

Shahir Ahmed

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EDUCATION

Michigan State University, College of Engineering

Bachelor of Science, Electrical Engineering

GPA: 4.00 | Dean's List | Honors College | Provost's Scholarship & Honors Excellence Scholarship (\$100,000)

East Lansing, MI

Expected May 2029

EXPERIENCE

Microtechnology Lab, Michigan State University

Undergraduate Researcher

East Lansing, MI

September 2025 – Present

- Conducted 1,000+ electrochemical experiments detecting heavy metal ions using Cyclic Voltammetry (CV), Differential Pulse Voltammetry (DPV), and Fast-Scan CV with carbon fiber working electrodes
- Developing an affordable microfluidic potentiostat platform for continuous, automatic heavy metal sensing down to 10 ppb, built around a custom analog front-end circuit with Teensy microcontroller integration
- Analyzed 100+ experimental datasets in Origin, producing graphical outputs to benchmark electrode performance and validate system sensitivity thresholds

IEEE MSU Student Branch

Technical Director

East Lansing, MI

February 2026 – Present

- Led hands-on workshop teaching schematic capture, PCB layout in KiCad, SMD soldering, and C firmware development to build a fully functional pedometer from scratch
- Performed component selection and BOM management for workshop PCB designs, balancing cost, availability, and electrical performance for student-accessible builds
- Co-hosted DIY metal detector workshop, guiding participants through breadboard circuit design with a 555 IC timer, resonant LC circuit, and audio alarm output

MSU Solar Car Racing

Vehicle Controls and Sensing

East Lansing, MI

September 2025 – Present

- Executed schematic capture, parts selection, and 4-layer impedance-controlled layout in Altium Designer for safety-critical vehicle control systems
- Selected and validated passive and active components (MCUs, sensors, MOSFETs, regulators) based on automotive operating conditions, thermal constraints, and supply chain availability
- Soldered fine-pitch components onto vehicle boards, maintaining strict adherence to PCB layout and IPC assembly standards

PROJECTS

- **Inertial Measurement Unit (IMU) Board:** Designed full PCB from schematic to layout with I²C sensor interface for multi-axis acceleration and rotation measurement
- **Electron Wave-Particle Duality Study:** Utilized Electron Backscatter Diffraction (EBSD) in a Scanning Electron Microscope (SEM) to experimentally demonstrate wave-particle duality and analyze crystallographic structure

SKILLS

EDA & PCB Design: Altium Designer, KiCad, Schematic capture, PCB layout, Parts selection, DRC/ERC, multi-layer stack-up

Programming & Analysis: C, Python, MATLAB, Origin, Electrochemical analysis (CV, DPV, FS-CV)