

RAJASEKHARAREDDY CHILUPI, PH.D.

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OBJECTIVE

Seeking full-time research and teaching-oriented challenging roles in power electronics and its applications.

EDUCATION

Ph.D., Indian Institute of Technology Delhi 2009-2014

B.Tech., Jawaharlal Nehru Technological University 2002-2006

RESEARCH INTERESTS

- Self-excited Induction Generators
- Power Electronics.
- Renewable Energy (Wind, Solar, and Hydro).
- Micro-grids and Energy Management.
- Power Quality and Custom Power Devices.
- Modular Multilevel Converters.
- Wireless Power Transfer and Electric Vehicles Charging.

EXPERIENCE

Assistant Professor Dec. 2019 to date
Sardar Vallabhbhai Nation Institute of Technology, Surat *Surat, India*

Post Doctoral Research Fellow Aug 2019 - Nov 2019
Khalifa University *Abu Dhabi, UAE*

Post Doctoral Research Associate Dec 2014 - Jul 2019
Khalifa University *Abu Dhabi, UAE*

Post Doctoral Research Fellow Nov 2013 - Oct 2014
National University of Singapore *Singapore*

SPONSORED PROJECTS

1. **Title of the Project:** Design and Control of Renewable Energy based AC Microgrid Systems.
Budget: 32,94,500 INR
Funding Agency: Science and Engineering Research Board- Startup Research Grant (SERB-SRG).
Role: Sole Investigator
Duration: Dec. 2021-23
2. **Title of the Project:** Intelligent Control for Active Shunt Compensator in Wind based Renewable Energy System for Remote Power Application .
Budget: 43,78,200 INR
Funding Agency: Gujarat Council on Science and Technology (GUJCOST).
Role: Co-Principle Investigator
Duration: May 2022-2025

3. **Title of the Project:** Research on Power Electronics and Control: Grid-Interface for Renewables, Storage and Green Micro-Grids.
Budget: 9,90,000 INR
Funding Agency: SVNIT.
Role: Sole Investigator
Duration: Dec. 2020-2022

PH.D SUPERVISION

On-going

1. **Thesis title:** Energy Management and Control of Micro-grids.
Student Name: Mr. Ranjith Kumar Uppuluri
Role: Main Supervisor
2. **Thesis title:** Design, Development, and Control of Custom Power Devices for Power Quality Enhancement.
Student Name: Mr. G Vishwas
Role: Main Supervisor
3. **Thesis title:** Design, Development and Control of MMC-based Power Electronic Transformers.
Student Name: Ms. Ankita Sharma
Role: Main Supervisor
4. **Thesis title:** Design and Control of Renewable Energy based AC Microgrid Systems.
Student Name: Ms. Astha Bharat Patel
Role: Sole Supervisor
5. **Thesis title:** Intelligent Control for Active Shunt Compensator in Wind based Renewable energy System for Remote Power Application.
Student Name: Ms. Sanamehreen Malik
Role: Co-Supervisor
6. **Thesis title:** Adaptive Control Algorithms for Dynamic Voltage Restorer.
Student Name: Mr. Chinmay Deshpande
Role: Main Supervisor

M.TECH. SUPERVISION

1. **Thesis title:** Model Predictive Control of Back-to-Back Connected Modular Multilevel Converters In HVDC Transmission Line.
Student Name: Rasik Gohel
Role: Sole Supervisor
Year: 2021
2. **Thesis title:** Control Of Battery Aided Microgrid with Solar-Wind Energy Sources in Grid Interactive And Isolated Mode Operation.
Student Name: Nikhil S Tayade
Role: Sole Supervisor
Year: 2021
3. **Thesis title:** Solar PV Water Pumping System Through DC Link Voltage Regulation.
Student Name: Urvish Patel
Role: Co-Supervisor
Year: 2022
4. **Thesis title:** Performance Analysis of Grid Integrated PV and DFIG Based Wind Energy System.
Student Name: Aman Jagarwal
Role: Co-Supervisor
Year: 2022

5. **Thesis title:** Modelling of Electric Vehicle Charging Station and Analysis of Voltage Sag Mitigation In It.
Student Name: Parmar Ankur Rajnikant
Role: Co-Supervisor
Year: 2022
6. **Thesis title:** Design and Control of Single Phase Five Level FC MLI and MMC.
Student Name: Vinit Kumar
Role: Sole Supervisor
Year: 2023
7. **Thesis title:** Leakage current reduction in three phase Transformerless grid connected pv systems.
Student Name: Yadukrishna K R
Role: Sole Supervisor
Year: 2023

UG PROJECTS

1. **Title of the Project:** Control of Doubly Fed Induction Generator for Wind Power Systems.
Year: 2021
2. **Title of the Project:** Wireless Inductive Power Transfer for Electric Vehicle Charging.
Year: 2022

WORKSHOPS ORGANISED

1. Organiser of STTP on “**Power Electronics for Distributed Generation and Electrical Drives**” at SVNIT, Surat from 2nd March 2020 to 6th March 2020.
2. Organiser of STTP on “**Applications of Power Electronic Converters for Sustainable Living**” at SVNIT Surat from 18th September 2020 to 22nd September 2020.

GUEST LECTURES DELIVERED

1. Delivered an **expert lecture** organized by IEEE PELS/IAS/PES Jt. Chapter, Vizag Bay Section, India in 2020.
2. Delivered a **guest lecture** in Micro Grid, Electric Vehicles and Allied Areas (MGEVAA- 20) FDP in 2021.

ADMINISTRATIVE ACTIVITIES

Department Level

- | | |
|--|--------------------|
| 1. Lab In charge for Electrical Machines Lab | 03/03/2020 to date |
| 2. Lab In charge for Power and Control Lab | 28/12/2021 to date |
| 3. Coordinator for T&P | 04/08/2022 to date |
| 4. Co-coordinator, Department Purchase Committee | 04/08/2022 to date |

Institute Level

- | | |
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| 1. Additional Faculty In-charge, Electrical, and Communication Systems | 01/08/2023 to date |
| 2. Faculty Associated–Academic Section | 29/08/2022 to date |
| 3. Co-Chairman of Electrical Engineering Society | 11/10/2021 to date |

COURSES TAUGHT

UG Level

1. Basic Electrical Engineering
2. Signals and Systems
3. Control Systems
4. Flexible AC Transmission Systems

PG Level

1. Digital Signal Processing

PATENTS

- Bhim Singh, S. S. Murthy, Ujjwal Kumar Kalla, and **Rajasekharareddy Chilipi** “A Digital Voltage Controller for Power quality Improvement in Two-winding Single-phase Self-excited Induction Generator System Driven by Biodiesel/gas Prime Movers,” Indian Patent No. 3115/DEL/2013.

PUBLICATIONS

List of Journals:

1. **Rajasekharareddy Chilipi**, Ameena Al Sumaiti and Bhim Singh, “Control of Grid-Tied Multiple Distributed Generation Systems with Cooperative Compensation Capabilities,” in *IEEE Journal of Emerging and Selected Topics in Industrial Electronics*, vol. 3, no. 3, pp. 821-833, July 2022.
2. S. Kumar, D. Jaraniya, **R. Chilipi** and A. Al-Durra, “Optimal Operation of RC-WL-QLMS and Luenberger Observer-Based Disturbance Rejection Controlled Grid Integrated PV-DSTATCOM System,” in *IEEE Transactions on Industry Applications*, 2022 (Early Access).
3. Veramalla, R, Arya, S R, Gundeboina, V, Jampana, B, **Chilipi, R**, Madasthu, S., “Meta-heuristics algorithms for optimization of gains for dynamic voltage restorers to improve power quality and dynamics”, *Optim Control Appl Meth.* 2022; 1- 20.
4. **Rajasekharareddy Chilipi**, Naji Al Sayari, and Jamal Al Sawalhi “Control of Single-Phase Solar Power Generation System with Universal Active Power Filter Capabilities using Least mean Mixed-Norm (LMMN) Adaptive Algorithm”, *IEEE Transactions on Sustainable Energy*, vol. 11, no. 2, pp. 879-893, April 2020.
5. **Rajasekharareddy Chilipi**, Naji Al Sayari, and Jamal Al Sawalhi “Control of Dual Converter based Grid-tied Solar Photovoltaic System with Series-Shunt Compensation Capabilities”, *IET Renewable Power Generation*, vol. 14, no. 1, pp. 164-175, January 2020.
6. **Rajasekharareddy Chilipi**, Naji Al Sayari, and Abdelali El Aroudi, “Coordinated Control of Parallel Operated Renewable-Energy-Based DG Systems”, *IET Renewable Power Generation*, vol.12, no.14, pp 1623-1632, Oct. 2018.
7. **Rajasekharareddy Chilipi**, Naji Al Sayari, Khalifa Al Hosani, Muhammed Fasil, and Abul R. Beig, “Third-order sinusoidal integrator (TOSSI)-based control algorithm for shunt active power filter under distorted and unbalanced voltage conditions,” *International Journal of Electrical Power & Energy Systems*, Volume 96, 2018, Pages 152-162.
8. **Rajasekharareddy Chilipi**, Naji Al Sayari, Khalifa Al Hosani, and Abdul R. Beig “Adaptive Notch Filter Based Multipurpose Control Scheme for Grid-Interfaced Three-Phase Four-Wire DG Inverter” *IEEE Transactions on Industry Applications*, vol. 53, no. 4, pp. 4015-4027, July-Aug. 2017.
9. Naji Al Sayari, **Rajasekharareddy Chilipi**, Khalifa Al Hosani, and Fahad Al Maskari “Grid Synchronization and Control of Distributed Generation Unit with Flexible Load Compensation Capabilities using Multi-Output LMS-Filter” *International Journal of Electrical Power & Energy Systems*, vol. 93, pp. 253-265, December 2017.
10. **Rajasekharareddy Chilipi**, Naji Al Sayari, Khalifa Al Hosani, and Abdul R. Beig, “A Control Scheme for Grid-Tied DG Inverter under Unbalanced and Distorted Utility Conditions with Power Quality Ancillary Services” *IET Renewable Power Generation*, vol.10, no.2, pp.140-149, 2016.

11. **Rajasekharareddy Chilipi**, Naji Al Sayari, Abdul R. Beig and Khalifa Al Hosani, "A Multitasking Control Algorithm for Grid-Connected Inverters in Distributed Generation Applications Using Adaptive Noise Cancellation Filters" *IEEE Transaction on Energy Conversion*, vol. 31, no. 2, pp. 714-727, June 2016.
12. Naji Al Sayari, **Rajasekharareddy Chilipi** and Mohamad Barara, "An adaptive control algorithm for grid-interfacing inverters in renewable energy based distributed generation systems," *Energy Conversion and Management*, vol. 111, pp. 443-452, March 2016.
13. Bhim Singh, S. S. Murthy, **Rajasekharareddy Chilipi**, and Prachi Arora, "Implementation of modified current synchronous detection method for voltage control of self-excited induction generator," in *IET Power Electronics*, vol.8, no.7, pp.1146-1155, 2015.
14. **Rajasekharareddy Chilipi**, Bhim Singh and S. S. Murthy "Performance of a Self-Excited Induction Generator with DSTATCOM-DTC Drive Based Voltage and Frequency Controller," *IEEE Transactions on Energy Conversion*, vol.29, no.3, pp.545-557, Sept. 2014.
15. Bhim Singh, S. S. Murthy, **Rajasekharareddy Chilipi**, Sandeep Madishetti, and G. Bhuvaneswari, "STATCOM-VFD based voltage and frequency control of Small-Hydro Driven SEIG System," *IET Generation, Transmission and Distribution*, vol.8, no.9, pp.1528-1538, Sept. 2014.
16. Bhim Singh, S. S. Murthy, and **Rajasekharareddy Chilipi**, "STATCOM Based Controller for a Three-Phase SEIG Feeding Single-Phase Loads," *IEEE Transactions on Energy Conversion*, vol.23, no.2, pp.320-331, June 2014.
17. **Rajasekharareddy Chilipi**, Bhim Singh, S. S. Murthy, Sandeep Madishetti, and G. Bhuvaneswari, "Design and Implementation of Dynamic Electronic Load Controller for Three-Phase SEIG in Remote Small-Hydro Power Generation," *IET Renewable Power Generation*, vol.8, no.3, pp.269-280, April 2014.
18. **Rajasekharareddy Chilipi**, Bhim Singh and S. S. Murthy "A New Voltage and Frequency Controller for Standalone Parallel Operated Self-Excited Induction Generators," *International Journal of Emerging Electric Power Systems*, vol. 13, no. 1, pp. 1-17, February 2012.
19. **Rajasekharareddy Chilipi**, Bhim Singh, and S. S. Murthy, "A New Three-phase Four-wire Integrated Voltage and Frequency Controller for a Self-Excited Induction Generator Employing Water Pumping," *Journal of The Institution of Engineers (India)*, vol. 92, pp. 3-10, June 2011.

List of Conferences:

1. A. Sharma, **Rajasekharareddy Chilipi** and K. V. P. Kumar, "Model Predictive Control of MMC-based Medium Voltage Microgrid for Grid Connected and Islanded Operation," in Proc. of *IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)*, 2023, pp. 1-5.
2. A. Sharma, **Rajasekharareddy Chilipi** and K. V. P. Kumar, "Control of Modular Multilevel Converter-based Power Electronic Transformer for Grid Integration of Solar PV System," in Proc. of *IEEE 2nd International Conference on Sustainable Energy and Future Electric Transportation (SeFeT)*, 2022, pp. 1-5.
3. R. K. Uppuluri, **Rajasekharareddy Chilipi** and M. A. Mulla, "Model Predictive based Control of Single-Phase SPVA-BESS Microgrid with Seamless Transition Offering Power Quality Improvement Features," in Proc. of *IEEE 2nd International Conference on Sustainable Energy and Future Electric Transportation (SeFeT)*, 2022, pp. 1-5
4. V. Gundeboina, **Rajasekharareddy Chilipi** and S. Arya, "Power Quality Enhancement using UPQC-S with Multiple Adaptive Noise Cancellation Filters," in Proc. of *IEEE 2nd International Conference on Sustainable Energy and Future Electric Transportation (SeFeT)*, 2022, pp. 1-5
5. R. K. Uppuluri, **Rajasekharareddy Chilipi** and M. A. Mulla, "A Comprehensive SoC-based Energy Management of a PV-BESS Microgrid," in Proc. of *IEEE 2nd International Conference on Sustainable Energy and Future Electric Transportation (SeFeT)*, 2022, pp. 1-5
6. A. Sharma, **Rajasekharareddy Chilipi** and K. V. P. Kumar, "Indirect Model Predictive Control of Grid Connected Modular Multilevel Converter," in Proc. of *National Power Electronics Conference (NPEC)*, 2021,

pp. 1-6.

7. S. Kumar, D. Jaraniya, **Rajasekharareddy Chilipi** and A. Al-Durra, "Optimal Operation and RC-WL-QLMS Control of Grid Integrated PV-DSTATCOM System," in Proc. of *IEEE Industry Applications Society Annual Meeting (IAS)*, 2021, pp. 1-6.
8. **Rajasekharareddy Chilipi**, Ameena Al Sumaiti and B. Singh, "Control of Self-Excited Induction Generator-based Micro-Hydro Power Generation System Feeding Single-Phase and Three-Phase Loads," in Proc. of *IEEE Industry Applications Society Annual Meeting (IAS)*, Detroit, MI, USA, 2020, pp. 1-8.
9. **Rajasekharareddy Chilipi**, Naji Al Sayari, Khalifa Al Hosani, and Abdul R. Beig "Adaptive Notch Filter Based Multipurpose Control Scheme for Grid-Interfaced Three-Phase Four-Wire DG Inverter," in Proc. of *IEEE Industry Applications Society Annual Meeting (IAS)*, Portland, OR, 2016, pp. 1-8.
10. Muhammed Fasil, Abdul R Beig, **Rajasekharareddy Chilipi**, Saikrishna Kanukollu, Naji Al Sayari, and Khalifa Al Hosani, "Mitigation of Harmonics in Drilling Rigs using Shunt Active Power Filters," in Proc. of *IEEE Energy Conversion Congress and Exposition (ECCE)*, Milwaukee, WI, USA, 2016, pp. 1-8.
11. Ujjwal Kumar Kalla, Bhim Singh, S. S. Murthy, Krishan Kant, and **Rajasekharareddy Chilipi**, "Adaptive harmonic cancellation scheme for voltage and frequency control of a single-phase two-winding SEIG," in Proc. of *IEEE Industry Applications Society Annual Meeting*, vol., no., pp.1-7, 18-22, Oct. 2015.
12. **Rajasekharareddy Chilipi**, Bhim Singh, and S. S. Murthy, "A 3-leg VSC based integrated voltage and frequency controller for a self-excited induction generator employing water pumping," in Proc. of *IEEE Intl. Conf. on Industrial and Information Systems*, July -Aug. 2010, pp.580-585.

BOOK CHAPTERS

- Sabha Raj Arya, Sayed Javed Alam, **Rajasekharareddy Chilipi**, and Papiya Ray, (2023). Adaptive Filtering for Power Quality Features with Optimized PI Gains in Four Wires UPQC. In: Power Quality in Microgrids: Issues, Challenges, and Mitigation Techniques. Lecture Notes in Electrical Engineering, vol 1039. Springer, Singapore.

REVIEWER

1. Reviewer for IEEE Transactions on Energy Conversion.
2. Reviewer for IEEE Transactions on Industry Applications.
3. Reviewer for International Journal of Electrical Power and Energy Systems.
4. Reviewer for IET Renewable power generation.
5. Reviewer for IET Generation, Transmission, and Distribution.

HONORS AND AWARDS

- MHRD Scholarship -Govt. of India for Ph.D. studies.
- Award from Indian Ministry of Energy, Department of Power for the best paper published on Power Development and Utilization.

SOFTWARE SKILLS

- MATLAB/Simulink
- PLECS
- PSIM
- Latex
- PCB Design (Easy EDA, Ki-CAD)

HARDWARE SKILLS

- dSPACE
- Typhoon-HIL
- C2000 Micro Controllers

REFERENCES

1. **Dr. Sabha Raj Arya**, Associate Professor, Department of Electrical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, India, Ph: + 918511034177, Email: sra@eed.svnit.ac.in.
2. **Dr. Ameena Al Sumaiti**, Associate Professor, Department of Electrical and Computer Engineering, Khalifa University, Abu Dhabi, UAE, Ph:+971-50-732-0207, Email: ameena.alsumaiti@ku.ac.ae.
3. **Dr. Bhim Singh**, Professor (Rtd.), Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India, Ph:+91-9811502125, Email: bsingh@ee.iitd.ac.in