Sivan Syed

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EDUCATION

The University of Texas at Austin (GPA: 3.8/4.0) **May 2027**

Bachelor of Science, ***Electrical and Computer Engineering*** *Bachelor of Science,* ***Physics***

Certificate, ***German*** *Minor,* ***Materials Science and Engineering***

Relevant Coursework: Embedded Systems, Electrodynamics, Power Electronics, Digital Logic Design, Fundamental Electronic Circuits, Fluid Dynamics, Mechanics of Solids, Computational Physics, Classical Dynamics, Materials Engineering

EXPERIENCE

Adom Industries Inc. / R&D Design Engineer / Electrical and Robotics Engineering **May 2025 – August 2025**

- **Architected** the mechatronic **drivetrain** for reliable autonomous payload transfer
- **Applied FEA** to drive material topology, **cutting material usage** by 88%; validated with **welded prototypes** and **bench testing**
- **Authored** bring-up procedures and DFM notes (wiring looms, EMI/grounding, thermal interfaces); reduced assembly effort

Sandia National Laboratories / R&D Computational Engineer / Pulsed Power Physics **May 2024 – August 2024**

- **Analyzed** fluid **RTIs** and **RMIs** to diagnose inaccuracies in ALEGRA **simulations**
- **Built** a fast **current-pulse generator** to synthesize **10k+ waveforms** for ML-aided **surrogate modeling** and **UQ pipelines**
- **Wrote ODE/trajectory solvers** to track radial liner implosions and compare ALEGRA predictions and observed instability spectra.

FSAE Longhorn Racing / Dynamics + Vehicle Modeling Engineer / Steering Lead, Member **September 2022 – Present**

- **Modelled** vehicle kinematics to optimize car performance with compliance modeling to tune slip-angle behavior in **Python**
- **Re-engineered** steering column using **carbon-fiber** layups, cutting system weight 68% while **maintaining torsional rigidity**
- **Designed** the steering system for ideal Anti-Ackermann and dynamics characteristics **validated** through **simulation**
- **Selected** bearings in order to optimize load and safety factor, allowing minimal compliance and effort in the steering system

Projects

Steering Gearbox ***Relevant Skills: CAD, SOLIDWORKS, ANSYS, Manufacturing, CNC, Manual Mill, Lathe***

- Performed **stress analyses** of various parts with **finite element analysis** from **Ansys** and **SOLIDWORKS**
- Calculated by hand steering efforts and ratios with high level **vehicle modeling** and **computational verification**
- Designed various parts such as **gearboxes**, **steering racks**, **carbon fiber** tubing in **SOLIDWORKS**

Vehicle Dynamics and Modeling ***Relevant Skills: Vehicle Modeling, Computational Dynamics, Simulation, Python, C++***

- Created a **kinematic model of the vehicle** to **optimize car performance** and stability; Porting to **C++**
- Designing **compliance model** to **simulate** stress of vehicle parts and implement **collision detection**

Ping Pong Ball Equilibrium Robot ***Relevant Skills: Mechatronics, Robotics, Controls, C, C++***

- **Developing inverse kinematics and PID control** of a **robotic platform** for precise movement correction within ±0.5 mm accuracy.
- Integrating **high-torque servos**, **power circuits**, and custom **3D-printed components** to engineer the **electromechanical system**

Wireless Communication via Infrared LED and UART ***Relevant Skills: Embedded Systems, C, C++, Firmware, UART, SPI Protocol***

- Implemented firmware with **UART** to transmit data with baud rate of **2375 bits/sec** and bandwidth of **148 bytes/sec**
- Verified with **oscilloscope** the **IR communication system** to transmit slide potentiometer data for videogame display

Dance-Dance Revolution Augmented Reality ***Relevant Skills: Computer Vision, OpenCV, HTML, CSS, JavaScript, Three.js***

- Implemented **real-time object detection** via **background subtraction** and **contour detection**, improving **accuracy by 89%**.
- **Integrated and synchronized OpenCV movement tracking** with **3D JavaScript graphics** in a **Three.js-rendered** game environment

E-Bike Boost Converter Design ***Relevant Skills: Power Electronics, Embedded Systems, PCB Design***

- Designing a PCB for a DC-DC **boost converter,** minimizing **EMI**, critical loop areas, and gating loop areas.
- Interfacing and configuring **digital PWMs** and **ADCs**

Crystal Oscillator Resonant Frequency Tracker ***Relevant Skills: Circuit Design, KiCAD, PCB Design***

- Created **a sensor** to measure **resonant frequency** with <5% error of a **Quartz Crystal Oscillator** to find **Ytterbium** flux in **vacuum**
- **Prototyped** with breadboards and 3D prints to ensure design validity

SKILLS

Software Language Proficiencies: Rust, C, C++, ARM, Python, MATLAB, Bash, JS, HTML, CSS, LaTeX

Simulation/Modeling Software: Fusion360, KiCAD, LTSpice, FLASH, MaGe, SOLIDWORKS, VCarve, Inventor, Ansys