

My research interests include Design of High Frequency Power Converters, Wide Band Gap Devices (GaN and SiC), Power Management Circuits, Design of Power Supplies, LED Drivers, Design of Planar Magnetics. Currently, my research focuses on application of power electronics in EV charging infrastructure, design of EV chargers.

EDUCATIONAL QUALIFICATIONS			
Year of	Degree	Institute	Performance
2022	Ph.D Electrical-power Engineering	Indian Institute of Technology, Kanpur	8.60/10
2016	M.Tech Electrical-power Engineering	Indian Institute of Technology, Kanpur	9/10
2013	B.Tech (Electrical Engineering)	Silicon Institute of Technology, BBSR, Odisha	8.70/10
RESEARCH EXPERIENCE			
Ph.D. (Jan 2017 to June 2022)		▪ Ph.D. – In my Ph.D., I worked on design of high efficiency, power dense and high gain Micro-inverter topologies suitable for roof-top PV installations. ▪ My major research innovation was to achieve high efficiency in the inverters by implementing a novel interleaving technique. ▪ My Ph.D. works on interleaving and paralleling of Micro-inverters were published in 3 IEEE	
Member of technical staff at GE Global Research, Bangalore (Nov 2021 to May 2022)		▪ Member of Electrical Systems team of GE - I worked on design and control of active harmonic filter to suppress harmonics in wind turbine systems. ▪ My major research focus had been on 1. Reliability analysis of active harmonic filter. 2. Online estimation of harmonic frequencies injected into the grid. The research innovation of our team was filed as a patent.	
Post-doctoral Research CART, IIT Delhi (Since Oct 2022)		▪ Post-doctoral Research Fellow - Major part of my research in postdoc focuses on development of product for various Electric Vehicle specific industry applications. Some of them are listed below. 1. Design and development of a residual current detector relevant for EV charging applications. 2. Battery back-up for critical systems. 3. Low-cost EV charger suitable for E bikes and E rickshaws.	
Projects (During doctoral research)		▪ I have worked on design of high frequency power converters using wide band gap devices like SiC, and GaN in the project funded by MHRD and Ministry of Power, Govt. of India under IMPRINT project F.No.3- 18/2015-TSI(Vol-III) – 7055 (Under the supervision of Dr. Santanu Mishra). ▪ I have worked on Design of high gain and high efficiency Micro-inverter for rooftop PV installations in rural areas in the project funded by Department of Science and Technology, Government of India, under the GrantDST/RCUK/JVCCE/2015/04 (2) (G) (Under the supervision of Dr. Santanu Mishra).	

PUBLICATIONS	
JOURNALS	
1. S. Acharya and S. K. Mishra, "Interleaved Current-Fed Switched Inverter," in IEEE Transactions on Power Electronics, vol. 35, no. 7, pp. 7015-7030, July 2020, doi: 10.1109/TPEL.2019.2954616. 2. S. Acharya, A. Mallik and S. K. Mishra, "PWM Control of a High Gain n-Phase Interleaved Current Fed Topology," in IEEE Transactions on Industrial Electronics, doi: 10.1109/TIE.2021.3095795. 3. S. Acharya, O. Ray and S. K. Mishra, "Powering Milliwatts to Megawatts," in IEEE Consumer Electronics Magazine, vol. 9, no. 2, pp. 70-75, 1 March 2020, doi: 10.1109/MCE.2019.2954044. 4. S. Acharya and S. Mishra, "PWM Control of N-Phase Interleaved Active Front-End Boost Stage- Based Impedance Source Inverter," in IEEE Transactions on Power Electronics, vol. 37, no. 6, pp. 7354-7369, June 2022, doi: 10.1109/TPEL.2021.3135950. 5. S. Banerjee, S. Acharya, and S. Mishra, "Effect of Grid Current QSG on Harmonic Current Content in Single Phase Grid Connected Inverter," in IEEE Transactions on Industrial Electronics. (Under Review).	
CONFERENCES	
1. S. Acharya, N. S. Chauhan and S. K. Mishra, "Replacing Si-IGBT by SiC Mosfet in high Gain Inverter: Challenges and Opportunities," <i>2018 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)</i>, Chennai, India, 2018. 2. S. Acharya and S. K. Mishra, "Design and Analysis of Interleaved Current Fed Switched Inverter," <i>2019 IEEE Applied Power Electronics Conference and Exposition (APEC)</i>, Anaheim, CA, USA, 2019. 3. S. Acharya, A. Gambhir and S. Mishra, "Elimination of 2f Ripple in a Current Shared Interleaved Current Fed Switched Inverter," <i>2020 IEEE Energy Conversion Congress and Exposition (ECCE)</i>, Detroit, MI, USA, 2020. 4. S. Acharya, S. Mishra and A. Tiwari, "An n-Phase Interleaved Current Fed Switched Inverter," <i>2020 IEEE Energy Conversion Congress and Exposition (ECCE)</i>, Detroit, MI, USA, 2020. 5. S. Jha, S. Acharya and S. Mishra, "Design and Performance Evaluation of an Air-Core Inductor for Point-of-Load (POL) Converter," <i>2020 IEEE Energy Conversion Congress and Exposition (ECCE)</i>, Detroit, MI, USA, 2020. 6. S. Acharya, and S. K. Mishra, "A Review of High Gain Inverters for Smart Grid Applications," <i>2018 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)</i>, Jaipur, India, 2020. 7. S. Acharya, S. Mishra and A. Tiwari, " PWM Control of an n-Phase Interleaved Current Fed Topology," <i>2021 IEEE Energy Conversion Congress and Exposition (ECCE)</i>, USA, 2021. 8. S. Acharya, S. Banerjee, and S. Mishra, "An n-Phase Interleaved Switched Boost Topology," <i>2021 IEEE Transportation Electrification Conference (ITEC-India)</i>, New Delhi, India, 2021. 9. S. Acharya, S. Banerjee, and S. Mishra, "Design and implementation of an air-cored flyback converter," <i>2023 IEEE International conference on Power Electronics and Drives Systems</i>, Canada, 2023. 10. S. Acharya, S. Banerjee, and S. Mishra, "An Integrated Control Structure for Improving Performance of Interleaved Current-fed Switched Inverter," <i>2024 IEEE Applied Power Electronics Conference and Exposition</i>, USA, 2024. 11. S. Banerjee, S. Acharya, and S. Mishra, "Effect of Grid Current QSG on Harmonic Current Content in Single Phase Grid Connected Inverter," <i>2024 IEEE Applied Power Electronics Conference and Exposition</i>, USA, 2024. 12. D. Vibhandik, S. Acharya, and S. Mishra, "Control of Bidirectional Inverter in Mixed Energy EV to Home System," <i>2023 National Power Electronics Conference</i>, Guwahati India, 2023. 13. D. Rana, S. Acharya, A. Suresh, S. K. Mishra and S. Nair, "A Review of High-Voltage High-Step Down Isolated Converter Topologies," <i>2024 IEEE International Communications Energy Conference (INTELEC)</i>, Bengaluru, India, 2024, pp. 1-5, doi: 10.1109/INTELEC60315.2024.10678975.	
INTELLECTUAL PROPERTY FILING	
▪ Design copyright: Inventors – Sonam Acharya, Kehkasan Qaiser, Santanu. K. Mishra Title - Design of an Air-Cored Tranformer and its Implementation in an Isolated Power Converter Affiliation – IIT Kanpur, India	

Issuing country - India
Docket number - 18089103IN-DF
▪ Patent: Inventors – Prasun Mishra, Sonam Acharya Title - System and method for adaptive control of active harmonic filter to suppress harmonics in doubly fed wind turbines Affiliation – GE, India Issuing country – Europe Application number - 23150321.0

PROFESSIONAL RECOGNITION	
Reviewer	▪ IEEE Transactions on Power Electronics (TPEL), IEEE Transactions on Industrial Electronics (TIE), IEEE Transactions on Industrial Application Society (IAS), IET Power Electronics. ▪ IEEE Energy Conversion Congress & Expo (ECCE).
Guest Lecture	▪ Guest lecture on design of Printed Circuit Boards (PCB) in an online course, “EV Charging Infrastructure”, conducted by Continuing Education Programme (CEP), IIT Delhi in collaboration with TimesPro group.
Academic Distinction	▪ Awarded Prof. Som Nath Mahendra Student Travel Award in IEEE Power Electronics, Drives and Energy System.
Invited Talks	▪ In tutorial session at PEDES 2022, Jaipur, India. ▪ At IIT Bhubaneswar, Bhubaneswar, India. ▪ At Delhi Technical University, Delhi, India.
Session Chair in National and International Conferences	▪ In “IEEE PEDS 2023, Power Electronics and Drives Systems, Montreal, Canada. ▪ In “11th National Power Electronics Conference (NPEC 2023), IIT Guwahati, Guwahati, India.
RELEVANT TECHNICAL SKILLS	
▪ PSPICE, PLECS, and MATLAB - Extensive skill in circuit design and simulation in power electronics circuit simulation software. ▪ ALTIUM - Skillfully versed with PCB design software, have designed about 10 PCBs in Altium, populated the fabricated PCB, and tested. ▪ DSP Programming - Very much conversant with DSP programming in Code Composer Studio (CCS) and E2 Studio environment for TI based and Renesas based digital controllers, respectively. Successfully integrated TI based digital controller with multiple power converters and tested the controlled performance. ▪ COMSOL and ANSYS MAXWELL - Have brief knowledge on simulation in Electromagnetic field solver software using finite elements method. ▪ RELIASOFT BLOCKSIM - Have brief knowledge on reliability analysis of power converters. ▪ FUSION 360 - Have brief knowledge on 3D design software and its integration with Altium. Designed a 3D casing for residual current detector using Fusion 360.	