Dr. Kapil Chauhan

Member, IEEE

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Employment

- Assistant Professor, Department of Electrical Engineering, **Motilal Nehru National Institute of Technology Allahabad, Uttar Pradesh,** August 2023 onward.
- Assistant Professor, Department of Electrical Engineering, **National Institute of Technology Calicut, Kerala,** July 2023- August 2023.
- Postdoctoral Research Fellow, **Nanyang Technological University Singapore,** 2023
- Institute Postdoctoral Fellow, **Indian Institute of Technology Bombay,** 2022

Education

- PhD, Electrical Engineering (Power Systems), **Indian Institute of Technology Ropar**, 2021.
- M.Tech, Power Systems, **National Institute of Technology Hamirpur,** 2016
- B.Tech, Electrical & Electronics Engineering, **Dr APJ Abdul Kalam Technical University, Uttar Pradesh,** 2014.

Research Expertise/ Interest

- Wide-Area Measurement Systems (WAMS), Synchrophasor measurements, Application of Machine-Learning in Power Systems, Topological and Numerical Observability of Power Systems, Distributed Energy Resources Management System (DERMS)

Teaching Experience

- At MNNITA: Network and Systems, Optimization Techniques,
- At NITC: Power Systems-I, Application of Signal Processing for Power Systems.
- At IIT Ropar: Principle of Electrical Engineering, Power Systems, Simulation and Analysis of Modern Power Systems, Electrical Machinery, Real-Time Digital Simulation (RTDS) Lab Development.

Skills

- **Programming Language:** MATLAB, C/C++, Python.
- **Simulation Software:** MATLAB-SIMULINK, PSCAD, RSCAD, DSA (PSAT, TSAT), OpenDSS
- **Hardware:** RTDS, DS1104, SELPMU-451, SEL-2404, Doble-F6350e, WAMSTER PMU.
- **Document:** Latex, MS, PowerPoint, Visio

Honors And Awards

1. **AWSAR DST Award- 2022** for Augmenting Writing Skills for Articulating Research (AWSAR) by Department of Science and Technology (DST), Government of India. (PostDoc Category)
2. **POSOCO Power System Award- 2021** for the PhD thesis by POwer Systen Operation and COrporation (POSOCO) Limited, Government of India.
3. **AWSAR DST Award- 2020** for Augmenting Writing Skills for Articulating Research (AWSAR) by Department of Science and Technology (DST), Government of India. (PhD Category)
4. **MHRD Fellowship** for M.Tech and PhD studies.
5. **Samman Prateek *(Symbol of Honor)*-2016** on golden jubilee of high school.
6. **GATE- 2014** qualified, 97.82 percentile.
7. **Project Award- 2013** for B.Tech project.
8. **Academic Excellence Award- 2011** for the excellent performance in the institute during B.Tech.
9. **Prithivi Mitr *(friend of earth)* Award- 2008** by Earth Matters Foundation New Delhi.

Publications

- **Journals**

1. **K. Chauhan**, M. V. Reddy and R. Sodhi, ”A Novel Distribution-Level Phasor Estimation Algorithm Using Empirical Wavelet Transform,” in IEEE Transactions on Industrial Electronics, vol. 65, no. 10, pp. 7984-7995, Oct. 2018, doi: 10.1109/TIE.2018.2801837.
2. **K. Chauhan** and R. Sodhi, ”Placement of Distribution-Level Phasor Measurements for Topological Observability and Monitoring of Active Distribution Networks,” in IEEE Transactions on Instrumentation and Measurement, vol. 69, no. 6, pp. 3451-3460, June 2020, doi: 10.1109/TIM.2019.2939951.
3. **K. Chauhan** and R. Sodhi, ”A distribution-level PMU enabled Teager-Kaiser energy based islanding detector” , Elsevier, Electric Power Systems Research, Volume 192,2021,106964, ISSN 0378-7796.
4. **K. Chauhan** and R. Sodhi,”A signal Parameter Measurement Technique for Adversely Distorted Multi-Frequency Grid Signals,” Springer, J. Inst. Eng. India Ser. B 102, 927–938, 2021.
5. V. Veerasamy, H. Qiu, A. M. Y. M. Ghias, **K. Chauhan**, H. D. Nguyen and H. B. Gooi, ”Federated-Learning-Based Distributed Frequency Control Against False Data Injection Attack,” in IEEE Transactions on Industrial Electronics, doi: 10.1109/TIE.2023.3325582.
6. **K. Chauhan**, J. Moirangthem, S. Ly, L. M. Koh and H. D. Nguyen, ”Stochastic Day-Ahead Scheduling of Distributed Energy Resources: A Meta Modelling Approach,” in IEEE Journal of Emerging and Selected Topics in Industrial Electronics, doi: 10.1109/JESTIE.2023.3332573.

- **Conference**

1. **K. Chauhan** MV Reddy and R. Sodhi, ”A Novel Frequency Estimator for Adversely Distorted Grid Signals,” 2018 International Symposium on Industrial Electronics (INDEL), Banja Luka, Bosnia and Herzegovina.
2. **K. Chauhan** and R. Sodhi, ”Distribution-Level Synchrophasors Estimation,” 2018 20th National Power Systems Conference (NPSC), NIT Tiruchirappalli, India.
3. **K. Chauhan** and R. Sodhi, ”A Comparative Analysis of µPMU Placement for Active Distribution Network’s Observability,” 2019 8th International Conference on Power Systems (ICPS), MNIT Jaipur, India.
4. **K. Chauhan** and R. Sodhi, ”A Robust State Estimation Framework for Active Distribution Network with Distribution-Level PMUs,” 2020 IEEE Power Energy Society General Meeting (PESGM), Montreal, Canada.
5. **K. Chauhan** and R. Sodhi, ”Advancements in Microgrid Voltage Control Schemes,” 2020 21st National Power Systems Conference (NPSC), IIT Gandhinagar, India.
6. **K. Chauhan** and R. Sodhi,”A novel Centralized Islanding Scheme using Teager-Kaiser Energy of Distribution-level Synchrophasors”, IEEE Energy Conversion Congress Exposition (ECCE) 2021, Singapore.
7. K.K. Gajjar, **K. Chauhan**, A.M. Kulkarni, ”Controller-Hardware-in-the-Loop simulation setup using a Real-Time Hybrid Simulator for Testing of Wide-area Damping Controllers”, 2022 22st National Power Systems Conference (NPSC), IIT Delhi, India.
8. **K. Chauhan**, M Pandit, R Sodhi, H.D. Nguyen, ”Synchrophasor Measurement Assisted Control Framework for Voltage Rise Mitigation in Active Distribution Networks, IEEE 10th Power India International Conference 2022, NIT Delhi, India.
9. L.Sel, **K. Chauhan**, G.H. Beng, and H.D. Nguyen, ”A Novel Quantile Lite-PCE for Probabilistic Risk Assessment of Power System Cascading Outage for N-1-1 Contingency Analysis”, IEEE PES General Meeting-2023.

Other Certifications

- ”Blockchain Technology and Application” Organized by Department of Computer Science, IIT Ropar, under ATAL Faculty Development Programme, 11-15 Jan 2021.
- ”Blockchain Basics” by University at Buffalo, The State University of New York through Coursera, Nov 2020
- ”Statistical Techniques for AI and Data Science” Organized by Indo-Taiwan Joint Research Centre on AI ML, IIT Ropar, Dec 2019.
- ”Integration of Electronically-Coupled Energy Resources and Apparatus in Electrical Power Systems” delivered by Prof Reza Iravani (University of Toronto Canada) at IIT Bhubaneswar, Feb 2018.

Professional Services

- Expert talk on “Integrated Power System for Research Prospective”, at Vellore Institute of Technology Andra Pradesh, 22-Dec-22
- Expert talk on ”Microgrids: Enabling Localized Sustainable Energy Solutions” in Faculty Development Programme of Invertis University Bareilley, 20-July-23

Volunteer Services

- **Reviewer:** IEEE Transaction on Smart Grid/ Instrumentation and Measurement/ Power Electronics/ Industrial Electronics, IET, Elsevier, Springer Nature, International Conferences such as GM PES, NPSC, ICPS.
- **Member of conference organizing committee:** IEEE ICPS -2021 @ IIT Kharagpur, 15th IEEE ICIIS 2020 @IIT Ropar, 13th IEEE ICIIS - 2018 @IIT Ropar, IEEE CATCON- 2017 @IIT Ropar.
- **IEEE Committee** Task Force on Behind-The-Meter Distributed Energy Resources: Estimation, Uncertainty Quantification, and Control

Referees

- **Prof. Ranjana Sodhi** *(PhD Supervisor)*, Associate Professor, Department of EE, Indian Institute of Technology Ropar, email: rsodhi@iitrpr.ac.in
- **Prof. Anil M Kulkarni** *(Postdoc Supervisor)*, Department of EE, Indian Institute of Technology Bombay, Mumbai, email: anil@iitb.ac.in
- **Prof. B S Rajpurohit**, School of Computing and Electrical Engineering, Indian Institute of Technology Mandi, email: bsr@iitmandi.ac.in
- **Prof. J S Sahambhi**, Department of EE, Indian Institute of Technology Ropar, email: jsahambi@iitrpr.ac.in