# Emil Guzman

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## Qualifications

An FPGA design engineer with a B.S. in Computer Engineering and minor in Physics from UC San Diego. Fluent in C/C++ and Verilog with experience in FPGA design, simulation, and verification using Xilinx Vivado and ModelSim. Strong understanding of microprocessors, embedded computing, and computer architecture with proven ability to implement and analyze digital systems. Brings strong analytical and problem-solving skills, organizational efficiency, and attention to detail. A self-starter and team player with excellent communication skills, able to mentor and be mentored. Skilled in managing priorities, meeting deadlines, and applying mathematical and programming knowledge to deliver reliable hardware solutions.

## Education

**University of California – San Diego** September 2021 – June 2025
*B.S. Computer Engineering, Minor: Physics* *GPA: 3.5/4.0*
**Relevant Coursework:** Wireless Embedded Systems, Robotic Sys Designs & Impl

## Skills

**Programming Languages**: C, C++, Java, HTML, Python, Verilog, SystemVerilog, Assembly
**Development Boards**: STM32L4(ARM Cortex-M4), Raspberry Pi 5, Xilinx Zynq FPGA
**Tools**: Git, Autodesk Fusion360, Logic Analyzers, Oscilliscopes, Cadence SPICE
**Business Software**: Microsoft Office(Teams, Word, PowerPoint, Excel), Google(Docs, Sheets, Slides), Zoom

## Project Experience

**Reactive LEDs**, ***Embedded Engineer*** October 2025 – Present
- Designing an embedded system on the Real Digital Blackboard (Xilinx Zynq FPGA + ARM processor) to sense environmental sounds and map frequency and amplitude to color and intensity on LEDs.
- Planning to benchmark and compare performance between hardware-accelerated FPGA logic and ARM software execution.
- Currently familiarizing myself with the board and researching end product components.

**YouLostIt Wireless Tracking Device**, ***Embedded Systems Engineer*** January 2025 – March 2025
- Built a wireless tracking device on ARM Cortex-M4 with Lost/Found modes for real-time status.
- Integrated accelerometer via I2C and implemented BLE protocols for communication.
- Used clever power optimization strategies to cut power usage by 98% in Lost mode and 80% in Found mode while meeting time constraints.

**SmartCart Real-Time Tracking**, ***Embedded Systems Engineer*** January 2025 – March 2025
- Developed real-time embedded system on Raspberry Pi 5 for in-cart product recognition.
- Integrated sensors, peripherals, and computer vision algorithms for item tracking.
- Enabled wireless data exchange for user-based product comparison.

**AirGeisel Quadcopter**, ***Firmware/Controls Engineer*** September 2024 – December 2024
- Designed, developed, manufactured, and operated custom PCB for stable flight.
- Conducted system-level testing/debugging to ensure reliable flight until battery depletion.
- Iterated rapidly on PCB design and firmware integration to meet aggressive timelines.

## Work Experience

**Triton Transportation Services**, ***Operations Support Training/Student Driver*** August 2023 – August 2025
- Logged 700+ safe driving hours, conducted fleet inspections, and trained 25+ employees in compliance with DOT safety regulations.

## Clubs

**Society of Hispanic Professional Engineers (SHPE)**, ***Outreach Member*** September 2024 – June 2025
- Led STEM outreach events including Tijuana Outreach and San Diego Festival of Science, promoting engineering education in underserved communities.