Matthew Taner

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Education

Aug 2024 - May 2028

Bachelor of Science, Computer Engineering GPA: 3.91/4.00

University of Florida | Gainesville, Florida Dean's List and President's Honor Role

Projects

4-bit Pipelined CPU – Logisim & Intel DE-10 Lite FPGA **| Pipelined-CPU.git** August 2025

▫ Took on a challenging project to engineer a 4-bit CPU with a 5-stage pipeline, implementing hazard detection and forwarding to achieve a 3.5x average speedup over a non-pipelined design.
▫ Developed a 16-instruction custom ISA to support an efficient variety of arithmetic, logic, memory, and control flow operations.
▫ Built a python assembler, converting assembly code into machine code resulting in a streamlined program execution process.
▫ Implemented the CPU in Logisim and deployed on an Intel DE-10 to create a tangible hardware representation of the design.
▫ Created an asynchronous interface, displaying register values on 7-segment displays with switch-controlled register selection.

Smart Home Sensor Network: RF Analysis and Interference Testing **|RF-Analysis-Project.git** June 2025

▫ Deployed 2.4GHz wireless sensor network on ESP32 platform, linking radio transceivers with PIR, DHT11, and magnetic sensors.
▫ Analyzed RF spectrum using an RTL-SDR and a down-converter, isolating a 2.4GHz signal at its 976Mhz intermediate frequency.
▫ Investigated signal degradation through physical obstructions, discovering a 13.2% packet loss in a repeatable RF dead zone.
▫ Traced the 13% packet loss to transceiver's placement behind a refrigerator, proving that environmental RF obstruction is another critical link to reliability along with pure transmission range.

Analog Circuit Prototyping & Troubleshooting **| FuzzPedal.git** April 2025

▫ Designed a single-transistor guitar fuzz pedal on a breadboard, producing a unique, high-gain, saturated fuzz effect.
▫ Substituted a PN2222 transistor for the unavailable 2N5088, producing a successful circuit despite limited components.
▫ Re-biased resistor values to compensate for transistor gain differences, restoring the desired tonal characteristics.

Work Experience

Lifeguard & Safety Team Member August 2022 – Present

International Swimming Hall of Fame | Fort Lauderdale, FL
▫ Monitored swimmers during high-volume events, ensuring safety and preventing accidents.
▫ Assisted in setup for nationally recognized aquatic competitions, focusing on a customer-oriented outcome.
▫ Acted as a trusted teammate in a high-stakes environment, collaborating with partners to move the team forward on safety initiatives.

Core Skills

Hardware and Digital Design: Digital Logic, PCBA Design, Schematics, Circuit Layout & Prototyping, CPU Architecture, VHDL
Analog Circuits & Testing: Circuit analysis and design, Troubleshooting, Debugging, Validation Testing
Programming & Software: Python, C++, GitHub, Linux/WSL, Technical Specifications, Design Documentation

Organizations

Audio Engineering Society September 2024 - Present
▫ Explored audio circuit designs, strengthening analog electronics knowledge.
▫ Prototyped guitar pedals, applying circuit analysis to practical audio applications.

Gator Motorsports September 2025 - Present
▫ Researched electrical systems of electric vehicles, including battery pack architecture, power electronics, and signal processing.
▫ Gained Introductory exposure to electrical design for high-voltage systems and high-speed circuits through independent study.