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 Peterbilt 337 truck to be 100% electric with 60+ engineers 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.
- 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

Moza R3 Controlled ESP32 based Car *Link*

- Designed and implemented a Wi-Fi based control architecture using Python (UDP sockets) to transmit real-time throttle and steering commands from a Sim-Wheel to an ESP32 microcontroller.
- Implemented a fly camera over Wi-Fi and MCU to broadcast feed to PC and ensured low-latency inputs by user.
- Developed logic to ensure consistent steering and motor control using C++ and compacted circuit through designing a PCB

Cabin Test Bench setup *Link*

- 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.
- Developed frontend UI using HTML, CSS, JavaScript and implemented logic through RaptorDev Tools to send HMI signals through a RCM112-2202

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.