Aayush Aryaman Sinha

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EDUCATION

University of Washington-Seattle **Sep 2024 - Jun 2028**

Bachelor's, Electrical and Computer Engineering (GPA: 3.7)

Coursework: DSA, Data Programming, Fundamentals of EE, Signals programing, Embedded Systems, Digits Circuits

PROFESSIONAL EXPERIENCE

Human-Machine Interface (HMI) Engineer & Safety Team **Sep 2024 – Present**

PACCAR E-Truck Challenege at UW *Seattle, WA, USA*

- Converted a Peterbuilt 337 truck to be 100% electric and overhauling all systems to optimize efficiency.
- Designed digital dashboard and center console for human interaction and Truck's System controls.
- Converted CAN messages into speed, SoC, warnings, and system-status output ensuring correct drivesate feedback
- Implemented SAE J1939-based networks, developing and verifying DBC files using CANdb++ for correct signal mapping.
- Built and debugged HIL test benches to validate CAN traffic, interface behavior, and HMI ECU communication reliability.
- Modeled system connections and data flow using MATLAB/Simulink for supporting crucial subsystems.
- Designed electrical systems by creating wiring diagrams and PCB designs and supporting integration of dashboard hardware and cab controls.

Research Intern **Aug 2025 - Nov 2025**

UW SEAL – Plasma Group *Seattle, WA, USA*

- Developed self-optimizing plasma power supplies and adaptive dielectric barrier discharge systems to enable next-generation medical sterilization, wound-healing, and surface treatment technologies.
- Performed documentation and performance characterization of plasma-electrode systems, including voltage waveform tuning, energy efficiency, and surface treatment effects on biological substrates.
- Assisted in lab setup and experimental validation, ensuring compliance with high-voltage and biomedical safety standards.

PROJECTS

Tablet-Based Dashboard and Console | *Front end Design, Control Systems, RaptorDev Tools*

- Developed frontend UI for dashboard and center console using HTML, CSS and JavaScript
- Implemented simulink modles through RaptorDev Tools and using a RCM112-2202 to send HMI signals over CAN network
- Implented user safety thorough visual feedback and validated end to end HMI behavior through SIL and HIL.

Regenerative Breaking | *Simulink, Vector CANalyzer, Embedded Systems, Singal Mapping*

- Implemented a regenerative braking speed controller using a VESC-based control platform, Increasing the driving range by 30%.
- Developed Simulink control logic with CAN signal mapping for regenerative braking.
- Verified performance through SIL testing in Vector CANalyzer and prepared HIL test benches.

SKILLS

- **Programming/Software:** C, C++, Python, Java, CAPL, R, HTML, CSS, JavaScript
- **Electronics/Controls Systems**: Circuit Analysis, Power Electronics, Microcontrollers, CAN (SAE J1939), CANalyzer, CANdb++
- **Simulation & Design Tools:** MATLAB, Simulink, KiCAD, Fusion 360, AutoCAD
- **Soft Skills:** Leadership, Communication, Problem Solving, Team Collaboration.