiotemporal responses in real-time and offline analysis.

UCSD Video Processing Lab | Student Researcher

2020 – 2022

- Co-authored ISOC 2021 paper *Human-Inspired Camera: A Novel Camera System for Computer Vision* under Dr. Truong Nguyen.
- Developed a Unity3D synthetic platform, built on C#, for autonomous driving data generation and algorithm benchmarking.
- Produced large, diverse datasets tailored for robust object detection.
- Collaborated with feature-matching researchers by generating synthetic point-cloud data and pose ground truth.

## PROJECTS

180 nm CMOS Op-Amp Design | UCSD ECE 164

- Designed two-stage, folded-cascode and common-source, differential-to-single-ended operational amplifier using 180nm CMOS PDK. Biased with constant-gm current reference and downstream current mirrors.
- Simulated performance in Cadence Virtuoso, achieving 80dB of gain and 35MHz of bandwidth, on top of stable margins
- Chosen out of 50 class groups to present for Apple judges; won 2nd place prize.

Homelab

- Self-taught HTML, CSS and PHP to make from scratch front/backend website to showcase art, music, and engineering body of work.
- Hosted on Dell Poweredge server running Apache virtually inside Proxmox; added Samba and SFTP filesharing capabilities for cloud streaming of media.
- Familiar with networking fundamentals: OSI model stack, network topologies, DHCP, subnets, virtual LAN, copper & fiber physical layer, DNS, VPN.

## SKILLS

- Software: Altium, Verilog, Tcl, ModelSim, Vivado, Petalinux, C/C++, Python, MATLAB, LTSpice, Cadence Virtuoso, Git, SolidWorks, LabVIEW, HTML, CSS
- Hardware: Hand & reflow soldering, board bring-up & re-work, oscilloscopes, logic analyzers, VNAs, 3D printing & prototyping, CNC