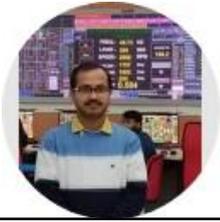# Dr. Dipayan Guha

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Adaptive Control   Cyber Physical Systems   Multi-Agent Systems   Intelligent Control

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Summary:

International Journals: Published/Accepted – **41**

International Conferences: 43   **National Conferences: 3**

Book: 1 (**International: Springer**)   **Book chapter:** 7

Citation: 2940 (h-index: 27, i-10 index: 46) [Google Scholar] [https://scholar.google.co.in/citations?user=GmiruH0AAAAJ&hl=en] Scopus id: 56567683700

2131 (h-index: 22) **[Scopus]**

IEEE	04	Elsevier	14	Wiley	05	Inderscience	04
IET	04	Springer	04	Taylor and Francis	03	IGI Global	02
MDPI	01						

Placed in the "World Ranking of top 2% Scientists" released by Stanford University in last four consecutive years 2022, 2023, 2024, & 2025.

Thrust Area of Research:

- Cyber-Physical Systems and Resilience.
- Multi-Agent Systems and Cooperative Control.
- Nonlinear Control.
- Artificial Intelligence and Soft Computing.

International Book

1. **D. Guha**, P.K. Roy, S. Banerjee, S. Purwar, *Application of Intelligent Control Algorithms to Study the Dynamics of Hybrid Power System*, **Studies in Systems, Decision and Control, Springer Verlag, Singapore, ISBN 978-981-19-0443-1.**

International Journals

1. A. Anand, **D. Guha**, and S. Purwar, Observer-aided Adaptive Consensus Control of Cyber-physical Multi-Agent Systems with Hybrid Attacked Topology, **IEEE Trans. on Automation Science and Engineering**, **IEEE** *(SCI Journal with Impact Factor-6.4), Accepted on Feb. 4, 2026* *[Q1 Journal]*.

2. **D. Guha**, R. Maiti, S. Banerjee and R. Negi, Fractional-Order Finite-Time Control of Cyber-Physical Power System with Time-Delayed Switching and Distributed DoS Attacks Using RBF-Neural Network, **IEEE Trans. on Consumer Electronics, IEEE** *(SCI Journal with Impact Factor-10.9),* vol. 71, no. 4, pp. 9221-9233, Nov. 2025 *[Q1 Journal]*.

3. S. Roy, A.K. Chaudhary, **D. Guha**, and R. Negi, Adaptive Event-triggered Finite-time Control of Affine Cyber-Physical System under Denial-of-Service (DoS) and Deception Attacks, International Journal of Robust and Nonlinear Control, *Wiley (SCI Journal with Impact Factor-3.2), Accepted on Jan. 12, 2025)* *[Q1 Journal]*.

4. K. Reddy, R. Sarma, and **D. Guha**, Performance Analysis of Advanced Metaheuristics for Optimal Design of Multi-Objective Model Predictive Control of Doubly Fed Induction Generator, Process, *MDPI (SCI Journal with Impact Factor-2.8)*, vol. 2025, 13, 221, 2025 *[Q2 Journal]*.

5. A. Anand, **D. Guha**, and S. Purwar, Adaptive Consensus Control of Leader-Follower Multi-Agent System with Actuator Deception Attacks, Chaos, Solitons and Fractals, ***Elsevier (SCI Journal with Impact Factor- 5.3)***, vol. 187, 115344, October 2024. *[Q1 Journal]*.

6. A.K. Chaudhary, S. Roy, **D. Guha**, *et al.*, *Adaptive Cyber-tolerant Finite-time Frequency Control Framework for Renewable-integrated Power System under Deception and Periodic Denial-of-Service Attacks*, Energy, ***Elsevier (SCI Journal with Impact Factor- 9)***, Vol. 302, Sep 2024, 131809, doi:10.1016/j.energy.2024.131809 *[Q1 Journal]*.

7. **D. Guha**, *Fuzzy-aided Finite-time Frequency Controller of Renewable-integrated Power Systems with Hydrogen Energy Storage*, Engineering Applications of Artificial Intelligence, ***Elsevier (SCI Journal with Impact Factor- 8)***, Vol. 126 (Part-A), 106814, Nov. 2023. *doi: 10.1016/j.engappai.2023.106814* *[Q1 Journal]*.

8. **D. Guha**, P.K. Roy, and S. Banerjee, *Improved Fractional-order Sliding Mode Controller for Frequency Regulation of a Hybrid Power System with Nonlinear Disturbance Observer,* IEEE Transactions on Industry Applications, ***IEEE (SCI Journal with Impact Factor- 4.4), vol. 59, no. 4, pp. 4964-4979, July-Aug. 2023, doi: 10.1109/TIA.2023.3268150*** *[Q1 Journal]*.

9. **D. Guha**. *Non-integer disturbance observer-aided resilient frequency controller applied to hybrid power system,* Chaos, Solitons and Fractals, ***Elsevier (SCI Journal with Impact Factor- 7.8)***, vol. 170, 113421, May 2023, *doi: 10.1016/j.chaos.2023.113421* *[Q1 Journal]*.

10. **D. Guha**, P.K. Roy, and S. Banerjee, *Frequency Control of a Wind-diesel-generator Hybrid System with Squirrel Search Algorithm Tuned Robust Cascade Fractional Order Controller Having Disturbance Observer Integrated*, Electric Power Components and Systems, ***Taylor and Francis (SCI Journal with Impact Factor-1.59), vol. 50(14-15), pp. 814-839, 2022***, *doi: 10.1080/15325008.2022.2141925* *[In Press]* *[Q4 Journal]*.

11. **D. Guha**, P.K. Roy, and S. Banerjee, *Adaptive fractional-order sliding-mode disturbance observer-based robust theoretical frequency controller applied to hybrid wind-diesel power system*, ISA Transaction, ***Elsevier (SCI Journal with Impact Factor-5.468), vol. 133, pp. 160-183, Feb 2023***, *doi: 10.1016/j.isatra.2022.06.030* *[Q1 Journal]*.

12. V. Patel, **D. Guha**, and S. Purwar, *Frequency Regulation of Nonlinear Power Systems using Neural Network Observer-based Optimized Resilient Controller*, International Transactions on Electrical Energy Systems*, **Wiley (SCI Journal with Impact Factor-1.692), vol. 35, Issue 5, Sep/Oct 2023***, *doi: 10.1002/jnm.3025* *[Q3 Journal]*.

13. V. Patel, **D. Guha**, and S. Purwar, *Optimized cascade fractional-order 3DOF-controller for frequency regulation of a hybrid power system using marine predators algorithm*, International Journal of Numerical Modelling: Electronic Networks, Devices And Fields, ***Wiley (SCI Journal with Impact Factor-1.296), vol. 2022, 6286500, doi: 10.1155/2022/6286500*** *[Q3 Journal]*.

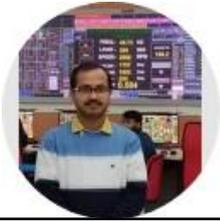14. V. Patel, **D. Guha**, and S. Purwar, *Neural Network aided Fractional-Order Sliding Mode*

Controller for Frequency Regulation of Nonlinear Power Systems, Computers and Electrical Engineering, **Elsevier (SCI Journal with Impact Factor-3.818),** Vol. 96, Part-A, December 2021, 107534, doi: *10.1016/j.compeleceng.2021.107534 [Q2 Journal]*.

15. **D. Guha**, P.K. Roy, and S. Banerjee, *Observer-aided resilient hybrid fractional-order controller for frequency regulation of hybrid power system*, International Transactions on Electrical Energy Systems, **Wiley (SCI Journal with Impact Factor- 1.692)**, Vol. 31, Issue 9, September 2021, *doi: 10.1002/2050-7038.13014 [Q3 Journal]*.

16. **D. Guha**, P.K. Roy, and S. Banerjee, *Performance evolution of different controllers for frequency regulation of a hybrid energy power system employing chaotic crow search algorithm*, ISA Transaction, **Elsevier (SCI Journal with Impact Factor-4.305)**, Vol. 120, January 2022, pp. 128-146, *doi: 10.1016/j.isatra.2021.03.017 [Q1 Journal]*.

17. **D. Guha**, P.K. Roy, and S. Banerjee, *Equilibrium optimizer tuned cascade fractional-order 3DOF-PID controller in load frequency control of power system having renewable energy resource integrated*, International Transactions on Electrical Energy Systems, **Wiley (SCI Journal with Impact Factor- 1.692)**, Vol. 31, Issue 1, January 2021, e12702, *doi: 10.1002/2050-7038.12702 [Q3 Journal]*.

18. **D. Guha**, P.K. Roy, and S. Banerjee, *Disturbance observer aided optimised fractional-order three-degree-of-freedom tilt-integral-derivative controller for load frequency control of power systems*, IET Generation, Transmission and Distribution, **IET (SCI Journal with Impact Factor- 2.862)**, Vol. 15, Issue 4, February 2021, pp. 716-736, doi: *10.1049/gtd2.12054 [Q3 Journal]*.

19. **D. Guha**, P.K. Roy, S. Banerjee, S. Padmanaban, F. Blaabjerg, and D. Chittathuru, *Small-signal stability analysis of hybrid power system with quasi-oppositional sine cosine algorithm optimized fractional order PID controller*, IEEE Access, **IEEE (SCI Journal with Impact Factor- 3.745)**, Vol. 8, August 2020, pp. 155971-155986, *doi: 10.1109/ACCESS.2020.3018620 [Q2 Journal]*.

20. **D. Guha**, P.K. Roy, and S. Banerjee, *Maiden application of SSA-optimised CC-TID controller for load frequency control of power systems*, IET Generation, Transmission and Distribution, **IET (SCI Journal with Impact Factor- 3.229)**, Vol. 13(7), April 2019, pp. 1110-1120, *doi: 10.1049/iet-gtd.2018.6100 [Q3 Journal]*.

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23. **D. Guha**, P.K. Roy, and S. Banerjee, *Load frequency control of interconnected power system using grey wolf optimization*, Swarm and Evolutionary Computation, *Elsevier (SCI with Impact Factor-6.912)*, Vol. 27, April 2016, pp. 97-115, *doi:10.1016/j.swevo.2015.10.004* *[Q1 Journal]*.

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26. **D. Guha**, P.K. Roy, and S. Banerjee, *Binary bat algorithm applied to solve MISO type PID-SSSC based load frequency control problem*, Iranian Journal of Science and Technology, Transactions of Electrical Engineering, *Springer (SCI Journal with Impact Factor-0.657)* Vol. 43, July 2018, pp. 323-342, *doi: 10.1007/s40998-018-0106-0* *[Q3 Journal]*.

27. **D. Guha**, P.K. Roy, and S. Banerjee, *Application of backtracking search algorithm in load frequency control of multi-area interconnected power system*, Ain Shams Engineering Journal, *Elsevier (SCI Journal with Impact Factor-1.949)*, Vol. 9(2), June 2018, pp. 257-276, *doi: 10.1016/j.asej.2016.01.004* *[Q1 Journal]*.

28. **D. Guha**, P.K. Roy, and S. Banerjee, *Quasi-oppositional Backtracking Search Algorithm to Solve Load Frequency Control Problem of Interconnected Power System*, Iranian Journal of Science and Technology, Transactions of Electrical Engineering, *Springer (SCI Journal with Impact Factor-0.657)*, Vol. 44, August 2019, pp. 781-804, *doi: 10.1007/s40998-019-00260-0* *[Q3 Journal]*.

29. **D. Guha**, P.K. Roy, and S. Banerjee, *Quasi-oppositional differential search algorithm applied to load frequency control*, Engineering Science and Technology, an International Journal, *Elsevier (SCI Journal with Impact Factor-5.7)*, Vol. 19, Issue 4, December 2016, pp. 1635-1654, *doi: 10.1016/j.jestch.2016.09.021*.

30. **D. Guha**, P.K. Roy, and S. Banerjee, *Load frequency control of large scale power system using quasi-oppositional grey wolf optimization algorithm*, Engineering Science and Technology, an International Journal, *Elsevier (SCI Journal with Impact Factor-5.7)*, Vol. 19, Issue 4, December 2016, pp. 1693-1713, *doi: 10.1016/j.jestch.2016.07.004*.

31. V. Patel, **D. Guha**, and S. Purwar, Frequency Regulation of Time-delayed Power System utilizing Nonlinear Resilient Controller, Int. J. of Automation and Control, **Inderscience (Scopus)**, vol. 18(1), pp. 87-109, Nov. 2023, *doi: 10.1504/IJAAC.2024.135096*.

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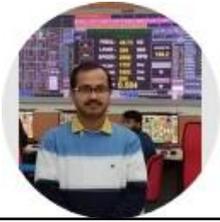
Control, **Inderscience *(Scopus*)**, Vol. 17(2), January 2023, pp. 188-226, *doi: 10.1504/IJAAC.2023.129387*

33. **D. Guha**, P.K. Roy, and S. Banerjee, Quasi-oppositional Jaya Optimized 2-degree-of-freedom PID Controller for Load Frequency Control of Interconnected Power Systems, International Journal of Modelling and Simulation, **Taylor and Francis *(Scopus)***, Vol. 42(1), October 2020, pp. 63-85, *doi: 10.1080/02286203.2020.1829444.*

34. **D. Guha,** P.K. Roy, and S. Banerjee, *Whale optimization algorithm applied to load frequency control of a mixed power system considering nonlinearities and PLL dynamics*, Energy System, **Springer *(Scopus)***, Vol. 11, February 2019, pp. 699-728, *doi: 10.1007/s12667-019-00326-2.*

35. **D. Guha**, P.K. Roy, and S. Banerjee, *Grasshopper optimization algorithm scaled fractional order PI-D controller applied to reduced order model of load frequency control system*, International Journal of Modeling and Simulation, **Taylor and Francis *(Scopus)***, Vol. 40(3), March 2019, pp. 217-242, *doi: 10.1080/02286203.2019.1596727.*

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37. **D. Guha**, P.K. Roy, and S. Banerjee, *Oppositional biogeography-based optimization applied to SMES and TCSC-based load frequency control with generation rate constraints and time delay*, International Journal of Power and Energy Conversion, ***Inderscience (Scopus)***, Vol. 7, Issue 4, Jan 2016, pp. 391-23, *doi: 10.1504/IJPEC.2016.10000395.*

38. **D. Guha**, P.K. Roy, and S. Banerjee, *Solutions of UPFC based Load Frequency Control using Quasi-Oppositional Biogeography Based Optimization Considering Various Nonlinearities of Power System*, International Journal of Power and Energy Conversion, ***Inderscience (Scopus)***, Vol. 9, Issue 2, March 2018, pp. 105-143, *doi: 10.1504/IJPEC.2018.090674.*

39. **D. Guha**, P.K. Roy, and S. Banerjee, *Application of Modified Biogeography Based Optimization in AGC of an Interconnected Multi-Unit Multi-Source AC-DC Linked Power System*, International Journal of Energy Optimization and Engineering, *IGI Global*, Vol. 5, Issue 3, 2016, pp. 1-18, doi: *10.4018/IJEOE.2016070101.*

40. **D. Guha**, P.K. Roy, and S. Banerjee, *Grey Wolf Optimization to Solve Load Frequency Control of an Interconnected Power System*, International Journal of Energy Optimization and Engineering, *IGI Global*, Vol. 5, Issue 4, 2016, pp. 62-83, *doi: 10.1016/j.swevo.2015.10.004.*

41. **D. Guha**, P.K. Roy, and S. Banerjee, Krill herd algorithm for automatic generation control with flexible AC transmission system controller including superconducting magnetic energy storage units, The Journal of Engineering, **IET**, Vol. 2016, Issue 5, May 2016, pp. 147-161, doi: 10.1049/joe.2016.0053.

Book Chapters

1. **D. Guha**, P.K. Roy, and S. Banerjee, *Robust optimization algorithms for solving automatic generation control of multi-constrained power system*, Handbook of Research on Power and Energy System Optimization, **IGI-Global,** Chapter 3, 2018, pp. 75-114, *doi: 10.4018/978-1-5225-3935-3.ch003*. [Scopus Indexed]

2. **D. Guha**, P.K. Roy, and S. Banerjee, *Dynamic and Stability Analysis of Wind-Diesel-Generator (WDG) with Robust and Intelligent Computation Control Algorithm*, Handbook of Research on Smart Power System Operation and Control, **IGI-Global,** Chapter 3, 2019, pp. 56-95, *doi: 10.4018/978-1-5225-8030-0.ch003*. [Scopus Indexed]

3. V. Patel, **D. Guha**, and S. Purwar, *Minimum order disturbance observer-aided integral sliding mode controller for frequency regulation of hybrid power system*, Control of Standalone Microgrid (ISBN 9780128230220), **Academic Press (Elsevier), Chapter** 12, 2021, pp. 277-296, *doi: 10.1016/B978-0-12-823022-0.00009-X*.

4. V. Patel, D. Guha, and S. Purwar, Disturbance observer-aided adaptive sliding mode controller for frequency regulation in hybrid power system, Microgrids: Modeling, Control, and Applications (ISBN 9780323854634), Academic Press (Elsevier), Chapter 2, 2022, pp. 43-66, doi:10.1016/B978-0-323-85463-4.00001-0.

5. **D. Guha** and S. Saringi, *Nonlinear resilient frequency controller for hybrid interconnected power system*, Advanced Frequency Regulation Strategies in Renewable-Dominated Modern Power Systems (AFRGRPS-2021), **Academic Press (Elsevier)**, Chapter 4, 2023, pp. 61-91, *doi: 10.1016/B978-0-323-95054-1.00014-7*.

6. A. Anand, **D. Guha** and S. Purwar, *Distributed Adaptive Fault-tolerant Consensus Control of Multi-agent Systems with Deception attacks*, Enhancing the Control of Systems and Devices: Improving Performance, Reliability and Adaptability in Dynamic Environments, **Academic Press (Elsevier – In Press).**

7. **D. Guha**, *Neural Network-observer based Adaptive Finite-time Frequency Control of Cyber-physical Power Systems*, Enhancing the Control of Systems and Devices: Improving Performance, Reliability and Adaptability in Dynamic Environments, **Academic Press (Elsevier – In Press).**

International Conferences [33]

1. V. Gupta, A. K. Chaudhary, **D. Guha** and R. Negi, Recurrent Neural Network-enabled Cyber-tolerant Resilient Control of Nonlinear System, **Accepted** in 2026 4th Odisha Int. Conf. on Electrical Power Engineering, Communication and Computing Technology **(ODICON-2026)**, **Feb. 20-21, 2026**, ITER, SOA Deemed to be University, Bhubaneswar, Odisha, India.

2. V. Singh, M. Gautam, R. Negi and **D. Guha**, Consensus Control of Multi-Agent System using

Backstepping Control, **Accepted** in 2026 4th Odisha Int. Conf. on Electrical Power Engineering, Communication and Computing Technology **(ODICON-2026), Feb. 20-21, 2026**, ITER, SOA Deemed to be University, Bhubaneswar, Odisha, India.

3. A. Narayan, A. Anand, D. Guha and S. Purwar, Consensus Control of Multi-Agent System using Backstepping Control, **Accepted** in 2026 4th Odisha Int. Conf. on Electrical Power Engineering, Communication and Computing Technology **(ODICON-2026), Feb. 20-21, 2026**, ITER, SOA Deemed to be University, Bhubaneswar, Odisha, India.

4. V. Gupta, S. Chaudhary and **D. Guha**, Dynamic Event-triggered Adaptive Backstepping Control for a 2-DOF Robot Manipulator, Accepted in 5th IEEE Int. Conf. on Power, Control, and Computing Technologies **(ICPC^{2}T 2026)**, NIT Raipur, **March 11-13, 2026**.

5. S. Chaudhary, V. Gupta and **D. Guha**, Backstepping Controller for Robot Manipulator using Actor-Critic Reinforcement Learning, **Accepted** in 2025 International Conference on Power Electronics & Energy (ICPEE 2025), **KIIT Bhubaneswar, Dec. 14-16, 2025**.

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8. P. Kumar, A. Anand, **D. Guha** and S. Purwar, Predefined Time Consensus Control for Multi-Agent Systems, In Proc. of **2025 IEEE 5th International Conference on Sustainable Energy and Future Electric Transportation (SEFET)**, Jaipur, India, **2025**, pp. 1-6.

9. K. S. Chaudhary, **D. Guha** and R. Maiti, Backstepping-enabled Fixed-time Terminal Sliding Mode Control of Robot Manipulators, **In Proc. of 2025 Fourth International Conference on Power, Control and Computing Technologies (ICPC2T),** Raipur, India, **2025**, pp. 1-6.

10. A. Yadav, **D. Guha** and R. Negi, Data Driven Control of Nonlinear System with Noisy Measurements, In Proc. of Int. Conf. on Recent Innovations and Trends in Electrical & Electronics Engineering and Computing, NIT Patna.

11. P. Kumar, A. Anand, **D. Guha**, and S. Purwar, Leader-Follower Consensus Control of Multi-Agent Systems with Disturbance by Distributed Sliding Mode Control, In Proc. of **2025 IEEE 1st Int. Conf. on Smart and Sustainable Developments in Electrical Engineering (SSDEE-2025)**, Feb 28 - March 2, 2025, IIT(ISM) Dhanbad, pp. 1-6.

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February 21 – 23, 2025, Pandit Deendayal Energy University (PDEU), Gandhinagar, India.

13. S. Chaudhary, **D. Guha**, and R. Maiti, Backstepping-enabled Fixed-time Terminal Sliding Mode Control of Robot Manipulators, **Accepted** in Fourth Int. Conf. on Power, Control, and Computing Technologies (ICPC^{2}T), January 20-22, 2025, NIT Raipur, Chhattisgarh, India.

14. S. Kumar, B. Dash, R. Maiti, and **D. Guha,** Adaptive Fuzzy Predictor based Fast Terminal Sliding Mode Controller Design for Two-link Robot Manipulator, **Accepted** in 2024 Tenth **Indian Control Conference (ICC)**, December 9-11, 2024, IISER Bhopal.

15. S. Roy and **D. Guha**, Finite-time Controller of Cyber-Physical Affine System with Mismatched Uncertainty, In Proc. of 2024 IEEE 4th International Conference on **Sustainable Energy and Future Electric Transportation (IEEE SeFeT 2024)**, 31 July - 03 August, 2024.

16. A. Anand, **D. Guha**, and S. Purwar, Cooperative Formation Control of the Multi-Agent System, In Proc. of 2024 IEEE 4th International Conference on **Sustainable Energy and Future Electric Transportation (IEEE SeFeT 2024)**, 31 July - 03 August, 2024.

17. S. Priyadarshi and **D. Guha,** Robust Tracking Controller of Nonlinear Twin Rotor MIMO System with Mismatched Uncertainties, In Proc. 2024 IEEE Students Conference on Engineering and Systems (SCES), June 21-23, 2024, Prayagraj, India, June 21-23, 2024.

18. A. Maurya and **D. Guha,** Design of Non-linear Sliding Mode Controller for Magnetic Levitation System, In Proc. in 2024 IEEE Students Conference on Engineering and Systems (SCES), June 21-23, 2024, Prayagraj, India, June 21-23, 2024.

19. **D. Guha**, P.K. Roy, and S. Banerjee, Fractional-Order Cyber-tolerant Frequency Controller for Renewables-integrated Power System, In Proc. of 3rd IEEE International Conference on Smart Technologies for Power, Energy and Control (STPEC), KIIT University, Bhubneswar, Odisha, 10-13 December 2023.

20. **D. Guha**, Cyber-tolerant Resilient Frequency Control for Microgrid with Mismatched Uncertainties and Stealthy FDI-attack, In Proc. of 2023 IEEE 3rd International Conference on Sustainable Energy and Future Electric Transportation (SeFeT), S'O'A University, Bhubneswar, Odisha, 09-12 August 2023.

21. A. Anand, **D. Guha**, and S. Purwar, Adaptive Cooperative Control of the Multi-Agent System, In Proc. of 2023 IEEE 3rd International Conference on Sustainable Energy and Future Electric Transportation (SeFeT), Bhubaneswar, Odisha, 09-12 August 2023.

22. J. Saha, **D. Guha,** and S.K. Jha, Voltage Control of Power System employing Q-Learning based PID Controller, IEEE 19th India Council International Conference (INDICON 2022), CUSAT, Kochi, Kerala, 24-26 November, 2022.

23. A. Ghosh, A. Saxena, R. Singh, and **D. Guha**, Design and Performance Analysis of Model Reference Adaptive Controller (MRAC) applied to a Dynamical System, 9th IEEE Uttar
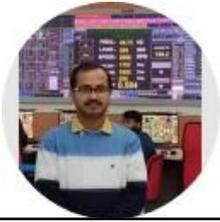
Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON-2022), IIIT Allahabad, 2-4 December 2022.

24. A. Verma, **D. Guha**, Disturbance Observer-based Resilient Controller for Nonlinear Maglev System, 9th IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON-2022), IIIT Allahabad, 2-4 December 2022.

25. A. Verma, **D. Guha**, Fractional-order Robust Controller Applied to Nonlinear Dynamical System. In Proc. of IEEE 2nd Int Conf on Power, Control and Computing Technologies, NIT Raipur, March 1-3, 2022.

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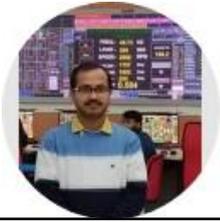
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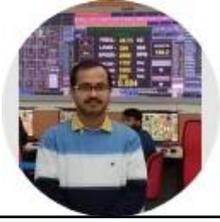
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