

# Sebastian Zapata

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## EDUCATION

**University of Texas at Austin, B.S.**, Electrical and Computer Engineering,

May 2027 | GPA: 4.0

Relevant Courses: **E&M**, Mechanics, Multivariable Calculus, Diff eq., Linear Alg., EE, Computing

## SKILLS & CERTIFICATIONS

### Technical Skills:

- **Hardware: PCB Design** (KiCad), Circuit Design, **Power** Electronics
- **CAD Software & MS: SolidWorks**, Autodesk Inventor, Fusion360, Onshape, Excel & Microsoft Suite
- **Programming**: Proficient in **C**, **Java**, **HTML**, **CSS**

**Languages**: English (Native), Spanish (Fluent)

**Areas**: Circuit Design, Firmware Development, Embedded Systems, PCB Design, Testing and Validation, Power Distribution

**Certifications**: AutoDesk Inventor, AutoCAD

**Awards**: 2024 **HSF Scholar**, FRC Robotics 2023 **State Champion**, SkillsUSA **3rd in Texas**, Vex Robotics **State Semifinalist**

## TECHNICAL EXPERIENCE

### **FSAE Longhorn Racing Electric** | *Electronics and Power Systems*

UT | August 2024 – Present

- Designed **Power** and control PCBs for the Electric Formula Car of UT Austin, competing internationally in May
- Developed circuit schematics for Vehicle Control Unit and Wheel speed boards ensuring correct part specifications and board functionality
- Tested and validated steering encoder using **hall effect sensors**, **RGB array mapping**, and **USB VCP communication**
- Laid out and assembled Vehicle Control Unit (VCU) and Wheel Speed PCBs using KiCad, minimizing **crosstalk** and **signal degradation**, and allowed for 40A+ to be safely delivered to other boards.
- Developed **low-level firmware** for the VCU, developing torque mapping
- Led **testing and validation** of experimental boards, including **CAN** bootloading, Flex PCBs, and speaker amplification, utilizing **oscilloscopes**, multimeters, and various debugging tools.

### **Texas Aerial Robotics** | *Electronics and CAD Member*

UT | August 2024 – Present

- Fully Designed a large lightweight, printable, waterproof, and autonomous octocopter in CAD and collaborated to design a self-landing **vector-controlled** mono-copter
- Collaborated to design circuit schematics for the **flight controller** of the self-landing “dart” mono-copter

### **GW Robotics (FRC)** | *Technical Design Lead*

Katy | June 2023 – May 2024

- Designed a top-performing robot at the FRC World Championship, leading to selection by the reigning **World Champions** despite operating with less than 20% of the funding of respective top teams.
- Debugged and troubleshot **CAN bus** and **PID** setup and implementation, reducing electrical failure rate to 0, and accelerating competition play by 10%.
- Co-led the design of three complete 125 lb competition robots using CAD software, optimizing space and financial constraints, winning several regional and state competitions
- Designed our first-ever arm, climb, and **PID** shooter mechanisms and swerve drive system
- Led CNC and Manufacturing systems ensuring manufacturability and packaging feasibility of CAD design

### **High-Speed RC Car Personal Project** | *Lead Designer and Manufacturer*

June 2024 – Present

- Developed custom **RF transmitter** and receiver connecting user to **ESC module**
- Designed a high-speed 3D printed RC Car with open **differential**, suspension, and **high torque** steering systems
- Designed with durability and practicality of assembly to allow for a top speed of **70 mph**

### **SkillsUSA** | *Additive Manufacturing Competitor*

Katy | August 2022 – May 2023

- Designed a 3D printed computer mouse tailored to users with trans-radial amputations creating a financially viable solution
- Finished 3rd place out of 150+ teams in the Texas State SkillsUSA competition

## LEADERSHIP EXPERIENCE

### **GW Robotics (FRC)** | *Strategy Officer/ Driver/ Drive Coach*

Katy | August 2022 – May 2024

- Led team and alliance strategy optimizing match performance and collaboration, defeating several top 10 teams in Texas
- Trained and coached 20 underclassmen in driving and robotics strategy, contributing to a 300% increase in student involvement and driving prospects for future seasons.