Aditya Sahi

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Education

Ohio University, Athens, OH

- **M.S. in Electrical Engineering** (GPA: 3.75) | *Aug 2023 – Present*
  - *Thesis:* "Low Altitude Weather Network: Optimizing Sub-GHz Mesh Networks via RF Propagation Analysis and Machine Learning."
  - *Research Focus:* RF systems, embedded development, wireless protocols (LoRa, Wi-SUN), and signal propagation.
- **B.S. in Electrical Engineering** | *Aug 2019 – May 2023*

Research Experience

Graduate Research Assistant *Sep 2023 – Present*

Department of Electrical Engineering and Computer Science, Ohio University

- Conducted **RF propagation analysis** using RSSI data to optimize node placement in sub-GHz mesh networks, achieving **95% uptime**.
- Reduced power consumption by **40%** via ML-based energy management for IoT nodes.
- Designed solar-powered CC1312Rx microcontroller systems for energy-efficient operation.

Research Assistant *May 2022 – May 2023*

Avionics Engineering Center, Ohio University

- Analyzed **GPU vulnerabilities** for cybersecurity research, documenting leaks and code vulnerabilities.
- Ensured **100% EMI compliance** for avionics systems through cross-functional collaboration.

Teaching Experience

Graduate Teaching Assistant *Aug 2023 – Present*

- **EE 6713 - Information Theory**:
    - Led weekly discussions on coding theory, entropy applications, and data compression algorithms, enhancing students' grasp of fundamental concepts.
    - Designed and graded problem sets and exams, providing detailed feedback to improve student performance.
    - Developed supplementary materials, including Python simulations, to demonstrate real-world applications of information theory.
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- **EE 3613 - Computer Organization** August 2023 - Present
- Department of Electrical Engineering and Computer Science
    - Taught x86 and ARM assembly programming, guiding students through low-level hardware-software interactions.
    - Created lab exercises using FPGA boards and logic analyzers to illustrate CPU architecture and memory hierarchy.
    - Held office hours to debug student projects, reducing assignment submission errors by 25%.
- **PCB Design Mentorship** August 2020 - May 2022

  IEEE, Ohio University

    - Supervised 20+ students in schematic design and PCB layout using Altium Designer, emphasizing industry best practices.
    - Introduced signal integrity analysis techniques, improving students' troubleshooting efficiency by 30%.
    - Coordinated a team project to build a functional IoT device, integrating sensors and wireless communication modules

Undergraduate Teaching Assistant - Chemistry II *Feb 2022 – Dec 2022*

Chemistry & Biochemistry Department, Ohio University

- **Lab Instruction**:
    - Demonstrated electrochemical cell setups and titration techniques, ensuring safe and accurate lab execution.
    - Troubleshot equipment issues (e.g., potentiostat calibration), minimizing downtime during experiments.
    - Authored a lab manual appendix on error analysis, adopted by the department for future semesters.
- **Student Support**:
    - Conducted weekly office hours, using active listening to address conceptual gaps in thermodynamics and kinetics.
    - Implemented peer-led study groups, raising class average on midterms by 12%.
    - Collaborated with professors to refine grading rubrics for clarity and fairness.
- **Course Logistics**:

- Managed inventory of lab supplies, ensuring 100% availability for weekly experiments.
- Digitized grading records, reducing administrative workload by 20%.
- Trained 3 new TAs on lab protocols and safety procedures.

Technical Skills

RF & Wireless Systems

- **Protocols:** LoRa, Wi-SUN, Zigbee, Sub-GHz mesh networking
- **Analysis & Simulation:** RSSI/PLE measurement, RF propagation modeling (NS-3), electromagnetic compliance testing
- **Hardware:** TI CC1312R7, Software-defined radios (SDRs), Spectrum analyzers, Network analyzers
- **Antenna Design:** Impedance matching, Radiation pattern optimization

Embedded Systems & IoT

- **RTOS:** FreeRTOS, Zephyr, TI-RTOS
- **Development Platforms:** Arduino (Teensy, ESP32), Raspberry Pi, BeagleBone
- **PCB Design:** Altium Designer, Eagle, Signal integrity analysis
- **Low-Power Design:** Energy harvesting (solar), Power management ICs

Programming & Data Science

- **Languages:** Python (TensorFlow, OpenCV, Pandas), C/C++ (Embedded), MATLAB (Simulink), Verilog/SystemVerilog
- **Machine Learning:** Scikit-learn, Keras, Hyperparameter optimization (GridSearchCV)
- **Web/Cloud:** JavaScript (Node.js), AWS IoT Core, Azure Sphere

Test & Measurement

- **Circuit Simulation:** LTSPICE, PSpice
- **Hardware Debugging:** Oscilloscopes, Logic analyzers, JTAG/SWD
- **Wireless Testing:** Spectrum analyzers, Signal generators

Additional Tools

- **Version Control:** Git/GitHub
- **CAD:** Fusion 360, AutoCAD, SolidWorks
- **Technical Documentation:** LaTeX, Markdown

Certifications

- Programming for Everybody (Python) - University of Michigan

- AWS Cloud Practitioner (In Progress)

Languages

- English (Professional), Hindi (Native), Punjabi (Native), Sanskrit (Working Proficiency)

Publications & Projects

- **Master's Thesis:** "Low Altitude Weather Network" – Deployed 25+ IoT nodes with ML-driven energy optimization.
- **Capstone Project:** Designed a laser control system with **<10ms response time** using custom DAC circuits.
- **Machine Learning:** Built a cancer classification pipeline (Python) with 5-fold cross-validation.

Honors & Awards

- **Eta Kappa Nu (HKN)** – IEEE Honors Society for top 20% of electrical engineering students.
- **International Excellence Award** – Recognized for academic and research contributions.
- **EE Graduate Scholaship**

Professional Affiliations

- **IEEE Member** – Active in Power Systems and Signal Processing societies.
- **ACM Member** – Special interest in embedded systems and wireless technologies.

Languages

- English (Professional), Hindi (Native), Punjabi (Native), Sanskrit (Working Proficiency).

References

Available upon request.