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, Solid-State Devices, Power Electronics, Digital Logic Design, Fundamental Electronic Circuits, Mechanics of Solids, Circuit Theory, Electrodynamics, Thermodynamics and Statistical Mechanics, Computational Physics

EXPERIENCE

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

- **Designed** the **mechanical** and **electrical systems** for robotic shuttle drivetrain to pick up and deliver circuit boards autonomously
- **Applied FEA** methods to analyze stress, strain, and deformation, **reducing material usage** by 88%
- **Welded** and manufactured the **drivetrain**, **mounting mechanisms**, and **removable battery holder** from **locally sourced steel**

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**
- Created an **electrical current pulse generation model** to rapidly deploy >10000 datasets for use in a **training algorithm**
- **Programmed a model** to track **radial implosion trajectories** on the Z-Machine through **numerically solved differential equations**

FSAE Longhorn Racing / Dynamics + Vehicle Modeling Engineer / Steering Lead, Member **September 2022 – August 2025**

- **Modelled** vehicle kinematics to optimize car performance and stability in **Python**
- **Reduced** weight with **carbon fiber** columns of Steering system by 68% while steering geometry
- **Designed** the steering system for ideal Anti-Ackermann and dynamics characteristics validated through simulation

Large Enriched Germanium for Neutrinoless Double-beta Decay – Karol Lang / High Energy Particle Detectors **November 2022 – Present**

- Analyzing **scintillating and wavelength shifting fibers** to detect the neutrinoless double-beta decay
- **Visualized** and analyzed **positional and intensity variation** from Fermilab's Hadron Monitor for preparation to be repaired
- **Simulating** through a **Docker supported codebase**, MaGe, photon emissions from scintillating fibers

Projects

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

- **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**

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 with **digital PWMs** and **ADCs**

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 sensor receiver** and IR Led transmitter to transmit slide potentiometer data for videogame display

Attenuation Lengths of Scintillating Fibers ***Relevant Skills: Python, SOLIDWORKS, Manufacturing, Sensor Integration, Data Analysis***

- Measuring and **analyzing attenuation lengths** of >100 wavelength shifting fibers from Eljen with 520nm wavelength LEDs
- Designed via **SOLIDWORKS**, **3D printed**, and **milled** 20 mechanical mounts for a sensor system of **SiPMs**, **PMTs** and **Spectrometers**

Crystal Oscillator Resonant Frequency and Mass Flux 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** circuit design via breadboards and 3D prints to ensure design validity

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 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**

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