Alberto Trejo

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EDUCATION

Boston University (College of Engineering) – Boston, MA   May 2026
Bachelor of Science in Electrical Engineering
Relevant Coursework: Power Electronics for Energy systems, Analog Electronics, Signals & Systems, Electromagnetic Systems

EXPERIENCE

Grounded Low Voltage (GLV) Lead, Terrier Motorsport   May 2024 – Present
- Collaborated with a multidisciplinary team to design and fabricate an electrical system for an electric race car competing in SAE's Formula Hybrid + Electric competition within a 1-year design cycle
- Led a team of 15 engineers redesigning the GLV Shutdown Loop, an electrical hierarchy responsible for safely managing and operating HV through LV and manual components (i.e. latching relays, push buttons) able to shut down vehicle
- Oversaw production, testing, & validation of 10 PCBs for proper functionality according to test plans and operation diagrams
- Devised & manufactured the Tractive System Active Lamp (TSAL) Control board in KiCad using analog devices (e.g. transistors) and monolithic ICs, ensuring proper documentation and compliance with competition rule book
- Standardized PCB designs by validating footprints, symbols and board size limitations (100x100mm) while optimizing vendor selection for cost, manufacturability, and lead time

Student Manager, Starbucks   Aug 2022 – Present
- Assessed team's efficiency by relocating and delegating tasks in a fast-paced environment, ensuring customers were served within 5-10 minutes while upholding Starbucks' culture and values
- Trained & onboarded 20 new hires on company and university expectations, general workflow, and policies
- Communicated policy changes, events, and weekly updates to 45 staff members via email

Tractive System (TS) Lead, Terrier Motorsport   Sep 2023 – Dec 2023
- Reviewed & designed bus bar connections specified for vehicle's accumulator system ($\sim240V_{nom}$, $\sim150A$)
- Coordinated with mechanical team to build an accumulator housing, guaranteeing proper insulation and space for 660 (18650 style) cells divided into 6 segments (66s/10p) and supporting circuitry
- Consolidated and organized legacy system documentation into an accessible online library (Notion), streamlining system and design knowledge transfer from experienced engineers to new team members

PROJECTS

Snake Game   Nov 2024 – Dec 2024
- Used Verilog (HDL) to program a functioning snake-like game controlled with an FPGA board (Nexys4) and displayed through a Video Graphics Array (VGA) controller ensuring design parameters (e.g. resolution, refresh rate)
- Developed game logic such as score, lose conditions and random object generation though combinational logic and Finite State Machines (FSMs), integrating different game modes, clock speeds, and displays facilitating game predictability
- Tested & debugged clock synchronization and module interactions to certify stable gameplay and accurate timing transitions

Lie-Detecting Device   Sep 2023 – Dec 2023
- Engineered & assembled a lie detecting tool with a budget of $200, incorporating client feedback and restrictions
- Generated & implemented circuit schematics using KiCad, integrating displays for real-time feedback, sensors for physiological signal detection, and microcontrollers to process data and determine potential deception
- Utilized OnShape (CAD) to design a housing enclosure, fabricated using laser cutting and PVC acrylic
- Reviewed data sheets and circuitry to optimize sensor functionality and product reliability while prototyping

Temperature Sensing Device   Jan 2023 – May 2023
- Assembled & programmed a real-time temperature sensing device to alert users of temperatures outside pre-programmed range through microcontrollers and sensors (Arduino UNO, TMP36) with 80% accuracy
- Produced a housing enclosure and 3D printed components to mount hardware as displayed on final CAD rendering
- Verified system's signals to enhance microcontroller and sensor performance through data sheet analysis and code debugging

Food Deserts in the United States   Nov 2022 – Dec 2022
- Applied linear regression learning models using MATLAB's machine learning toolbox to predict food desert regions
- Developed a predictive model through MATLAB's machine learning toolbox to identify food desert regions across the United States, leveraging linear regression techniques to analyze over 10,000 data points

AWARDS & INVOLVEMENTS

Hispanic Scholarship Fund (HSF) Scholar   Jul 2023 – Present
- Advocates for educational equity providing financial aid and an extensive network aimed to empower Hispanic leaders achieve academic and professional goals

Michael & Susan Dell Foundation Scholar   Mar 2022 – Present
- Fosters students with personalized, multifaceted academic, financial, and emotional support to promote career development

Dean's List   Jul 2024
- Awarded to top 30% of students in each class cohort. Students must complete a term GPI of at least 3.00 with at least 12 academic unit hours of graded coursework (none incomplete, missing, or unresolved)

SKILLS

Software: KiCad, Altium, LTspice, OnShape, MATLAB, Python, Verilog, GitHub, Notion, Google Suite, Microsoft Office, 3D Printing & Slicing
Electrical: Soldering, Circuit Design, PCB Design, Electrical Architecture, Troubleshooting, Signal Analysis, Test Plans