

Soham Manjrekar

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EDUCATION

Georgia Institute of Technology

Master of Science in Electrical Engineering

- Chair, IEEE Power & Energy Society Student Chapter

Aug. 2024 – Dec. 2025

Thesis Advisor: Dr. Deepak Divan

University of Illinois Urbana-Champaign

Bachelor of Science in Electrical Engineering

- Hoeft Technology and Management Minor

Aug. 2020 – May 2024

RESEARCH AND WORK EXPERIENCE

Power Electronics Engineer

GridTran - Endeavour (Founding Engineer)

- Designing efficient, scalable, and robust MVSST's for a beachhead market of datacenter power delivery
- Co-led electrical, mechanical, and firmware teams in design and test sprints to rapidly de-risk core technologies
- Led GridTran intern program SU'26. Provided guidance to develop internal tools to visualize product benefits, build firmware to support test lab, and design a high-voltage test cell for medium voltage testing

Oct. 2025 – Present

Atlanta, GA

Graduate Research Assistant

Georgia Institute of Technology – Center for Distributed Energy (CDE)

- Research Advisor: Dr. Deepak Divan
- Research focused on designing, modeling and prototyping grid-connected inverters which integrate distributed energy resources to be rapidly adopted and scaled for industrial use

Aug. 2024 – Oct. 2025

Atlanta, GA

Undergraduate Research Assistant

University of Illinois Urbana-Champaign – Power and Energy Group

- Advisor: Dr. Arijit Banerjee
- Research to experimentally characterize transformer core losses when excited by a signal of multiple frequencies

Aug. 2023 – May 2024

Champaign, IL

Electrical Engineering Intern

Northrop Grumman - Mission Systems

- Tested and validated Electronic Warfare (EW) systems aboard the EA-18G Growler platform
- Supported design and analysis of the Power Processing Unit (PPU) for electrical systems on the F-35 Lightning II

May 2023 – Aug. 2023

Baltimore, MD

Electrical Engineering Intern

Black & Veatch - Power Delivery

- Physical design of Gas Insulated Substations across the Midwest with delivery to client and performed site surveys thermally validating surge arresters
- Developed proposal for street-side EV charging bays presented to City Council of Kansas City

May 2022 – Aug. 2022

Overland Park, KS

Electrical Engineering Intern

American Battery Solutions

- Developed an automated system with Python scripts to report requirement testing and validation of battery packs in an ETAS LABCAR HIL
- Built a low-cost CANalyzer alternative using open-source software and economical hardware to transmit CAN signals directly to a mobile app or web server

May 2021 – Oct. 2021

Lake Orion, MI

PROJECTS

Medium Voltage Inertia-Less Isolated Converter

Center for Distributed Energy (CDE), Georgia Institute of Technology

Atlanta, GA

- Design, prototyping of a multi-level, medium-voltage, single-stage isolated converter, 800 Vdc to 2.4 kVac per slice. Work included topology definition, high-frequency magnetics design, control and protection implementation, hardware and firmware testing and validation.

Regenerative Clamp Converter - *Thesis Topic*

Center for Distributed Energy (CDE), Georgia Institute of Technology

Atlanta, GA

- Design and analysis of regenerative clamp converters to recover leakage-inductor energy in high-power isolated converter topologies, reducing device stress and improving efficiency; extended clamp architecture into a multiport interface enabling PV/DER integration via the auxiliary port while maintaining clamping functionality.

Integrated Home Energy Fast Charger

Center for Distributed Energy (CDE), Georgia Institute of Technology

Atlanta, GA

- Design of a 50 kW bidirectional home fast charger, 120 Vac split-phase to 250-400 Vdc, with interleaved PFC, active power decoupling, and isolated DC–DC stage. Supported automatic PV/storage integration, and EV charging using SiC MOSFETs.

Rogowski Coil Analog Current Sensor

Center for Distributed Energy (CDE), Georgia Institute of Technology

Atlanta, GA

- Design and validation of a wideband, low cost, analog Rogowski coil current sensor for closed loop current control of high frequency power converters.

Single-Stage Isolated DC–AC Energy Router

Center for Distributed Energy (CDE), Georgia Institute of Technology

Atlanta, GA

- Designed and prototyped a 1 kW single-stage isolated converter based on the inertia-less isolated converter, delivering 240 Vac from a 48 Vdc source with a $\Sigma - \Delta$ modulation scheme.

Machine Learning for Weld Acoustics Monitoring

Caterpillar Inc. and University of Illinois Urbana–Champaign

Peoria, IL

- Developed a machine learning system to classify weld quality from acoustic signals using MFCC feature pipelines and SVM classifiers; built Python-based GUI feedback, Arduino/LED prototype alert stack, and achieved 75–84% test accuracy on Caterpillar welding lab datasets.

PUBLICATIONS & PATENTS

- [1] Deepak Divan, Joseph Benzaquen, Poornachandra Rao Nallamatti, and **Soham Manjrekar**. *Soft Switching Isolated Modular Multilevel (SSIMM) Converter*. Provisional Patent Disclosure, GridTran. March, 2026.
- [2] Deepak Divan, Joseph Benzaquen, and **Soham Manjrekar**. *Automatic Integration of PV Solar Energy into Multiport Dual Active Bridge Converter-Based EV Chargers*. Provisional Patent Disclosure, Georgia Institute of Technology. June, 2025.
- [3] Ruomu Hao, **Soham Manjrekar**, Satish Belkhode, Aniruddh Marellapudi, Joseph Benzaquen, and Deepak Divan. “A Multiport Bidirectional HF-Link Split-phase DC/DC/AC Universal Minimal Converter”. In: *IEEE Energy Conversion Congress & Expo (ECCE)*. 2025. DOI: 10.1109/ECCE58356.2025.11259542..
- [4] Navami Prabhu, **Soham Manjrekar**, Ritvik Sriram, Aniruddh Marellapudi, Joseph Benzaquen, and Deepak Divan. “Solar Plug – Universal Off-Grid Microconverter for Low-Cost Tier-1-4 Energy Access”. In: *IEEE International Decentralized Energy Access Solutions (IDEAS) Conference*. 2025. DOI: 10.1109/IDEAS62193.2025.11157522.
- [5] **Soham Manjrekar**, Aniruddh Marellapudi, Satish Belkhode, Joseph Benzaquen, and Deepak Divan. ““AC Cube”: A Single-Stage PV/Battery/Grid Energy Router”. In: *2025 IEEE Energy Conversion Congress & Exposition Asia (ECCE-Asia)*. Bengaluru, India, 2025, pp. 1–6. DOI: 10.1109/ECCE-Asia63110.2025.11111930.

AWARDS

Frank C. Mock Scholarship

Dec. 2023

- This scholarship is given in honor of the Frank C. Mock family to be used to help top ECE students

Grainger Power Engineering Award

May 2024

- To reward highly qualified and well-motivated undergraduate and graduate students who have chosen to pursue a field of study in electric power engineering

TECHNICAL SKILLS

Modeling & Simulation: MATLAB/Simulink, PLECS, LTspice, PSIM

Hardware Tools: Cadence Allegro/OrCAD, Altium, KiCad, Oscilloscope, Power analyzers, LEM Sensor Platform, TI DSPs (C2000 series), Intel FPGA (DE0-Nano)

Programming: Python (NumPy, scikit-learn, Librosa), C/C++, SystemVerilog, MATLAB, JavaScript, HTML/CSS

Developer Tools: Git, VS Code, Quartus, Code Composer Studio, Eclipse