

# Md. Samiul Islam Sagar

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## SUMMARY

- 4+ years of academic research experience with more than 10 high impact scholarly research articles in the field of data analysis, pattern recognition, embedded systems, automation, 5G communication, antenna design, and Clean Room (class 100) based device fabrication. ([Google Scholar profile](#))
- Extensive experience on power converter topologies with their application on electric vehicles alongside with battery management system.
- Managed student engagement programs to engineering through 4 technical clubs during undergrad and graduate period, as well as volunteered the underserved community inclusion programs by [iEngineer](#).

## PROFESSIONAL EXPERIENCE:

[University of Alabama](#), Tuscaloosa, AL

August 2024 to present

### Graduate Research Assistant

- Researching intelligent algorithm enabled control system with TI C2000 MCU for second-life battery management system.
- Researching second-life battery enabled charging station design perspectives.

[Ohmitron Inc.](#), Irvine, CA

November 2023 to April 2024

### Power Electronics Engineer – Level 1

- Researched ultra-fast switching-based charging system topologies for EV charging.
- Researched the design methodology of a 1MW and 1500V EV charging station with 300KHz SiC MOSFETs.

[Washington State University](#), Vancouver, WA

August 2021 to May 2023

### Graduate Research and Teaching Assistant

- Designed and fabricated 4 flexible and 3 rigid ultra-wideband antennas using inkjet printing and milling technology, resulting in 7 high impact research articles.
- Performed as teaching assistant for an undergraduate course on assembly and C++ based coding for TIVA C board by TI.

## SKILLS:

- Programming:** Fluent in Python, MATLAB, and C/C++.
- Modeling and simulation:** Battery electrochemical and electrical modeling, GT-suite based simulation, control system design for power converters, Simulink based simulation, Altium based circuit design.
- Hardware equipment:** Arbin battery tester, Squidstat cyler, Keysight, Chroma and EA high power bidirectional power supply, milling and inkjet printing based flexible and rigid circuit prototyping.
- Mathematics:** Proficiency in optimization, state-space analysis, and control algorithms.
- Embedded system:** TI F28379D (C2000), TIVA C (ARM), CCS (both in DriverLib and SysConfig based coding), Arduino (AVR), VS code.
- Soft Skills:** Effective communication, Cross-functional collaboration, Management, Critical thinking, Positive attitude.

## EDUCATION

[University of Alabama](#), Tuscaloosa, AL

Current

Prospective PhD student, Fall 2024, Electrical Engineering

Research Lab: [The Energy and Power Electronics Systems and Devices Laboratory](#) directed by Dr. Jaber A. Abu Qahouq.

Research Topic: Battery management system and control design for second-life batteries.

[Washington State University](#), Vancouver, WA

May 2023

Master of Science in Electrical Engineering

CGPA: 4.00 out of 4.00

Research Lab: [Nanomaterials-Sensor Laboratory](#) directed by Dr. Praveen Sekhar.

Research Topic: CPW-fed wide-bandgap antenna design, inkjet printing based fabrication and testing.

## PROJECTS:

- EIS measurement interface:** UART based communication protocol has been utilized to control TI F28379D control card using Digilent ADP3450 for the electrochemical impedance spectroscopy of a Li-ion battery.
- Feedback control of a power converter:** Voltage and current mode control of a 250W synchronous buck converter using TI F28379D control card with 100KHz MOSFET switching.
- Battery SoC and SoH estimation:** Developed a Long-short-term-memory based state of health estimator for Li-ion batteries utilizing partial impedance data as well as the electrical equivalent parameters at different state of charge.
- PF Correction Circuit with Type-3 Controller:** A boost converter has been designed in Simulink with both the voltage and the current controller circuit for PF correction. The designed converter has been analyzed considering multiple case scenarios including half, full, and quarter loading conditions.