Fabian A. Hernandez Flores

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Professional Summary

Computer Engineer with a strong background in embedded systems, robotics, and hardware-software integration. Experienced in developing and testing real-world systems involving sensors, microcontrollers, autonomous platforms, and safety-aware control.

EDUCATION

University of Texas Rio Grande Valley – *Edinburg, Texas*

M.S. Computer Science *GPA: 4.00* 2024-2026

B.S. Computer Engineering, Minor in Applied Mathematics *GPA: 3.96* 2019-2023

PROJECTS

Digital-to-Analog and Analog-to-Digital Converter System | *Embedded Systems / Microcontroller*

- Programmed a PIC16F1517 microcontroller in C using MPLAB X IDE to test DAC and ADC behavior through digital I/O, analog input configuration, and waveform generation.
- Built and tested 4-bit and 8-bit R/2R ladder DAC circuits using resistor networks, verifying voltage resolution differences through measured staircase waveforms on an oscilloscope.
- Configured the PIC16F1517's 10-bit successive approximation ADC and synthesized a 100 Hz triangle waveform using the 8-bit DAC, validating analog output behavior through circuit testing and waveform analysis.

360 Sensor System for the Visually Impaired | *Embedded Systems / Microcontroller*

- Programmed HC-SR04 ultrasonic sensors in C++ on a Raspberry Pi Zero to collect real-time distance data and support 360° obstacle detection around the user.
- Implemented interrupt-driven GPIO sensing and multicore processing on the RP2040, using inter-core FIFO communication to separate sensor detection from PWM-based audio playback.
- Designed and assembled a custom PCB to integrate sensors, motors, and audio components, and 3D printed wearable crown-style sensor mounts to create a functional hands-free assistive device.

EXPERIENCE

AI Trainer | DataAnnotation Tech 03/2024 - Present

- Evaluate and improve state-of-the-art LLMs through extensive code review, prompt testing, and software engineering analysis across C++, C, Rust, Python and JavaScript.
- Create complex system instructions, coding prompts, and evaluation tasks to test model reasoning, code generation, debugging, and adherence to software engineering best practices.
- Build isolated Docker-based testing environments, write validation scripts and golden solutions, and document evaluations using Markdown and LaTeX to support fair, repeatable LLM benchmarking.

Graduate Researcher | Multiple Autonomous Robot System Research Lab 12/2024 - 05/2026

University of Texas Rio Grande Valley – Edinburg, Texas

- Conducted thesis research on collaborative autonomous driving, integrating camera, LiDAR, GPS, and radar sensor data with reinforcement learning and Control Barrier Functions (CBFs) to improve safety-aware decision-making.
- Developed and tested autonomous workflows using ROS 2 Jazzy, Gazebo Harmonic, ArduPilot SITL, MAVROS, and Python/C++ for simulation-to-hardware drone control.
- Assisted in building a low-cost autonomous drone platform using a Raspberry Pi 4, custom-selected batteries and electronic components, and 3D-printed mounts for modular hardware integration.

TECHNICAL SKILLS

- Languages: C++, C, Rust, Ruby, Python, HTML, CSS, JavaScript, Verilog, MATLAB, SQL
- Frameworks: ROS2, PyTorch, OpenCV, CARLA, CUDA
- Tools: Git, VS Code, Agile, CI/CD, Docker, LLM multi-agents, LTSpice, KiCad, Linux, RTOS
- Soft Skills: Fluent in English & Spanish, Project Management, Clear communication, Time managements