Jack Payne

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Education

University of Florida – BS Computer Engineering (3.7 GPA)   May 2024 - Present
- **Relevant coursework:** Microprocessor Applications, Signals & Systems, Data Structures & Algorithms, OS
- **Upcoming coursework:** Real-Time DSP, VLSI, Digital Design, Neural Interfaces & Systems

Santa Fe College – AA (3.8 GPA)   April 2024

Work Experience

Researcher, Hybrid Photonics (CHIP) Lab, University of Florida   August 2023 – July 2025
- Developed signal processing pipeline with Zynq FPGA RFSoC to load image data to DRAM buffers via RF encoding and later stream to photonic chip via optical cable for AI acceleration
- Used Vivado/Vitis to accelerate conversion rates by 45% while maintaining signal fidelity
- Wrote RF test signals in MATLAB to validate edge cases, improving coverage by 100%

Teaching Assistant, Electronic Circuits I, University of Florida   July 2025 – Present
- Lead 20+ students across 2 weekly lab sections, teaching circuit analysis
- Train students in the use of industry lab equipment (oscilloscopes, function generators, multimeters)
- Provide support in circuit debugging/measurement, maintaining 100% positive student evaluation score

Projects

Embedded EEG Data Acquisition System   https://github.com/jacklpayne/Gh05t
- Rescued unstable ESP32 + ADS1299 system, restoring reliable multi-channel EEG capture (<50µV)
- Rewrote and extended ADC library API (C), corrected peripheral configurations, and optimized SPI/I^2C communication, reducing signal noise by over 90% from incomprehensible output to clean biosignal readings
- Integrating system with OpenBCI headset and electrodes, leading to ongoing development of lower cost drop-in replacement for OpenBCI's own control board

Embedded Instrument and Sequencer   https://github.com/jacklpayne/Brizachord
- Designed embedded musical instrument on STM32 with custom filters, capacitive sensing, and sequencing
- Developed low-level C++ code integrating I^2C and GPIO peripherals with real-time concurrent management
- Designed and brought up custom PCB with LTSpice and KiCad integrating a microcontroller, switch array, capacitive sensor, and Class-D amplified audio output

Leadership

Project Lead, IEEE Signal Processing Society, UF – Gainesville, FL   August 2025 – Present
- Lead embedded biosignal research group developing real-time acquisition and analysis systems
- Coordinate firmware and hardware integration efforts across several contributors

Embedded Lead, Audio Engineering Society, UF – Gainesville, FL   May 2025 – Present
- Design and implement embedded audio projects including instruments and filters for student workshops
- Run weekly hardware meetings and provide instruction on DSP and circuit topologies to 40+ students
- Increased funding from by over $3000 for Fall 2025 by demonstrating value of workshops

Skills

Languages: C/C++, VHDL/Verilog, Python, Rust
Software: STM32CubeIDE, MATLAB, FreeRTOS, Vivado/Vitis, Quartus, KiCad, LTSpice, Git, Linux