

# Jonny Shen

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## EDUCATION

University of California, Davis | Electrical Engineering B.S | Upcoming Senior

Graduation Date: June 2026

## EXPERIENCE

### MicrowaveCells LLC- *Electrical Engineering Intern*

June 2024 - PRESENT

- Operated various RF lab equipment including signal generators, spectrum analyzers, network analyzers, and power meters etc.
- Performed key RF measurements: gain/loss, P1dB, OIP3, noise figure, harmonics, S-Parameters, isolation, spurious responses, filter/mixer response.
- Assembled RF subsystems based on system block diagrams using MicrowaveCell's cell prototypes.

### MoonSour PCs- *Business Owner*

JAN 2017 - PRESENT

- Founded and solo operated a custom PC business generating six-figure sales
- Performed troubleshooting and repairs for PCs, laptops, tablets, and other electronics with an engineering problem-solving approach
- Managed technical work, marketing, sales, and customer service independently

### HackDavis- *Director of Finance*

OCT 2021 - JAN 2023

- Managed a budget of \$200,000 for UC Davis's Hackathon event, (the largest in-person hackathon in the nation in 2021). Fostered cross-team coordination and gained project based experience with resource allocation, data driven decision making, operational planning.

## PROJECTS

### 4 Element Linear Phase Array - *RF engineering*

- Designed system architecture for a QPSK mod, 0.5 GHz BW, 1W Pout, 4-element X-band phased array transmitter including DAC, modulators, filters, attenuators, amplifiers, power amplifiers, mixers, phase shifters, antennas, with microstrip transmission lines
- Developed detailed level plan in Excel, calculating output powers, backoffs, noise figures, SNRs, and DC bias/power/current requirements for each stage
- Built an interactive Excel GUI to model and visualize array beam patterns based on element spacing, beamforming angle, and number of elements

### Inter Square Root Unit - *Digital Logic | Finite State Machine | State Based Design | Verilog*

- Designed a state-based integer square root computation unit on FPGA using a finite state machine controller, 16x8 M9K RAM, and subtractive datapath logic
- Integrated modular Verilog design, synchronous memory access, and HEX display output; validated functionality via vector-based testbench and implemented on DE10-Lite board

### Pong Game - *Microcontroller | Embedded Systems | C++*

- Built a real-time Pong game on a TI Microcontroller using SysTick and ADC interrupts, joystick input (ADC), and BoosterPack LCD graphics
- Integrated polling, flag-based ISR handling, and state logic for paddle control, collision detection, and smooth ball animation

### FFT Signal Compression Program - *Digital Signal Processing | Python*

- Implemented lossy signal compression in Python using FFT and IFFT, preserving key frequency components while discarding low-energy coefficients
- Applied spectral sparsity, conjugate symmetry, and Parseval's theorem to reconstruct signals with minimal perceptual loss, demonstrating principles used in MP3-style compression

### Personal Websites - *Small Self Taught Web Dev Projects | Company Website | Personal Website*

- <https://sourmoon.github.io/MoonSour>
- <https://sourmoon.github.io/JonnyJShen>

## Skills

**Engineering** - Signal generator, Spectrum Analyzer, Network Analyzer, Power Meter, Oscilloscope, Waveform Generator, Power Supply, Multimeter, Noise Source, ADALM, Breadboard, etc.

**Programs** - MatLAB, Simulink, Simscape, Quartus, LTSpice, Cadence, Excel

**Programming** - Verilog, C, Python, HTML, CSS, JS

**Finance** - Budget Planning, Accounting, Financial Reporting, Invoice Processes

**Language** - English, Mandarin

## Certifications

**Gen AI for Everyone** - Coursera/Deeplearning.ai

**MatLab, Simulink, Simscape Onramp** - MATLAB

**HFSS Fundamentals, HFSS 3D Modeling, Transmission Line Basics, Antenna Arrays & Microstrip Patch Antenna Arrays** - Ansys