

# Alberto Trejo

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## EDUCATION

**Boston University (College of Engineering)** – Boston, MA

Graduation: **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 the electrical system for an electric race car competing in SAE's Formula Hybrid + Electric competition within a 1-year design cycle
- Managed a team of 15 engineers redesigning the GLV Shutdown Loop, an electrical hierarchy responsible for the safe management and operation of HV through LV and manual components (i.e. latching relays, push buttons) able to shut down the vehicle
- Oversaw production, testing, & validation of PCBs ensuring 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
- Verified & standardized project lead PCB designs to validate footprints, symbols and board size limitations (100x100mm), comparing vendor options for cost, manufacture and delivery time

**Student Manager**, Starbucks

Aug 2022 – Present

- Assessed team's efficiency by relocating and delegating tasks in a fast-paced environment, ensuring costumers were served within 5-10 minutes while upholding Starbucks' culture and values
- Trained & assisted 20 new hires on expectations, instructions, and general workflow according to company and university policies
- Authored emails detailing policy changes, important events and weekly reminders to ~45 staff members

**Tractive System (TS) Lead**, Terrier Motorsport

Sep 2023 – Dec 2023

- Reviewed & designed bus bar connections specified for vehicle's accumulator system ( $\sim 240V_{nom}$ ,  $\sim 150A$ )
- Coordinated with the mechanical team to build an accumulator housing, ensuring proper insulation and space for 660 (18650 style) cells divided into 6 segments (66s/10p) including 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), integrating different game modes switching clock speeds and display to improve user experience
- Developed game logic such as score, lose conditions and random object generation through combinational logic and Finite State Machines (FSMs) introducing features that facilitate player experience and game predictability
- Tested & debugged clock speed synchronization and module interactions to ensure stable gameplay, accurate timing, and seamless mode 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

## AWARDS & INVOLVEMENTS

**Dean's List**

Spring 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)

**Hispanic Scholarship Fund (HSF) Scholar**

July 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

## 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