Kaushik Paul, PhD

Assistant Professor
Department of Electrical Engineering
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Biography

- Dr. Kaushik Paul is currently working as an Assistant Professor in the Department of Electrical Engineering at BIT Sindri.
- He has received his PhD degree from NIT Jamshedpur for his contribution in managing power system congestion with application of optimization techniques.
- He was awarded distinction in his M.Tech thesis from NIT Kurukshetra for his research contribution in the field of demand response and designing of smart meters for residential energy consumption.
- His recent research interests include power system congestion management, application of optimization of techniques for optimal system operation, renewable energy integration, and demand side management.
- He is also the reviewer of reputed journals like Alexandria Engineering Journal, International Transactions on Electrical Energy Systems, International Journal of Renewable Energy Research-IJRER, Sustainable Computing: Informatics and Systems Reliability Engineering and System Safety, Energy Reports, Results in Control and Optimization, E-Prime Electrical Engineering.

Skills

MATLAB Programming, C, Python, Optimization techniques application, Power system modelling.

Research Interest

- Power system congestion management
- Application of Optimization Techniques for optimal power system operation
- Renewable energy integration
- Demand side management.

Achievements

- Delivered invited technical talk on *"An Overview on Some Aspects of Deregulated Power System Environment"*Invertis University, India.
- Distinction in M.Tech Thesis from NIT Kurukshetra.
- Presented Paper in CERA-2017 conference at IIT Roorkee.
- Presented Paper in EPERC 2020 at NIT Jamshedpur.
- Presented Paper in ICCC 2020

- Qualified GATE (Graduate Aptitude Test in Engineering) in the year 2010 with All India Rank of 1218 and a score of 550.

Education

Degree Achieved	**Name of the Institution**	**Year of Passing**
Ph.D **Electrical Engineering** **(Power System)**	National Institute of Technology, Jamshedpur.	2014-2019
M.Tech **Electrical Engineering** **(Power System)**	National Institute of Technology, Kurukshetra	2010- 2012
B.Tech **Electrical Engineering**	(Netaji Subhash Engineering College) West Bengal University of Technology	2006- 2010
Board of Higher Secondary **(10+2)**	DAV Model School,Durgapur (C.B.S.E)	2004- 2006
Board of Secondary **(10)**	Assembly of God Church Ukhra (I.C.S.E)	2003- 2004

Ph.D. Research Topic: Optimization based approaches for Congestion management in Deregulated Power System Environment.

Ph.D. and Post Ph.D. Research Contribution

- Development and implementation of stochastic optimization models for managing congestion in the power system transmission lines with the aim to minimize the congestion cost.
- Integration of renewable energy sources considering the uncertainty in power generation in the Power system framework for Congestion Management.
- Optimal engagement of DGs for congestion controlling in distribution side.
- Multi-objective optimal scheduling approach for hybrid power system considering the risk factor associated with the intermittent/uncertain behaviors of the renewable sources.
- Comparative analysis of the optimization-based approaches adopted for congestion management.

M. Tech Research Topic: Demand response of residential air conditioning load using real time pricing.

- A demand response strategy was formulated based on the real time pricing, to control the power consumption of the air conditioning load.
- The Programmable Communicating Thermostat was introduced in which the thermostat setting was varied based on the variation in the real time pricing.
- This demand response strategy led to saving of 33% in the electricity bill in 24 hours when compared to the air conditioning load with normal thermostat.

Teaching Experience

Sl. No.	Position held	Name of Organization	From	To
1.	Asst. Professor, Dept. of Electrical and Electronics Engineering	BIT Sindri	3rd January 2018	Present
2	Asst. Professor, Dept. of Electrical and Electronics Engineering	Sharda Group of Institutions, Agra	9th July 2012	31st July 2014

Research Experience

Sl. No	Position held	Research Topic	Name of Organization	From	To
1.	Doctoral Research Scholar	Optimization based Approaches for Congestion Management in Deregulated Power System Environment.	NIT Jamshedpur	12thAugust 2014	5th August 2019

External Sponsored Research Project

Project Title	PI & CO-PI	Name of Sponsoring Agency	Amount Sanctioned (Rupees)	Duration
Multi-Agent Based Modelling for Collision Handling and Delay Optimization in Indian Railway System.	PI- Poulami Dalapati Co-PI- S.C. Dutta, K Paul	MHRD-World Bank	828000/-	01 years

Patent

Patent ID: 202231053728 (Published)
Topic: An Experiment Special Technology In Emergency Management And Disaster Response For Human World
Date of filing of Application:20/09/2022
Publication Date: 23/09/2022

PG Dissertation Guided

Sl No.	Title of Dissertation/Project	Department/ Institute	Year
1	Design and analysis of substrate integrated wave guide antenna	Electrical Engineering, BIT Sindri	2019

2	Performance Analysis of FLC & ANN Based MPPT Controller For Solar PV System	Electrical Engineering, BIT Sindri	2022
3	Power System Congestion Management using Bald Eagle Optimization	Electrical Engineering, BIT Sindri	Ongoing 2023

B.Tech Dissertation Guided

Sl No.	Title of Dissertation/Project	Department/ Institute	Year
1.	Analysis And Control Of Magnetic Levitation System	Electrical Engineering, BIT Sindri	2022
2.	Analysis of Economic Load dispatch for IEEE 14 system using PSAT.	Electrical Engineering, BIT Sindri	2022
3.	Design and Implementation of Real Time Automated Classroom Environment Using PLC, SCADA, and Arduino	Electrical Engineering, BIT Sindri	2023
4.	Power quality Improvement using Power Electronic Equipment	Electrical Engineering, BIT Sindri	2023

Publications

Journals

(Published)

SCI Indexed

[1] V. Kumar, R. N. Rao, A. Singh, **Kaushik Paul**, P. Sinha, T. A. H. Alghamdi, A. Y. Abdelaziz **"A Novel Nature Inspired Nutcracker Optimizer Algorithm for Congestion Control in Power System Transmission Lines,"** *Energy Exploration and Exploratation (Accepted 2024)*

[2] **Kaushik Paul** and D. Hati, **"A novel hybrid Harris hawk optimization and sine cosine algorithm based home energy management system for residential buildings**," *Building Services Engineering Research and Technology*, p. 01436244231170387, 2023.

[3] P. Sinha, **Kaushik Paul,** S. Deb, A. Vidyarthi, A. S. Kilak, D. Gupta, **" A New Approach to Detect Power Quality Disturbances in Smart Cities Using Scaling-Based Chirplet Transform with Strategically Placed Smart Meters,"** *Journal of Circuits, Systems and Computers*, 2023 (Accepted)

[4] P. Sinha, **Kaushik Paul**, S. Deb, and S. Sachan, **"Comprehensive Review Based on the Impact of Integrating Electric Vehicle and Renewable Energy Sources to the Grid,**" *Energies*, vol. 16, p. 2924, 2023.

[5] **K. Paul**, P. Sinha, Y. Bouteraa, P. Skruch, and S. Mobayen, "**A Novel Improved Manta Ray Foraging Optimization Approach for Mitigating Power System Congestion in Transmission Network,"** *IEEE Access*, vol. 11, pp. 10288-10307, 2023.

[6] P. Sinha, **K. Paul**, C. Saiprakash, A. Y. Abdelaziz, A. I. Omar, C.-L. Su, *et al.*, **"Identification of cross-country fault with high impedance syndrome in transmission line using tunable Q wavelet transform,"** *Mathematics*, vol. 11, p. 586, 2023.

[7] P. Sinha, **K. Paul**, S. Chatterjee, F. P. García Márquez, J. Ogale, A. Ali, *et al.*, **"Cross-country high impedance fault diagnosis scheme for unbalanced distribution network employing detrended cross-correlation,"** *IET Generation, Transmission & Distribution*, 2023.

[8] **K. Paul**, P. Sinha, S. Mobayen, F. F. El-Sousy, and A. Fekih**, "A novel improved crow search algorithm to alleviate congestion in power system transmission lines,"** *Energy Reports*, vol. 8, pp. 11456-11465, 2022.

[9] S. Lenka, P. Sinha, **K. Paul**, C. Jena, S. Das, and B. Khan, **"Identification of the Dominant Harmonic Source Type in the Distribution Network Using the Soft Computing Technique,"** *International Transactions on Electrical Energy Systems*, vol. 2022, 2022.

[10] **K. Paul**, P. Dalapati, and N. Kumar, **"Optimal Rescheduling of Generators to Alleviate Congestion in Transmission System: A Novel Modified Whale Optimization Approach,"** *Arabian Journal for Science and Engineering*, pp. 1-25, 2021.

[11] **K. Paul, "Multi-objective risk-based optimal power system operation with renewable energy resources and battery energy storage system: A novel Hybrid Modified Grey Wolf Optimization–Sine Cosine Algorithm approach,"** *Transactions of the Institute of Measurement and Control*, p. 01423312221079962, 2022.

[12] **K. Paul**, N. Kumar, S. Agrawal, and K. Paul, **"Optimal rescheduling of real power to mitigate congestion using gravitational search algorithm,"** *Turkish Journal of Electrical Engineering & Computer Sciences*, vol. 27, pp. 2213-2225, 2019.

Scopus/ESCI

[13] **K. Paul**, V. Shekher, N. Kumar, V. Kumar, and M. Kumar, **"Influence of wind energy source on congestion management in power system transmission network: a novel modified whale optimization approach,"** *Process Integration and Optimization for Sustainability*, vol. 6, pp. 943-959, 2022.

[14] **K. Paul**, **"Modified grey wolf optimization approach for power system transmission line congestion management based on the influence of solar photovoltaic system,"** *International Journal of Energy and Environmental Engineering*, pp. 1-17, 2022.

[15] **K. Paul**, N. Kumar, and P. Dalapati**, "Bat Algorithm for Congestion Alleviation in Power System Network,"** *Technology and Economics of Smart Grids and Sustainable Energy*, vol. 6, pp. 1-18, 2021.

[16] **K. Paul** and N. Kumar, **"Cuckoo search algorithm for congestion alleviation with incorporation of wind farm,"** *International Journal of Electrical & Computer Engineering (2088-8708)*, vol. 8, 2018.

[17] **K. Paul**, N. Kumar, and S. Agrawal, **"Optimal rescheduling of real power to mitigate congestion with incorporation of wind farm using gravitational search algorithm in deregulated environment,"** *International Journal of Renewable Energy Research (IJRER)*, vol. 7, pp. 1731-1740, 2017.

Book Chapters/ Conferences

[18] N Kumari, **K. Paul,** P Sinha, **"A Bald Eagle Search Optimization Approach for Congestion Alleviation in Power System Transmission Channels"** *in Innovations in Electrical and Electronic Engineering*, ed: Springer, 2023, pp. 61-71

[19] Prakash Kumar, Md Abul Kalam, **K. Paul**, **"Optimal Power Flow Analysis Using Pelican Optimization Algorithm"** *in Innovations in Electrical and Electronic Engineering*, ed: Springer, 2023, pp. 73-87.

[20] V. K. Bhagat, **K. Paul**, R. Dutta, P. Sinha, and M. K. Debnath, **"Performance Analysis of FLC & ANN Based MPPT Controller For Solar PV System,"** in *2022 2nd Odisha International Conference on Electrical Power Engineering, Communication and Computing Technology (ODICON)*, 2022, pp. 1-6.

[21] **K. Paul** and P. Dalapati, **"Optimal Rescheduling of Real Power to Mitigate Congestion Using Elephant Herd Optimization,"** in *Intelligent Computing in Control and Communication*, ed: Springer, 2021, pp. 105-115.

[22] P. Dalapati and **K. Paul**, **"Optimal scheduling for delay management in railway network using hybrid bat algorithm,"** in *Intelligent Computing in Control and Communication*, ed: Springer, 2021, pp. 91-103.

[23] **K. Paul**, N. Kumar, and D. Hati, **"Congestion Management Based on Real Power Rescheduling Using Moth Flame Optimization,"** in *Recent Advances in Power Systems*, ed: Springer, 2021, pp. 365-376.

[24] **K. Paul**, P. Arvind, K. Yadav, and J. Kumar, **"Economic Power Wheeling Using MW-MILE Method Through Gravitational Search Algorithm,"** in *Recent Advances in Power Systems*, ed: Springer, 2021, pp. 521-530.

[25] **K. Paul** and N. Kumar**, "A review on some aspects of transmission pricing in power system network,"** in *2017 6th International Conference on Computer Applications In Electrical Engineering-Recent Advances (CERA)*, 2017, pp. 175-180.

[26] **K. Paul**, K. Yadav, and N. Kumar, **"Application of gravitational search algorithm to analyse economic load dispatch in power system network,"** in *2016 IEEE 7th Power India International Conference (PIICON)*, 2016, pp. 1-6.

Administrative Position Held

Sl. No.	Position Held	Duration	
		From	To
1.	Class coordinator (Final Year)	12/10/2021	Present
2.	Assistant Central time table Incharge	23/11/2022	Present
3.	Departmental Gate co-ordinator	4/8/2020	09/02/2023
4.	Assistant Warden	04/08/2018	03/08/2019
5.	MIS Co-coordinator	06/06/2019	05/06/2021
6.	Assistant Professor In-charge Power System Lab	14/09/2018	28/04/2022
7.	Assistant Professor In-charge Electrical Machine Lab	14/09/2018	28/04/2022
8.	Assistant Professor In-charge Electrical Energy and Switch Gear Lab	14/09/2018	28/04/2022

9.	Assistant Professor In-charge Basic Electrical Engineering Lab	28/04/2022	31/03/2023
10	Theory and Sessional marks Upload and Tabulation (College and University Level))	15/10/2022	6/08/2023

Extra Curricular Activities

- Active participant of cultural activities was an organizer of SURGE 2011, organized by Mexperts PG Society, National Institute of Technology, Kurukshetra held on 4th to 6th March 2011.
- Playing Guitar.
- Successfully completed 6th year in Painting with 1st class and distinction from Nikhil Bharat Sangeet Samity, Kolkata in 2010.
- Participation in Social services like Help-Age India for creating awareness and assistance in raising funds for the care of elderly.

For Reference:

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Declaration

I Kaushik Paul hereby declare that the details provided above are true and best of my knowledge.

Kaushik Paul

Signature