

# AFROZ ALAM

Department of Electrical Engineering,  
HBTU, Kanpur.  
Email:[afroz@hbtu.ac.in](mailto:afroz@hbtu.ac.in)  
DoB : January 9, 1984

## CARRIER HIGHLIGHTS

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- 9 years' experience in teaching Electrical Engineering courses at UG and PG levels.
- 2 years industrial experience with the clients of GE, Global Research Centre, Bangalore.
- Convener and resource person of various workshops and faculty development programs.

## EDUCATION

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Ph.D.	Indian Institute of Technology Roorkee (Thesis title: Optimal Placement of Protective Devices in Distribution System)	2018
M.Tech.	Indian Institute of Technology Roorkee	2011 ( <b>First Rank</b> )
B.Tech.	Aligarh Muslim University	2008
Intermediate	Aligarh Muslim University	2001
Matriculation	Bihar Board	1999

## HONORS AND AWARDS

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<b>First position</b> in M.Tech at IIT Roorkee.	2009 - 2011
<b>Electro Steel Award</b> of Rs.10,000/- for "Best M.Tech Dissertation" at IIT Roorkee.	(IITR Annual Convocation, 12 <sup>th</sup> November 2011).
<b>Hydro Award</b> of Rs.10,000/- for securing highest CGPA in M.Tech second year at IIT Roorkee.	(IITR Annual Convocation, 12 <sup>th</sup> November 2011).
<b>Bihar Hydro Award</b> of Rs.10,000/- for securing highest CGPA in M.Tech first year at IIT Roorkee.	(IITR Science day function, 28 <sup>th</sup> February 2011).
<b>Technology Excellence Award 2012</b> , by QuEST Global Engineering Pvt Ltd, Bangalore.	Bangalore, 2012
Letter of appreciation from the superintendent of examination, Z.H.C.E.T., AMU, for developing examination software.	December, 2018

## TEACHING EXPERIENCE

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- Assistant Professor,** June, 2022 – till date  
Department of Electrical Engineering,  
HBTU, Kanpur.
- Assistant Professor,** Sept., 2016 – June, 2022  
Department of Electrical Engineering,  
ZHCET, AMU, Aligarh.
- Assistant Professor,** January, 2008 - July, 2009  
Aligarh College of Engineering &  
Technology, Aligarh.

## INDUSTRIAL EXPERIENCE

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- Engineer,** July, 2011 - July, 2013  
Quality Engineering and Software Technologies  
Pvt. Ltd., Bangalore.  
Clients: GE (General Electric),  
Global Research Centre (JFWTC).

## ACADEMIC SERVICES

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- **Session Chair** in the “3<sup>rd</sup> International Conference on Emerging Frontiers in Electrical and Electronic Technologies (ICEFEET 2023)”, Dec. 21-22, 2023, organized by Department of Electrical Engineering, NIT Patna, India.
- **Session Chair** in the “International Conference on Power, Instrumentation, Energy & Control (PIECON 2023)”, Feb. 10-12, 2023, organized by Department of Electrical Engineering, AMU, Aligarh, India.
- **Session Chair** in the “2<sup>nd</sup> International Conference on Emerging Frontiers in Electrical and Electronic Technologies (ICEFEET 2022)”, June 24-25, 2022, organized by Department of Electrical Engineering, NIT Patna, India.
- **Convener** in the one week training program on “Nature Inspired Optimization Techniques and Research Paper Writing using Latex Software”, March 16-22, 2017, Department of Electrical Engineering, Z. H. College of Engineering & Technology, AMU, Aligarh.
- **Resource person** in the one week training program on “Nature Inspired Optimization Techniques and Research Paper Writing using Latex Software”, March 16-22, 2017, Department of Electrical Engineering, Z. H. College of Engineering & Technology, AMU, Aligarh.
- **Resource person** in 6 Days Online National Level STTP on “Recent Advances and Applications of IOT in Renewable Energy Technologies”, Dec. 20-25, 2021, Anjuman-i-Islam’s M. H. Saboo Siddik Polytechnique, Byculla, Mumbai.

- **Resource person** in AICTE Training And Learning (ATAL) academy online elementary FDP on "Advanced MATLAB for Scientific Computing" Sept. 13-17, 2021, University Polytechnic, AMU, Aligarh.
- **Resource person** in the one week Faculty Development Program on "Genetic Algorithm Based Optimization", jointly organized by Dept. of Electrical Engineering, Integral University Lucknow, Dept. of Electrical Engineering, NIT Patna, Electronics and ICT Academy, NIT Patna & HRDC, Integral University Lucknow, Sept. 24-28, 2018, Integral University Lucknow, India.
- **Coordinator** of the **Spotlight Event** (Technical paper presentation program), Cognizance 2010, March 26-28, 2010, IIT Roorkee.
- **Organiser** of the **JUMBISH 2005** (Annual Common Room Championship 2005), February 26-March 03, 2005, V.M. Hall, AMU, Aligarh.
- **Member**, CDC (curriculum development committee), Department of Electrical Engineering, AMU, Aligarh, 2021.
- **Coordinator** of the 3-days lectures series on "Innovation and research methodologies", July 23-25, 2018, Department of Electrical Engineering, AMU, Aligarh.

## PROJECT/DISSERTATION SUPERVISION

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### **M.Tech. Dissertations Supervised:**

- Optimal allocation of distributed energy resources in distribution system [Awarded, 2018].
- Reliability worth analysis of a radial distribution system [Awarded, 2019].
- Improvement of reliability indices of a radial distribution system [Awarded, 2019].
- Development of a multilevel converter with selective harmonic elimination technique [Awarded, 2019].
- Smart PV on-grid inverter with advanced measurement and control [Awarded, 2020].
- Voltage stability based DG allocation in distribution system [Awarded, 2020].
- Optimal placement of protective devices in distribution systems [Awarded, 2021].
- Grid interfaced solar water pumping system [Awarded, 2022].
- Intentional islanding in a DG integrated self-healing grids [Awarded, 2022].
- Detection of fault inception in low voltage DC micro-grid [Awarded, 2022].
- Identification of fault location in low voltage DC micro-grid [Awarded, 2022].

### **B.Tech. /B.E. projects Supervised:**

- Sizing and siting of small scale generation in a radial distribution system for power loss minimization [Awarded, 2018].
- Distributed generation placement in distribution system [Awarded, 2018].
- Reliability improvement of radial distribution system [Awarded, 2019].

- Reliability improvement of distribution systems considering parameter uncertainties [Awarded, 2019].
- Integration of renewable energy sources with the distribution system [Awarded, 2020].
- Reliability enhancement of distribution systems using various optimization techniques [Awarded, 2020].
- Meta-heuristic optimization techniques used for maximum power point tracking in solar PV system [Awarded, 2021].
- Economic operation of a thermal power plant [Awarded, 2021].
- Maximum power point tracking in solar PV systems [Awarded, 2022].
- Reliability improvement of a radial distribution system [Awarded, 2023].
- Power loss minimization in a radial distribution system [Awarded, 2023].

## JOURNAL PUBLICATIONS

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- **A. Alam**, V. Pant and B. Das, "Optimal placement of protective devices and switches in a radial distribution system with distributed generation", **IET Generation, Transmission & Distribution**, vol. 14, no. 21, pp. 4847-4858, 2020, (ISSN: 1751-8695, Impact Factor = 2.862).
- **A. Alam**, M. N. Alam, V. Pant and B. Das, "Placement of protective devices in distribution system considering uncertainties in loads, temporary and permanent failure rates and repair rates", **IET Generation, Transmission & Distribution**, vol. 12, no. 7, pp. 1474–1485, 2018, (ISSN: 1751-8695, Impact Factor = 2.862).
- **A. Alam**, V. Pant and B. Das, "Switch and recloser placement in distribution system considering uncertainties in loads, failure rates and repair rates", **Electric Power Systems Research**, vol. 140, pp. 619-630, 2016, (ISSN: 0378-7796, Impact Factor = 3.414).
- A. Sarwar, M. Siddique, M. Saad, **A. Alam** and N. M. Shah, "Dual asymmetrical dc voltage source based switched capacitor boost multilevel inverter topology", **IET Power Electronics**, vol.13, no. 7, pp. 1481-1486, 2020, (DOI: 10.1049/iet-pel.2019.1567, ISSN: 1755-4543, Impact Factor = 2.672).
- **A. Alam**, M. Tariq, M. Zaid, P. Verma, M. Alsultan, S. Ahmad, A. Sarwar and M. A. Hossain, "Optimal Placement of Reclosers in a Radial Distribution System for Reliability Improvement", **Electronics**, vol. 10, no. 24, pp. 3182, 2021 (ISSN: 2079-9292, DOI: <https://doi.org/10.3390/electronics10243182>, Impact Factor = 2.408).
- **A. Alam**, P. Verma, M. Tariq, A. Sarwar, B. Alamri, N. Zahra and S. Urooj, "Jellyfish Search Optimization Algorithm for MPP Tracking of PV System", **Sustainability**, vol. 13, no. 21, pp. 11736, 2021, (ISSN: 2071-1050, DOI: <https://doi.org/10.3390/su132111736>, Impact Factor = 3.473).
- N. I. Siddiqui, **A. Alam**, L. Quayyoom, A. Sarwar, M. Tariq, H. Vahedi, S. Ahmad and A. S. N. Mohamed, "Artificial Jellyfish Search Algorithm-Based Selective Harmonic

- Elimination in a Cascaded H-Bridge Multilevel Inverter”, **Electronics**, vol. 10, no. 19, pp. 2402, 2021 (ISSN: 2079-9292, DOI: <https://doi.org/10.3390/electronics10192402>, Impact Factor = 2.408).
- P. Verma, **A. Alam**, A. Sarwar, M. Tariq, H. Vahedi, D. Gupta, S. Ahmad and A. S. N. Mohamed, “Meta-Heuristic Optimization Techniques Used for Maximum Power Point Tracking in Solar PV System”, **Electronics**, vol. 10, no. 19, pp. 2419, 2021 (ISSN: 2079-9292, DOI: <https://doi.org/10.3390/electronics10192419>, Impact Factor = 2.408).
  - I. Pervez, A. Sarwar, **A. Alam**, R. K. Chakraborty and M. J. Ryan, “An MPPT method using hybrid radial movement optimization with teaching-learning based optimization under fluctuating atmospheric conditions”, **Journal of Intelligent & Fuzzy Systems**, vol. 42, no. 2, pp. 807-816, 2022, (DOI: <https://doi.org/10.3233/JIFS-189750>, ISSN:10641246, 18758967, Impact Factor = 1.737).
  - M. Anas, A. Sarwar, A. Ahmad, **A. Alam**, S. Ahmad, M. Sharaf, M. Zaindin and Muhammad Firdausi, “Generalized Structures for Switched-Capacitor Multilevel Inverter Topology for Energy Storage System Application”, **Appl. Sci.**, vol.11, no. 3, pp. 1319, 2021,(ISSN: 2076-3417, DOI: <https://doi.org/10.3390/app11031319>, Impact Factor = 2.679).

## CONFERENCE PUBLICATIONS

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- Wajahat Hussain, **Afroz Alam**, Sheeraz Kirmani, “Detection of Fault Inception in a Low Voltage DC Microgrid using Current Differential Protection Method”, 2023 International Conference on Recent Advances in Electrical, Electronics & Digital Healthcare Technologies (REEDCON), New Delhi, India, 01-03 May 2023, (DOI: [10.1109/REEDCON57544.2023.10150928](https://doi.org/10.1109/REEDCON57544.2023.10150928)).
- **Afroz Alam**, Abdul Suboor, F. Rais Khan and M. Tahmid Hussain, “Optimal Placement of Faulted Circuit Indicators in Radial Distribution Systems”, 2022 2<sup>nd</sup> International Conference on Emerging Frontiers in Electrical and Electronic Technologies (ICEFEET), NIT Patna, India, June 24-25, 2022, (DOI: [10.1109/ICEFEET51821.2022.9848392](https://doi.org/10.1109/ICEFEET51821.2022.9848392)).
- Abdul Suboor, F. Rais Khan, M. Tahmid Hussain and **Afroz Alam**, “Optimal Placement of Reclosers in Radial Distribution Systems”, 2022 IEEE Silchar Subsection Conference (SILCON), NIT Silchar, India, November 04-06, 2022, (DOI: [10.1109/SILCON55242.2022.10028910](https://doi.org/10.1109/SILCON55242.2022.10028910)).
- **Afroz Alam**, Mohammad Zaid, Neha Sabeel and Adil Sarwar, “A New Optimal Automation Strategy with Profit-based Optimization Model”, 2020 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES), MNIT Jaipur, India, Dec. 16-19, 2020, (DOI: [10.1109/PEDES49360.2020.9379400](https://doi.org/10.1109/PEDES49360.2020.9379400)).
- Mohammad Zaid, Javed Ahmad, Adil Sarwar, Zeeshan Sarwer, Mohd Tariq and **Afroz Alam**, “A Transformerless Quadratic Boost High Gain DC-DC Converter”, 2020 IEEE

- International Conference on Power Electronics, Drives and Energy Systems (PEDES), MNIT Jaipur, India, Dec. 16-19, 2020, (DOI: 10.1109/PEDES49360.2020.9379778).
- Abhishek Srivastava, **Afroz Alam**, Mohd Albash, Aman Gupta, Vishal Kumar and Mohammad Zaid, "Reliability Enhancement of a Distribution System Using Genetic Algorithm", 2020 IEEE 7th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON), MNNIT Allahabad, Prayagraj, India, Nov. 27-29, 2020, (DOI: 10.1109/UPCON50219.2020.9376555).
  - Shahrukh Khan, Mohammad Zaid, Arshad Mahmood, Javed Ahmad and **Afroz Alam**, "A Single Switch High Gain DC-DC converter with Reduced Voltage Stress", 2020 IEEE 7th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON), MNNIT Allahabad, Prayagraj, India, Nov. 27-29, 2020, (DOI: 10.1109/UPCON50219.2020.9376578).
  - Neha Sabeel, **Afroz Alam** and Mohammad Zaid, "Feeder Automation based Strategy for Reliability Enhancement of Radial Distribution Systems", IEEE International Conference on Power Electronics, Control and Automation (ICPECA-2019), JMI, New Delhi, India, Nov. 16-17, 2019, (DOI: 10.1109/ICPECA47973.2019.8975592).
  - Ayesha Sultana, **Afroz Alam** and Mohammad Zaid, "A new model for optimal deployment of remote controlled switches in a radial distribution system using mixed-integer non-linear programming", IEEE International Conference on Electrical, Electronics and Computer Engineering (UPCON 2019), AMU, Aligarh, UP, India, Nov. 8-10, 2019, (DOI: 10.1109/UPCON47278.2019.8980106).
  - Anzar Ahmad, Mu Anas, Adil Sarwer, Mohammad Zaid, **Afroz Alam** and Zeeshan Sarwer, "Realization of an asymmetric Switched-Capacitor Multilevel Inverter using Nearest Level Control", IEEE 2nd International Conference on Power Energy, Environment and Intelligent Control (PEEIC 2019), G. L. Bajaj Inst. of Technology and Management Greater Noida, U. P., India, pp. 522-527, Oct 18-19, 2019, (DOI: 10.1109/PEEIC47157.2019.8976603).
  - Hira Sultan, Shahid Junaid Ansari and **Afroz Alam**, Salman Khan, Mustufa Sarwar, Mohammad Zaid, "Reliability Improvement of a Radial Distribution System with Recloser Placement", IEEE International Conference on Computing, Power and Communication Technologies (GUCON 2019), Galgotias University Greater Noida, UP, India, pp. 736-741, Sept. 27-28, 2019, (INSPEC Accession Number: 19276292).
  - Mohammad Zaid, **Afroz Alam**, Zeeshan Sarwer and Umair Shahajhani, "Optimal Allocation of Distributed Energy Resources in a Distribution System", IEEE International Conference on Innovations in Power and Advanced Computing Technologies (i-PACT), VIT Vellore, India, pp. 1-6, March 22-23, 2019, (DOI: 10.1109/i-PACT44901.2019.8959995).
  - M M Kamal, Imtiaz Ashraf, E. Fernandez and **Afroz Alam**, "Resource Allocation, Utilization and Feasibility Study of a Rural Microgrid", IEEE International Conference on Electrical, Electronics and Computer Engineering (UPCON 2019), AMU, Aligarh, UP, India, Nov. 8-10, 2019, (DOI: 10.1109/UPCON47278.2019.8980228).

- **Afroz Alam**, Bushra Zaheer and Mohammad Zaid, "Optimal Placement of DG in Distribution System for Power Loss Minimization and Voltage Profile Improvement", IEEE, International Conference On Computing, Power and Communication Technologies (GUCON 2018), Galgotias University Greater Noida, UP, India, pp. 846-852, 28th & 29th September, 2018, (DOI: 10.1109/GUCON.2018.8674930).
- **Afroz Alam**, Mohammad Zaid, Abhishek Gupta, Parth Bindal and Aiman Siddiqui, "Power Loss Reduction in a Radial Distribution System with Distributed Generation", IEEE International Conference On Computing, Power and Communication Technologies (GUCON 2018), Greater Noida, UP, India, 28th & 29th September, 2018, (DOI: 10.1109/GUCON.2018.8674942).
- **Afroz Alam**, Abhishek Gupta, Parth Bindal, Aiman Siddiqui and Mohammad Zaid, "Power loss minimization in a radial distribution system with distributed generation", IEEE international conference on Power, Energy, Control and Transmission Systems-2018 (ICPECTS'18), Sai Ram Engineering College, West Tambaram, Chennai, Tamilnadu, India, pp. 21-25, Feb. 22-23, 2018, (DOI: 10.1109/ICPECTS.2018.8521619).
- Md Farman, Salman Ahmad, **Afroz Alam** and M. P. Sharma, "Chemical analysis of insulator contaminants and reliability improvement of T&D line for smart operation of grid under chemically polluted environment", Sustainable energy and intelligent systems international conference (SEISCON-2011), Dr M.G.R University, Maduravoyal, Chennai (Tamil Nadu), India, pp. 539-544, July 20-22, 2011, (DOI: 10.1049/cp.2011.0420).
- **Afroz Alam** and D. K. Khatod, "Reconfiguration of Radial Distribution Network with Distributed Generation using Genetic Algorithm". International Conference on Emerging Green Technologies (ICEGT 2011), Periyar Maniammai University, Thanjavur, Tamil Nadu, India, pp. 245-247, July 27-30, 2011.
- **Afroz Alam**, Md Farman and D. K. Khatod, "Reconfiguration of Radial Distribution Network for Loss Reduction with Distributed Generation", National Conference on Power and Energy System, (NCPES-2011), University College of Engineering, RTU, Kota, Rajasthan, India, pp. 161-164, April 23-24, 2011.
- Md Farman, **Afroz Alam** and M. P. Sharma, "Off-Grid Hybrid Energy System for Rural Electrification", National Conference on Power and Energy System,(NCPES-2011), University College of Engineering, RTU, Kota, Rajasthan, India, pp. 51-57, April 23-24, 2011.

## BOOK CHAPTER

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- **Afroz Alam**, Mohammad Zaid, Umair Shahajhani, and Adil Sarwar, "Improvement of Voltage Stability Margin in a Radial Distribution System". Renewable Power for Sustainable Growth. Lecture Notes in Electrical Engineering, Springer, Singapore, vol 723 , pp. 459-466, 2020 (DOI:[https://doi.org/10.1007/978-981-33-4080-0\\_44](https://doi.org/10.1007/978-981-33-4080-0_44) Online ISBN: 978-981-33-4080-0).

## EDITOR RESPONSIBILITIES

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- Editor of “Andalasian International Journal of Applied Science, Engineering, and Technology”. <https://aijaset.lppm.unand.ac.id/index.php/aijaset/about/editorialTeam?fbclid=IwAR1TT3NZac4Fc4fjBtsd-KyLu6qZZH9QtAOrIN0brtCGb9Z2YbGyBWrAepI>
- Editor of “Journal of Renewable Energy, Electrical & Computer Engineering”. <https://ojs.unimal.ac.id/index.php/jreece/about/editorialTeam>

## REVIEWER RESPONSIBILITIES

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- IEEE Transactions on Smart Grid
- International Transactions on Electrical Energy Systems
- IET Generation, Transmission & Distribution
- IET Renewable Power Generation
- IEEE Access

## MEMBERSHIP

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- IEEE Member: 95517638

## INDUSTRIAL PROJECTS UNDERTAKEN

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**Project 1: Development of standalone tool for parameter optimization of the higher order differential model.**

**Tools** : MATLAB, GUIDE, Optimization Toolbox

**Project Summary:**

A set of coupled differential equations or a simple set of algebraic equations will be available. A set of x-y data will also be available. If reasonable bounds for the parameters are specified, then the tool will explore the entire space within the bounds and will arrive at the optimal set. Alternatively, an intelligent search protocol based on Levenberge Marquardt was implemented that obviates the necessity to explore the entire specified space. If such bound are not available, then the tool will use an algorithm that starts from any random guess and arrive at the optimal set of parameters.

**My Role:**

- Algorithm development
- Coding based on requirement
- GUI design
- Documentation



**Team Size:** 3

**Client** : GE, Global Research Centre, Bangalore.

**Project 2: Algorithm development in MATLAB for performance analysis of different components of Heat Recovery Steam Generator (HRSG) for life estimation.**

**Tools** : MATLAB, GUIDE

**Project Summary:**

Scope of the work included monitoring and diagnosis of HRSG components which involves the development of scripts and functions in the MATLAB environment for the analytical purpose of the HRSG components.

**My Role:**

- Coding based on requirement
- GUI design
- Documentation

**Team Size:** 2

**Client** : GE, Global Research Centre, Bangalore.

**Project 3: Algorithm development in MATLAB for performance analysis of different components of gas turbines for life estimation.**

**Tools** : MATLAB

**Project Summary:**

Scope of the work included development of scripts and functions in the MATLAB environment for the analysis purpose of the various components of the running gas turbines from the biweekly data obtained from the Monitoring and Diagnosis department of GE.

**My Role:**

- Coding for data analysis
- Detection of 'Water wash' for different running models of GE gas turbines

**Team Size:** 6

**Client** : GE, GE Energy, Bangalore.

**SHORT BIOGRAPHY**

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Dr. Afroz Alam received the Ph.D degree in Power System from Indian Institute of Technology Roorkee, India in 2018. He is Assistant Professor in the Department of Electrical Engineering, HBTU Kanpur, India with over 10 years of teaching and industrial experience. He is also editorial board member of “Andalasian International Journal of Applied Science, Engineering, and Technology” and “Journal of Renewable Energy, Electrical & Computer Engineering”. He has published more than 30 papers in reputed journals, national and international conferences. He has supervised 11 M.Tech dissertations and 12 B.Tech projects. He got first rank during his M.Tech and received “Electro Steel Award’ and “Hydro Award”. His research interests include optimization, distribution system reliability and distributed generation.