Shahnawaz Haque

Wayne, NJ (Relocatable) | (862) 571 4260 | shahn.haque@gmail.com | shawnhaque.com

Skills

Software/Programming Languages: Altium Designer, Altera Quartus, Multisim, VHDL, C++, Python, MATLAB

Hardware/Embedded Systems: Digital and Analog PCB design, Embedded Linux, STM32, ESP32, PIC, Atmel;

Proficient in hardware validation and test, verifying signal integrity and power-rail performance.

Professional Experience

Hardware Design Engineer Intern **Bethlehem PA**

Myers Emergency Power Systems *June 2024 – August 2024*

- Extensively used Altium Designer to develop schematics and layout PCBs for prototyping and production.
- Projects involved developing 2 and 4 layer mixed-signal PCBs involving impedance controlled differential pair routing and high-voltage power integration.
- Led the configuration, testing, and validation of active load sharing between six 5.5kW bidirectional DC-DC converters (810V-56V, 33kW total).

SAT/ACT Tutoring Manager and Instructor **West Caldwell NJ**

The Tutoring Center of West Caldwell *July 2019 – June 2020*

- Established and sustained positive relationships with all 80 students, students' parents, their teachers, as well as team members.
- Led weekly staff meetings to review K-12 students' progress and foster team collaboration.
- Worked with parents and schools to individualize learning.

Project Experience

Guitar Interface for Polyphonic Modular Synthesizer **April 2025**

- Designed custom PCBs and developed a polyphonic guitar interface module for existing modular synthesizers, using an STM32 microprocessor to sample and process guitar signals from a hex coil pickup to do pitch tracking, outputting control voltages to use with the existing modular synthesizer ecosystem.
- Designed and laid out 3 additional polyphonic synthesizer modules to demonstrate the functionality of the interface, including a 6-channel voltage-controlled oscillator, 6-channel voltage-controlled attenuator, and a 6-channel output mixer and assembled functional Eurorack-compliant prototypes.

8-bit CPU on FPGA **December 2024**

- Designed an 8-bit CPU using Quartus Prime and VHDL, developed a control unit, decoder, ALU, and RAM-based instruction memory.
- Real-time debugging by displaying register values on a 7-segment display, showcasing system state changes and instruction execution.

Throttle Body Controller for use with combustion engine **April 2024**

- Developed an advanced PID-based throttle body controller using Ziegler–Nichols auto-tuning, and Kalman filtering for ADC data preprocessing.
- Integrated safety redundancies, including an analog non-programmable brake plausibility device, ensuring fail-safe mechanisms under real-world conditions.

Frame-View (IEEE Hackathon Winner) **April 2023**

- Worked with a team in a 24-hour design sprint to build a pair of smart glasses that aids situational awareness to assist those who are deaf or hard of hearing.
- Used ESP32's to implement stereo vision depth mapping and AI object detection using a convolutional neural network.

Education

New Jersey Institute of Technology **Newark NJ**

B.S. in Computer Engineering *May 2025*

- Director of Electrical Systems – NJIT Formula SAE Student Racing Team

Bergen Community College **Paramus NJ**

- Judith K. Winn School of Honors *August 2020*