

Sameen Ahmad

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Education

Massachusetts Institute of Technology | GPA: 4.8/5.0 Cambridge, MA
Master of Engineering in Electrical Engineering & Computer Science May 2028
Bachelor of Science in Electrical Engineering & Computer Science and Mechanical Engineering May 2027

- **Coursework:** Semiconductor Electronic Circuits, Solid-State Circuits, Analog Electronics Lab, Power Electronics Lab, Digital Systems Lab, Computation Structures, Signal Processing, Design and Manufacturing

Projects

Mixed-Signal IC Design | *Cadence Virtuoso, 65 nm CMOS*

- Designed a mixed-signal IC in a 65 nm, 1.2 V CMOS process comprising a differential amplifier, a logic-gate code checker, and transmission-gate switches for shared-bus isolation
- Verified performance with DC, AC, and transient test benches against gain (>26 dB at 1 MHz), power (<500 μ W), propagation delay (<500 ps), and output swing (>300 mV); specifications drew a DRC/LVS-clean layout
- Reduced parasitics with multi-finger devices, common-centroid matching, symmetric power rails, and guard rings

Power Electronics | *LTspice, Hardware Prototyping, Bench Validation*

- Built a variable-speed DC motor drive with an H-Bridge, PWM generation, dead-time circuitry, and a totem-pole gate driver; built a three-phase inverter driving a wye-connected brushless DC (BLDC) motor
- Designed in LTspice and built a fluorescent lamp ballast with resonant converter stages, stepping 40 V up to 400 V
- Built a class-D audio amplifier with an LC output filter, powered from cascaded buck and boost converters

Experience

MIT Culpepper Lab (Precision Machine Design) Cambridge, MA
Undergraduate Researcher Sept. 2025 – Present

- Designing and characterizing a PCB that implements a closed-loop analog controller for a nanopositioner
- Designed a strain-gauge PCB in Altium with a Wheatstone bridge, amplification stage, and anti-aliasing filter

Symbotic (Robotic Warehouse Automation) Wilmington, MA
Electrical Engineering Intern May 2026 – Aug. 2026

- Performed power load analysis to validate adding cooling fans to robotic systems, tripling operational runtime
- Created schematics in AutoCAD to repair electrical faults on an industrial lift; solution replicated across 60+ lifts
- Designed and programmed a safety interlock system in Studio 5000; performed life-cycle testing before deployment
- Built an AI-assisted Python tool to automate engineering bulletin generation, cutting manual processing by 95%

REV Robotics (FIRST Robotics Supplier) Carrollton, TX
Mechanical Engineering Intern May 2025 – Aug. 2025

- Designed 18 consumer products in SolidWorks; created GD&T production drawings and ran tolerance stack-up, FEA, and DFM analyses; defended designs in design reviews

Sensori Robotics (Landscape Automation) Irving, TX
Software Engineering Intern June 2024 – Aug. 2024

- Built an automated image annotation pipeline with Segment Anything Model (SAM), validated on 7,500+ images, improving efficiency by 92%; trained and deployed a real-time YOLOv8 obstacle detection model

Leadership

MIT RoboTeam (NASA Lunabotics) Sept. 2024 – Present
Captain

- Led 15+ students designing a lunar rover; built MATLAB models to size motors and batteries per constraints

Skills

Circuit Design: Cadence Virtuoso (schematic, layout, DRC/LVS), LTspice, Altium, KiCad, AutoCAD Electrical
Bench Test & Debugging: Oscilloscope, Logic Analyzer, Multimeter, PulseView, Soldering/Rework, Arduino
Programming: Python, C/C++, MATLAB, Verilog/SystemVerilog, Vivado, RISC-V Assembly, Linux, Git, TCL
Mechanical: SolidWorks, Fusion 360, OnShape, GD&T, FEA, CNC Mill, Lathe
AI/ML: SAM, YOLOv8, Grounding DINO, OpenCV