

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 programming, Embedded Systems, Digital Circuits

PROFESSIONAL EXPERIENCE

Human-Machine Interface (HMI) Engineer & Safety Team

Sep 2024 – Present

PACCAR E-Truck Challenge at UW

Seattle, WA, USA

- Converted a Peterbilt 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 driver 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 modules through RaptorDev Tools and using a RCM112-2202 to send HMI signals over CAN network
- Implemented user safety through visual feedback and validated end to end HMI behavior through SIL and HIL.

Cabin Test Bench setup | Simulink, Vector CANalyzer, Embedded Systems, Signal Mapping

- Reverse-engineered 4 steering column subsystems (wipers, high beams, turn signals, hazards) by performing 20+ continuity tests to characterize undocumented wiring behavior.
- Validated 100% of control signal mappings using a custom test circuit with 0–12 V measured differentials.
- Built a MATLAB/Simulink HIL/SIL-ready cabin test bench enabling real-time monitoring of 10+ input signals.

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.