Abdelrahman Ahmed

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Education

University of Michigan — Ann Arbor, MI

Bachelor of Science in Engineering – Electrical Engineering — *GPA: 3.55* — *August 2025 – May 2029*

- **Relevant Coursework:** Circuits, Signals & Systems, Engineering Electromagnetics, Logic Design, Microprocessors, Data Structures & Algorithms, Electrical Design
- **Activities and Societies:** Blacksmithing Club President (*2026–Present*), W8UM Amateur Radio Club

Technical Skills

Tools: Ansys HFSS, Altium, FPGA, Arduino, OnShape/SolidWorks, VNA, Linux, Git, React, Pandas, PyTorch
Languages: C++, C, Java, Verilog, Python, Assembly, Matlab, SQL, JavaScript, HTML/CSS, C#/.NET, GDScript

Experience

Michigan Mars Rover Team — Ann Arbor, MI

RF and Communications Engineer — *August 2025 – Present*

- Executed rigorous RF testing to ensure radio systems were competition-ready, analyzing data using MATLAB
- Independently researched and designed a custom radio to replace our current off-the-shelf solution, self-teaching Altium Designer and Ansys HFSS

University of Michigan Information and Technology Services — Ann Arbor, MI

Student Manager & Tech Help Consultant — *August 2025 – Present*

- Facilitate on-boarding and supervise 30+ tech consultants to ensure high-quality service and adherence to protocols
- Develop and design internal resources and tools using React to allow consultants to better serve customers with ease
- Provide frontline technical support for the UofM community resolving networking, software, and hardware problems

First Robotics Team 469 Las Guerrillas — Pontiac, MI

System Lead — *August 2024 – May 2025*

- Led the design and implementation of the elevator and climber subsystems during the FIRST and OCCRA seasons
- Coordinated integration between mechanical, electrical, and software teams to build reliable automations for drivers

Electrical and Programming Subsystem — *August 2021 – January 2025*

- Designed schematics integrating sensors and motors, accounting for efficiency and maintenance during competition
- Programmed robust autonomous and tele-operated robot functions in Java, to achieve more reliable scoring

Projects

Smart Sustainability Bat Box | *Arduino UNO Q, PyTorch, Firebase* | MHacks 2026 — October 2026

- Built a sensor-equipped bat box with on-device computer vision to detect bats on an Arduino UNO Q (∼100fps)
- Fine-tuned BatNet model in PyTorch on 10,000+ daylight photos, cutting false alarms from 42% to 13% at 70% recall
- Streamed sensor data over Wi-Fi to Firebase and built a website pulling it into a dashboard with maintenance advice

Bluetooth Antenna | *Ansys HFSS* — May 2026

- Designed, simulated, and optimized a meandered inverted-F antenna in HFSS for 2.4 GHz BLE, reaching 90% efficiency and 100 MHz bandwidth to transmit plant moisture sensor data

Synth Synthesis | *FPGA, Verilog, Assembly, Quartus* — January 2026 – April 2026

- Spearheaded the development of a microprocessor based synthesizer using Verilog and our own assembly language
- Constructed the microprocessor's instruction set using a datapath and state-machine to run code from memory
- Built blocking and non-blocking drivers for several devices, and the logic to control and display modulated waveforms

360° RF Test Analyzer | *Network Analyzer, Python, Pandas, NumPy* | DENSO — August 2024

- Automated processing of 360° anechoic chamber VNA data in Python, organized by frequency and angle
- Built a GUI generating polar plots at each of 1601+ measured frequencies to inform engineering decisions