

# Vaanika Singla

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**Goal:** To use my ability as an engineer to solve problems to make a long-lasting impact on people.

## EDUCATION

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### RUTGERS UNIVERSITY

Bachelor of Science in Electrical and Computer Engineering  
Cumulative GPA: 3.9/4.0

New Brunswick, NJ  
Expected May 2027

Relevant Coursework: Principles of Electrical Engineering I & II, Digital Logic Design, Introduction to Computer Science, Computer Architecture, Sustainable Energy.

## RELATED EXPERIENCE

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### ASTRODYNE TDI

Electrical Engineering Intern

Hackettstown, NJ  
May 2025 – August 2025

- Designed and simulated a linear power supply in LTSpice, implementing op-amp and transistor feedback loops to achieve 12 mV line and load regulation, ensuring precise voltage control under varying load conditions.
- Performed circuit-level validation using multimeters and electronic loads, confirming compliance with specifications.
- Selected components and reworked PCBs, applying power electronics knowledge to reduce noise and enhance stability.
- Interpreted schematics and executed bench debugging for automated test equipment (ATE), supporting SPI, OpAmps, ADC/DAC, and CAN-based circuit verification.

### RUTGERS FORMULA RACING (Formula SAE Electric)

Electronics Lead (High Voltage and PCB Design)

Piscataway, NJ  
Sep 2024 – Present

- Served as the engineering lead on the team to design, manufacture, and integrate high-voltage electronics and circuits on an FSAE-style vehicle.
- Identified and mitigated EMI issues across high- and low-voltage systems by designing filtering solutions and modifying layouts.
  - Designed tests to measure ground plane impedances and isolate components using power supplies, loads, and oscilloscopes, identifying common-mode noise
  - Designed low-pass and DC-DC power supplies, reducing sensor noise by 90% and validating through lab testing.
- Managed and supervised a high-voltage battery capacity test to characterize capacity degradation by utilizing multimeters, electronic loads, and probes, identifying a 12% reduction in capacity over three years.
- Developed an isolated CAN repeater board in Altium Designer with isolated power supplies to eliminate noise in temperature sensors, validated signal integrity using circuit testing, and designed arbitration logic to ensure reliable subsystem communication.
- Managed PCB development projects for Formula SAE Electric, conducting weekly check-ins to track progress, define deliverables, and ensure on-time, high-quality hardware delivery.

## PROJECTS

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### HV Charging Interface (Formula SAE Electric)

Spring 2025

- Designed and implemented a custom PCB to implement EV charging standards (J1772), enabling BMS-controlled charging without auxiliary power.
- Created schematic and PCB layout in Altium Designer, validated for high-current DC handling and signal integrity.
- Performed circuit-level simulations in LTSpice to verify design concepts, identifying potential issues and improving overall PCB performance before fabrication.

## ADDITIONAL

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**Technical Skills:** Schematic Capture and Layout Tools (Altium Designer, Cadence), SPICE Simulation, CAN Interface, Power Electronics, EMI troubleshooting, Solidworks.

**Tools:** Oscilloscope, Spectrum Analyzer, Multimeter, Soldering Iron, Connector Crimpers, Hand Tools. Vertical Mill, 3D Printer.

**Programming Languages:** MATLAB, Verilog, Java, C, C++, Python.

**Passions:** Reading, Cars (especially EVs), Hiking, Working out.