

PERSONAL PROJECTS (2025):

- Built an AI customer support agent capable of providing realtime appointment setting, work quotes, technical support, answering FAQs, etc. Techstack: n8n, model: gpt-4o-mini, Pinecone RAG, webhooks, and Google drive integration (business docs for training & logging interactions)
- [Video Hat](#): Constructed a flexible OLED video hat powered by Raspberry Pi Zero 2W, DietPi OS, with a PowerBoost 1000C battery system and optimized Kodi multimedia player for continuous looping.
- Vibe coded a script to quote & swap cryptocurrency on a Hedera-based DEX. Tech stack: TypeScript, Ethers.js v6 (RPC), Hashgraph SDK.
- Vibe coded an [AI chatbot comparison system & interactive display table](#), using Python, JSON schemas, and automated evidence scoring to deliver transparent insights based on publicly available reviews.

EMPLOYMENT HISTORY:**◆ Co-founder @ OffTheLand**

2/2024 – Present

- Co-founded [OffTheLand.net](#) and led non-technical company operations, helping build a statewide local-food marketplace where gardeners, growers, and artisans can freely list, sell, trade, and barter.
- Led core business operations including establishing the LLC, setting up banking and multi-member financial accounts, writing legal Terms & Conditions and all public-facing documentation, and managing tax filing and compliance.
- Drove platform growth through events, social media, and educational content, helping reach ~100k+ impressions, thousands of site visitors, and formation of 100+ farmstands in the first year.
- Shaped product vision for features such as Local Food Hubs and multi-seller checkout to make regenerative local food as accessible as everyday online shopping.

◆ Electronics Engineer II @ Beckman Coulter Microbiology, A Danaher Company

3/2021 – 2/2024

- Designed a 4-layer MCU-based PCBA, and an FPGA interposer using Siemens (Mentor Graphics) Designer Suite, managing the entire process from creating part libraries (symbols & pads), to designing schematics and PCB layouts, and working with the PCBA manufacturer to obtain fully functional boards.
- Reverse engineered an obsolete decoder IC responsible for the 3-axis of motion on the [WalkAway instruments](#). Built custom test instrumentation based on the Arty A7-100T (Artix-7 FPGA) & Verilog to evaluate and record performance of original IC vs replacements under various noise conditions, and various motor speeds. Created an FPGA replacement solution, using the Lattice MachX03LF & Verilog. Also tested another alternative solution based on the TI TMS320F28069 MCU created by coworker, and modified its firmware. Simulated Schmitt-trigger inputs with asymmetric thresholds via LTspice prior to building. Instruments used to characterize and document work included Agilent 16803A Logic Analyzer, DSO7054A Oscilloscope, 33500B Keysight Waveform Generator.
- Oversaw, verified, and signed-off on engineering efforts to convert 8 legacy PCB gerbers to modern Altium Designer projects by a contract manufacturer. Also assisted with transitioning 20+ PCBAs to a new PCB manufacturer.
- With mentorship, led a 15+ person cross-functional Kaizen event, to improve manufacturability, reliability, serviceability, and cost of the WalkAway biomedical instruments. Event established a project pipeline with total savings of \$2M over few years.
- Assisted with sourcing mechanical and electronic components to keep manufacturing lines going due to challenges with End-Of-Life components and post-pandemic extended lead times.
- Led creation, updates, and approvals of engineering documentation (Design Change Plans, dFMEAs, Characterization Plans, and controlled mechanical drawings) with heavy involvement in cross-functional routing, verification, and sign-offs across quality, manufacturing, and service teams to ensure full compliance in a highly regulated environment.

- Utilized Oracle for purchase requisitions, part research, inventory checks, and supply continuity planning. Worked directly with strategic sourcing, procurement, manufacturing, service, regulatory, and external vendors to manage component availability and lifecycle status (via SiliconExpert).

◆ **Hardware Engineer @ Barco**

9/2018 – 10/2020

- [Barco PDS4K product](#): Worked with 2 hardware engineers to deliver a brand new video capable PCBA containing 6 Zynq UltraScale+ MPSoCs to software and digital design engineers. Personal responsibilities included incorporating and testing USB (ULPI PHY & hub), Ethernet (RGMII PHY), PCIe (Gen2 switch, 8-lane, 8-port), clocking (generator + fanout buffers), and part of the power distribution network consisting of a dozen TPS54418A buck converters (with various V_{out} requirements) and LDOs. Verification of the Buck converter designs involved adding an external load for transient step response, whereas frequency domain testing was performed to tune compensation values to ensure stability by injecting a small signal (Omicron BWIT-100) into the feedback loop and obtaining phase and gain margin information from the Bode plots. In the early stages of development with Zynq UltraScale+, created a Vivado project to assign MIO peripherals, and enable software team to exercise control of PL EMIO pins on the ZCU104 development kit.
- [Barco CXP IO Card](#): Responsible for schematic work using Mentor Graphics xDX Designer, as well as writing Verilog logic in Vivado, and testing in ModelSim (Kintex-7 FPGA product). After hardware verification and signal integrity testing using Vivado IBERT was complete, supported software engineers with further development testing.
- DVT & misc: Responsibilities included: bring-ups and verification of new PCB assemblies by capturing signals using the DPO4104 (1GHz, 5GS/s, 350MHz) scope with active, differential, and current probes; modding and troubleshooting by soldering SMD components as small as 0402(1.0 x 0.5mm); SPI bus monitoring using the BeagleSPI(Total Phase) protocol analyzer; troubleshooting Xilinx FPGAs with the ILA IP core and a Platform Cable device; visualizing DC drop throughout the power planes with HyperLynx (Mentor) PI analysis. Regularly used Linux, Cygwin, gVim, and occasionally modified existing Tcl, Shell, Perl, and Python scripts. Gained experience with SystemVerilog and familiar with UVM.

◆ **Hardware Engineering Intern @ Barco**

4/2018 – 9/2018

Wrote Verilog modules and simulation test benches for Altera MAX10 FPGA to display a power up splash-screen and then transfer control to the CPU to display a user menu for the new [ImagePro4K product](#). Used QuartusPrime and SignalTap for debugging, and modified Tcl scripts to automate ModelSim simulation.

◆ **Software Engineering Intern @ Grass Valley, a Belden Brand**

6/2017 – 9/2017

With mentorship, implemented a GoogleTest C++ framework to automatically test pre-development builds of the [Video Production Center](#) GUI application, which previously had to be manually performed by testing engineers.

EDUCATION:

- ◆ Bachelor of Science in Electrical and Electronic Engineering, California State University, Sacramento. Completed: Dec 2017. CSUS GPA: 3.631, Honors: Cum Laude

AWARDS & RECOGNITIONS:

- ◆ Received the "Solve the Toughest Challenges" recognition from the Senior Director of Global Operations - Microbiology at Beckman Coulter Diagnostics, for collaborating on a creative team initiative to reclaim PCBA boards from non-essential lab instruments, thus preventing manufacturing downtime and ensuring continued supply of critical units to customers.
- ◆ Presented with the Navy and Marine Corps Achievement Medal by the Secretary of the Navy for overhauling the flight-deck lighting guidance system (with 2 other sailors) on board the amphibious assault carrier USS IWO JIMA, which resulted in an exceptional score for the aviation certification.
- ◆ Dean's Honor Roll (x4), presented by the College of Engineering & Computer Science, CSUS.