

Juan Campos

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Education

University of Arkansas - Fayetteville, AR

Bachelor of Science in Electrical Engineering, GPA 3.847/4.000

Expected May 2028

Arkansas Tech University - Ozark, AR

Associate of Applied Science, Computer Information Systems

May 2024

Skills

Programming: C/C++, Assembly, VHDL, Python, MATLAB, JavaScript

Embedded: STM32, MSP430, RP2040, Raspberry Pi, I²C, UART, GPIO

EDA/CAD: Cadence Virtuoso, Allegro PCB Editor, OrCAD Capture CIS, KiCad, LTspice, Fusion 360

Test Equipment: Oscilloscope, Multimeter, Power Supply, Function Generator

Projects

STM32 Automotive Headlight Controller | STM32, KiCad, C/C++

- Designed and built an STM32-based PCB controller for a Mazda Miata's 12 V pop-up headlight system.
- Developed relay control, power regulation, protection circuitry, and embedded firmware for independent headlight modes, timing control, debounced inputs, and safety interlocks.
- Tested and debugged the hardware and firmware using a multimeter and oscilloscope, verifying power rails, control signals, relay operation, and system timing.

8-Bit GCD Digital System | VHDL, Digital Logic

- Designed and implemented an 8-bit GCD calculator in VHDL using Euclid's subtraction algorithm.
- Built the datapath and Moore finite-state machine using registers, multiplexers, a comparator, conditional inversion, and a ripple-carry adder.
- Verified functionality through simulation testbenches and hardware testing on a Boolean Board, including seven-segment output and zero-input error handling.

RP2040 Macro Controller | RP2040, MicroPython, USB HID

- Designed and built a custom macro controller with 9 switches, 3 rotary encoders, and an I²C OLED display.
- Implemented GPIO input handling, encoder processing, input debouncing, USB HID media controls, and real-time display updates.
- Integrated Philips Hue lighting through HTTPS REST APIs and created multiple encoder-driven control modes.

Experience

Installation and Service Technician, Air-Pro – Fort Smith, AR

June 2025 – August 2025

- Installed and serviced electromechanical HVAC equipment, including motors, contactors, relays, capacitors, and control/communication wiring.
- Diagnosed electrical and control-system faults using voltage, current, resistance, and continuity measurements in power and low-voltage circuits.
- Interpreted wiring and control systems, replaced failed electrical components, and verified proper system operation after repairs.

Teaching Assistant, Arkansas Tech University – Ozark, AR

April 2024 – August 2024

- Tutored students in technical coursework, focusing on troubleshooting, problem-solving, and core computer systems concepts.
- Assisted students with debugging hardware/software issues and explained technical concepts step-by-step.
- Administered and graded assessments while providing feedback on technical accuracy and problem-solving methodology.