PUBLICATIONS AND RESEARCH

My research focuses on grid studies with hybrid renewable energy resources (wind, PV, and storage), advanced power grid control, dynamics, model order reduction, stability assessment, enhancement, smart grid, microgrid, zero carbon emission, system inertia & flexibility.

Synopsis: **Total Citations: 1640, h- index: 18, i10- index:23 (*Google Scholar*)**

Publications: 23 journals and 11 conference articles

Refereed Journal Articles

1. **Sudipta Ghosh**, " An Estimation of COI Frequency using Minimal Measurements in Renewable Power Grid," *IEEE trans. on Industry app.*, July 2024 (Accepted).

2. **Sudipta Ghosh**, Younes J. Isbeih, Mohamed Moursi and Ehab El-Saadany, " An Efficient Method for Estimating Inertia of a PV-Integrated Power Grid for Enhanced Security," *IEEE trans. on smart grid*, vol. 15, no. 6, pp. 5885-5898, Nov. 2024.

3. Faisal Sattar, **Sudipta Ghosh**, et al. "A Predictive Tool for Power System Operators to Ensure Frequency Stability for Power Grids with Renewable Energy Integration" in Applied Energy, vol 353, Part B, 2024.

4. **Sudipta Ghosh**, Younes J. Isbeih, and Mohamed Moursi, "Assessment of Bus Inertia to Enhance Dynamic Flexibility of Hybrid Power Systems with Renewable Energy Integration," in *IEEE trans. on Power Del.*, vol. 38, no. 4, pp. 2372-2386, Aug. 2023.

5. **Sudipta Ghosh** and Mohamed Moursi, "An Analytical Approach for Frequency Estimation of Modern Power Grid," in *IEEE trans. on Power Syst.*, vol. 37, no. 5, pp. 4094-4097, Sept. 2022.

6. **Sudipta Ghosh**, Younes J. Isbeih, Syafiq. Azman, Mohamed Moursi and Ehab El-Saadany, "Optimal PMU Allocation Strategy for Completely Observable Networks with Enhanced Transient Stability Characteristics," in *IEEE trans. on Power Del.*, vol. 37, no. 5, pp. 4086-4102, Oct. 2022.

7. Younes J. Isbeih, **Sudipta Ghosh**, Mohamed Moursi, Ehab El-Saadany,"Online DMDc Based Model Identification Approach for Transient Stability Enhancement Using Wide Area Measurements", *IEEE trans. on power syst.*, vol. 36, no. 5, pp. 4884-4887, Jul. 2021.

8. Abilash Thakallapelli**, Sudipta Ghosh** and Sukumar Kamalasadan, "Sensorless real-time reduced order model-based adaptive maximum power tracking pitch controller for grid connected wind turbines*"*, *Electric Power System Research*, vol. 194, pp. 107-115, 2021.

9. **Sudipta Ghosh,** Younes J. Isbeih, Mohamed Moursi, Ehab El-Saadany and S Kamalasadan, *"*Dynamic Coordination Control Architecture for Reactive Power Capability Enhancement of the DFIG-based Wind Power Generation*"*, *IEEE trans. on power syst*, vol. 35, no. 4, pp. 3051-3064, 2020.

10. **Sudipta Ghosh,** Mohamed Moursi, Ehab El-Saadany and Khalifa Al Hosani, *"*Online Coherency Based Adaptive Wide Area Damping Controller for Transient Stability Enhancement*"*, *IEEE trans. on power syst*, vol. 35, no. 4, pp. 3100-3113, 2020.

11. **Sudipta Ghosh**, Younes J. Isbeih, Mohamed Moursi, and Ehab El-Saadany, "Cross-Gramian Model Reduction Approach for Tuning Power System Stabilizers in Large Power Networks", *IEEE trans. on power syst*, vol. 35, no. 3, pp. 1911-1922, 2020.

12. Abilash Thakallapelli**, Sudipta Ghosh** and Sukumar Kamalasadan, "Development and Applicability of Online Passivity Enforced Wide-Band Multi-Port Equivalents For Hybrid Transient Simulation*"*, *IEEE trans. on power syst.*, vol. 34, no. 3, pp. 2302-2311, May 2019.

13. Rojan Bhattarai, Niroj Gurung, **Sudipta Ghosh**, Sukumar Kamalasadan, *"*Parametrically Robust Dynamic Speed Estimation Based Control for Doubly Fed Induction Generator *", IEEE trans. on Industry app*., vol. 54, no. 6, pp. 6529-6542, 2018.

14. Tim Paul, Sheikh J. Hossain, **Sudipta Ghosh**, Pranab Mandal, Sukumar Kamalasadan, "A Quadratic Programming Based Optimal Power and Battery Dispatch for Grid-Connected Microgrid*", IEEE trans. on Industry app*., vol. 54, no. 2, pp.1793-1805, 2018.

15. **Sudipta Ghosh**, and Sukumar Kamalasadan, "An Integrated Dynamic Modeling and Adaptive Controller Approach for Flywheel Augmented DFIG Based Wind System*", IEEE trans. on power syst*., vol. 32, no. 3, pp. 2161-2171, 2017.

16. **Sudipta Ghosh**, and Sukumar Kamalasadan, "An Energy Function based Optimal Control Strategy for output stabilization of Integrated DFIG-Flywheel Energy storage System", *IEEE trans. on smart grid*, vol. 8, no. 4, pp. 1922-1931, 2017.

17. **Sudipta Ghosh**, Sukumar Kamalasadan, Nilanjan Senroy and Johan Enslin, "Doubly Fed Induction Generator (DFIG)-based Wind Farm Control Framework for Primary Frequency and Inertial Response Application*", IEEE trans.* on power syst., vol. 31, no. 03, pp.1861-1871, 2016.

18. Nikhil Kulkarni, Sukumar Kamalasadan, **Sudipta Ghosh**, "An Integrated Method for Optimal Placement and Tuning of Power System Stabilizer Based on Full Controllability Index and Generator Participation", *IEEE trans. on Industry app*., vol. 51, no. 5, pp. 4201-4211, 2015.

19. **Sudipta Ghosh**, and Nilanjan Senroy, "Electromechanical Dynamics of Controlled Variable Speed Wind Turbines", *IEEE syst. Journal*., vol. 9, no. 2, pp. 639-646, 2015.

20. **Sudipta Ghosh**, and Nilanjan Senroy, "Balanced Truncation based Reduced Order Modeling of Wind Farm", *Int. J. Elect. Power Energy Syst.*, vol. 53, pp. 649-655. 2013.

21. **Sudipta Ghosh**, and Nilanjan Senroy, "Balanced Truncation Approach to Power System Model Order Reduction*", Electric Power Components and Syst.*, vol. 41, no. 8, pp. 747-764, 2013.

22. **Sudipta Ghosh**, and Nilanjan Senroy, "The Localness of Electromechanical Oscillations in Power Systems", *Int. J. Elect. Power Energy. Syst*., vol. 42, no. 1, pp. 306-313, 2012.

23. **Sudipta Ghosh**, S. P. Ghoshal and Saradindu Ghosh "Optimal Sizing and Placement of Distributed Generation in a Network System", *Int. J. Elect. Power Energy. Syst.*, vol. 32, no. 8, pp. 849-856, 2010.

Patents granted:

- **Sudipta Ghosh,** *A Method and System for Online Tracking of Inertia of A Power Source* (Patent Number : 546753, 31st July 2024) in the name of National Institute of Technology, Kurukshetra, India.

Patents published:

- **Sudipta Ghosh** and El Moursi, *Bus Inertia For Enhancing Dynamic Flexibility Of Hybrid Power Systems,* US Patent. Aug, 2022. U.S. Application No 63/402,012.

- **Refereed Conference Articles (11 total)**

1. **Sudipta Ghosh**, Rojan Bhattarai ,Sukumar Kamalasadan, "Reactive Power Estimation based Adaptive Voltage Control for Improved Grid Voltage Restoration using Doubly Fed Induction Generators" *IEEE ITEC India* , Pune, India, 13-15th Dec 2017.

2. Abilash Thakallapelli**, Sudipta Ghosh** and Sukumar Kamalasadan, "Real-Time Reduced Order Model Based Adaptive Pitch Controller for Grid Connected Wind Turbines*", Proc.of IEEE Industrial Applications Society*

Annual Meeting, Portland, Oregon, USA, 2-6th Oct 2016.

3. Abilash Thakallapelli, **Sudipta Ghosh** and Sukumar Kamalasadan, "Real-time Frequency Based Reduced Order Modelling of Large Power Grid**",** in *Proc*. of *IEEE PES General Meeting*, Boston, Massachusetts, USA, 17-21st July 2016.

4. Tim Paul, **Sudipta Ghosh**, Sukumar Kamalasadan and Pranab Mondal, "A Quadratic Programming Based Optimal Power and Battery Dispatch for Grid Connected Microgrid*", Proc.of IEEE Industrial Applications Society Annual Meeting*, Portland, Oregon, USA, 2-6th Oct 2016.

5. Tim Paul, **Sudipta Ghosh,** Sukumar Kamalasadan, Madhu Joshi, Deepak Chandran, "A Hybrid Battery Optimal Power Dispatch for Grid Connected Micro Grid*" , Proc. of IEEE PEDES*, Trivandrum, India, 14-16th Dec-2016.

6. **Sudipta Ghosh**, Nilanjan Senroy, Sukumar Kamalasadan and Sukumar Mishra, "Fast PSS Tuning in Large Power Systems", in *Proc*. of *IEEE PES General meeting*, Denver, CO, USA, 26-30th July 2015.

7. **Sudipta Ghosh**, Nilanjan Senroy and Sukumar Kamalasadan, "Reduced Order Modeling of Wind Farms for Inclusion in Large Power System Simulations for Primary Frequency Response", *North American Power Symposium (NAPS)*, Pullman,WA, USA, 7-9th Sept. 2014.

8. **Sudipta Ghosh**, "Closed loop Control of a DFIG based Wind Power System", in *Proc.* of *IEEE ISGT ASIA* 2013, Bangalore, India, 10-13th Nov, 2013.

9. **Sudipta Ghosh**, and Nilanjan Senroy, "A Comparative Study of Two Model Order Reduction Approaches for Application in Power Systems", in *Proc.* of *IEEE PES General Meeting*, San Diego, California, USA, pp. 1-8, 22-26th July 2012.

10. **Sudipta Ghosh**, and Nilanjan Senroy, "Effect of generator type on the participation of adjacent synchronous machines in electromechanical oscillations", *Proc. IEEE PEDES*, pp. 1-3, New Delhi, India, 20-23th Dec, 2010.

11. **Sudipta Ghosh**, S. P. Ghoshal and Saradindu Ghosh, "Two Analytical Approaches for Optimal Placement of Distributed Generation Unit in Power Systems", *Proc. IEEE ICPS*, pp-1-4, Kharagpur, India, Dec 2009.

Book Chapter :

1. Ramanjot Singh, **Sudipta Ghosh** & Rajesh Kumar, "A Review on Different Voltage Source Converter based Multi-Terminal Direct Current System Control Schemes" accepted in International Conference on Recent Advancement in Smart Energy Systems & Intelligent Automation (2024). (accepted for publications in **"Lecture Notes in Electrical Engineering" series (https://www.springer.com/series/7818).**

2. Ramanjot Singh, **Sudipta Ghosh** & Rajesh Kumar, " A Comparative Study Between Fixed Droop Control & Adaptive Droop Control in Voltage Source Converter Based MTDC system" accepted in International Conference on Recent Advancement in Smart Energy Systems & Intelligent Automation (2024). (accepted for publications in **"Lecture Notes in Electrical Engineering" series (https://www.springer.com/series/7818).**