

LUIS LEON PINEDA

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SUMMARY

Electrical Engineer with hands-on experience designing, integrating, and validating FPGA-based systems and hardware prototypes, including AMD/Xilinx Zynq-7000 SoC platforms, AXI4/AXI-Lite IP integration, embedded C/C++, and Verilog/SystemVerilog HDL development. Experienced in FPGA bring-up, hardware verification and validation, board-level debugging, and bitstream release management, utilizing oscilloscopes and logic analyzers to execute test plans, resolve design issues, and improve system reliability. Led development activities for an FPGA-based educational platform, supporting system integration, configuration management, and hardware deployment across multiple revisions. Additional experience includes mixed-signal PCB design, prototype assembly, and signal-level validation for biomedical data acquisition systems. Graduated from Texas State University with a B.S. in Electrical Engineering (Micro and Nano Device Systems) in May 2026..

EXPERIENCE

Undergraduate Research Assistant

October 2025 – May 2026

Texas State University, San Marcos, TX

- Designed, simulated, assembled, and validated custom mixed-signal PCBs for a Ballistocardiogram (BCG) data acquisition system, supporting reliable collection of research-grade physiological measurements.
- Executed hardware bring-up, verification, and debug of PCB assemblies using oscilloscopes and logic analyzers to validate signal integrity, functional performance, and compliance with test requirements.
- Re-launched a faculty-developed hardware platform, implementing design and sourcing improvements that reduced unit cost while improving manufacturability and deployment scalability.

BMW Parts Specialist

August 2019 – July 2021

Hendrick BMW of South Austin, Austin, TX

- Supported repair execution through technical part identification, translating technical diagnostics into correct component selection, and ensuring on-time availability through inventory planning.
- Coordinated with BMW Technical Support to resolve complex repair cases, validating part applicability and improving first-pass repair accuracy through clear documentation and communication with the service team.

BMW Certified Technician

May 2018 – August 2019

Hendrick BMW of South Austin, Austin, TX

- Performed system-level fault isolation, troubleshooting, and repair of automotive electrical and electromechanical systems while maintaining compliance with OEM procedures and quality standards.
- Executed OEM test procedures using oscilloscopes and digital multimeters to analyze electrical signals, identify root causes of failures, and verify corrective actions through post-repair validation.

PROJECTS

Senior Design Project Manager

August 2025 – December 2025

- Led development of an FPGA-based educational platform on the Digilent Cora Z7 (AMD/Xilinx Zynq-7000), coordinating system integration, hardware validation, and deployment activities across an 8-person engineering team.
- Developed and maintained an FPGA build and release workflow, generating version-controlled bitstreams and ensuring reproducible hardware configurations across testing and demonstration environments.
- Executed verification and validation activities in simulation and hardware, utilizing oscilloscopes and logic analyzers to debug board-level issues, perform stress testing, and improve system reliability.
- Authored technical documentation, laboratory exercises, and deployment guides to support long-term platform adoption and repeatable FPGA development workflows.

HDL Autonomous BOT, Self-Started

December 2025 – Present

- Designed, implemented, and validated a SystemVerilog-based autonomous robot controller on a Digilent Cora Z7 FPGA platform, integrating ultrasonic ranging, IR boundary detection, and PWM motor control subsystems.
- Developed FPGA control logic and sensor interfaces, performing simulation, synthesis, implementation, and hardware verification using Vivado.
- Debugged timing, interface, and constraint-related issues during FPGA bring-up, validating functionality through iterative simulation and on-board testing.

Member, Bobcat Racing

August 2022 – April 2026

- Supported Formula SAE powertrain development through component evaluation, material selection, and subsystem integration activities for fueling and cooling systems.
- Collaborated within a multidisciplinary engineering environment to support vehicle development, testing, and competition readiness.

- Contributed technical recommendations for future telemetry and data acquisition system development to support vehicle performance monitoring

Self-Initiated Project

- Executed automotive electronics and mechanical projects leveraging prior BMW technician experience, applying structured diagnostic methodologies, root-cause analysis, and system validation techniques to troubleshoot complex vehicle systems.
- Performed a complete GM LS-series engine integration into a BMW chassis, supporting electrical system modifications, wiring integration, mechanical adaptation, subsystem validation, and end-to-end vehicle commissioning

EDUCATION

Bachelor of Science in Electrical Engineering – Micro and Nano Device Systems, May 2026

Ingram School of Engineering – ABET Accredited Program

Texas State University – San Marcos, Texas

Minors in Applied Mathematics, Economics

Engineering GPA: 3.35

- Dean's List

Fall 2022, 2025, Spring 2025

ENGINEERING COURSEWORK

- **Digital Design & FPGA:** Digital System Design Using HDL, Microprocessors, Introduction to VLSI Design
- **Semiconductor & IC Design:** Microelectronics, Solid State Devices, Analog and Mixed-Signal Electronics
- **Systems & Signal Processing:** Signals and Systems, Linear Control Systems
- **Design Experience:** Capstone Design Project
- **Power & Energy:** Introduction to Power Systems

TECHNICAL SKILLS AND CERTIFICATIONS

- **FPGA & HDL Development:** AMD/Xilinx Zynq-7000 (Cora Z7, RealDigital Blackboard), Verilog/SystemVerilog, AXI4/AXI-Lite, Custom IP Integration, FPGA Bring-Up, Verification & Validation.
- **Programming:** C, C++, Python
- **Development Tools:** Vivado, Vitis, MATLAB, LTspice, KiCad, VS Code
- **Hardware Validation & Test:** Oscilloscopes, Logic Analyzers, Board-Level Debug, Signal Integrity Verification.
- **Embedded Systems:** Embedded C/C++, Hardware-Software Integration.
- **Languages:** English (Native), Spanish (Native)

VOLUNTEER

Finance Committee Board Chair

January 2026 – Present

Wimberley United Methodist Church, Wimberley, TX

- Lead finance committee meetings and participate in budget planning, financial oversight, and resource allocation decisions supporting organizational operations and strategic initiatives.
- Strengthened financial controls and stewardship by formalizing approval workflows and documentation standards, improving transparency, accountability, and reporting accuracy.
- Co-developed a centralized volunteer engagement database with church leadership, standardizing contribution tracking and enabling data-driven planning, reporting, and volunteer recognition

Board Chair

January 2025 – Present

Bright Beginnings Preschool, Wimberley, TX

- Chair board meetings and guide decision-making across budgeting, policy development, strategic planning, and organizational resource allocation.
- Partner with executive leadership to identify operational improvement opportunities, prioritize initiatives, and align resources with long-term organizational goals.
- Facilitate board governance and consensus-building activities, helping translate strategic goals into actionable initiatives that strengthen the preschool's programs, operations, and mission