

# Anamitra Pal

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## EDUCATION

**PhD**, Electrical Engineering (May'14), Virginia Tech, USA. (CGPA: 4.00/4.00)

- **Title:** PMU-based applications for improved monitoring and protection of power systems
- **Advisor:** Dr. James S. Thorp (Email: [jsthorp@vt.edu](mailto:jsthorp@vt.edu))

**M.S.**, Electrical Engineering (Feb'12), Virginia Tech, USA. (CGPA: 4.00/4.00)

- **Title:** Coordinated Control of Inter-area Oscillations using SMA and LMI
- **Advisor:** Dr. James S. Thorp (Email: [jsthorp@vt.edu](mailto:jsthorp@vt.edu))

**B. E.**, Electrical & Electronics Engineering (May'08), Birla Institute of Technology (BIT) Mesra, India. (CGPA: 8.57/10.00)

- Awarded **Gold Medal** for achieving highest GPA in Electrical Engineering
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## ACADEMIC EXPERIENCE

**Assistant Professor**, School of Electrical, Computer, and Energy Engineering, Arizona State University, Tempe, Arizona. (Aug' 16 – Present)

- Discover innovative applications of wide-area measurement system (WAMS)
- Design resilient critical infrastructures
- Analyze effects of increased penetration of renewable energy on the smart grid
- Teach junior-level (Energy Systems and Power Electronics), senior-level (Power System Analysis), and graduate-level (WAMS-based Applications in Power Systems) courses

**Applied Electrical and Computer Scientist**, Network Dynamics and Simulation Science Laboratory (NDSSL), Virginia Bioinformatics Institute (VBI), Virginia Tech. (Jul'14 – Jul'16)

- Modeled dynamic behavior of power system in response to catastrophic events
- Designed efficient and accurate energy demand model for modern cities based on a synthetic population database

**Instructor**, Virginia Tech. (Jan'14 – May'14)

- Taught Electrical Theory to 120+ students from Non-Electrical Majors

**Graduate Research Assistant**, Virginia Tech. (Jan'11 – May'12, Jan'13 – May'14)

- **Research Area:**
  - PMU-based Applications in Power Systems
- **Research Projects:**
  - Damping Low Frequency Oscillations in the WECC (funded by California Energy Commission's Public Interest Energy Research Program – Jan'11 to Oct'11)
  - Dynamic Power System State Estimator using Synchrophasor Measurements (funded by Lockheed Martin Corporation – Nov'11 to May'12)
  - Synchrophasor Data Conditioning and Validation (funded by Lawrence Berkeley National Laboratory – Jan'13 to May'14)

**Graduate Teaching Assistant**, Virginia Tech. (Aug'10 – Dec'10, Aug'12 – Dec'12)

- Validated experiments and graded students in Open Engineering Lab (Lab-in-a-box)

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## INDUSTRIAL EXPERIENCE

**Summer Intern, Electric Power Group, LLC**, Pasadena, California. (May'13 – Aug'13)

- Created model files for PGDA/RTDMS 2012 testing and training
- Performed base-lining studies (Analyzed causes of Outliers in two ISOs)

**Summer Intern, Electric Power Group, LLC**, Pasadena, California. (May'12 – Aug'12)

- Computed phasor alarm limits for SCE System
- Performed code-testing for RTDMS 2012 (Modemeter & Oscillation Detection modules)

**Manager (Electrical T&D), Tata Steel Ltd.**, Jamshedpur, India. (Jul'08 – Jun'10)

- Operationalize Transmission Security Management – a software developed by GE
- Perform contingency analysis for 6.8 MTPA Tata Steel Power System

**Summer Intern, Tata Steel Ltd.**, Jamshedpur, India. (May'07 – Jul'07)

- Studied back-up protection of a Thermal Power Plant so as to improve its reliability
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## FUNDED PROPOSALS

- As PI/Co-PI:
  - “Collaborative Research: High-dimensional Spatio-temporal Data Science for a Resilient Power Grid: Towards Real-time Integration of Synchrophasor Data” (**U.S. National Science Foundation**); Role: **Co-PI**; Share: 20% of USD 1.5M; 09/01/2019-08/31/2021.
  - “Sensor Enabled Modeling of Future Distribution Systems with Distributed Energy Resources” (**U.S. Department of Energy – Advanced Research Projects Agency-Energy (ARPA-E)**); Role: **Co-PI**; Share: 18% of USD 3.1M; 08/2019-07/22.
  - “Coupled Social and Infrastructure Approaches for Enhancing Solar Energy Adoption” (**U.S. Department of Energy**); Role: **PI** (sub-recipient); USD 61,982; 01/2017-12/2019.
  - “Machine Learning Approaches for Real-time Integration of Synchrophasor Data” (**Power Systems Engineering Research Center**); Role: **Co-PI**; USD 60,000; 07/2019-08/2021.
  - “Harnessing the Power of Artificial Intelligence (AI) for Transmission & Distribution Operations” (**Power Systems Engineering Research Center**); Role: **Co-PI**; USD 70,000; 07/2019-08/2021.
  - “Synchrophasor-Data Analytics for a More Resilient Electric Power System” (**Power Systems Engineering Research Center**); Role: **PI**; USD 80,000; 07/2017-08/2019.
  - “Identification of Utility-Scale Renewable Penetration Threshold for SRP in a Dynamic Setting” (**Salt River Project**); Role: **PI**; USD 57,200; 09/2019-08/2020.

- “A Systematic Approach to using Power Systems Signatures for Uniquely Identifying Failing Assets” (**Salt River Project**); Role: **PI**; USD 57,200; 09/2019-08/2020.
- “Three-phase Line Parameter Estimation for the Bulk Power System of SRP using PMUs” (**Salt River Project**); Role: **PI**; USD 57,200; 09/2018-08/2019.
- “Identifying Unique Power System Signatures for Determining Vulnerability of Critical Power System Assets” (**Salt River Project**); Role: **PI**; USD 57,200; 09/2018-08/2019.
- “Designing a Robust Voltage Support System (VSS) for SRP Transmission System” (**Salt River Project**); Role: **PI**; USD 57,200; 09/2018-08/2019.
- “PMU-based Online Monitoring of Critical Power System Assets” (**Salt River Project**); Role: **PI**; USD 52,800; 09/2017-08/2018.
- “Development of a Precise Line Impedance Estimation Tool for Transmission Lines Using Synchrophasor Measurements” (**Salt River Project**); Role: **PI**; USD 52,800; 09/2017-08/2018.
- “Relevant Transmission Reliability Metrics for SRP System” (**Salt River Project**); Role: **PI**; USD 52,800; 09/2017-08/2018.
- As Non-PI/Senior Personnel:
  - “Transformer Predictive Maintenance” (A joint research project done under the U.S.-Pakistan Centers for Advanced Studies in Energy (USPCAS-E) Program funded by **U.S. Agency for International Development**); USD 58,677; 07/2018-06/2019.
  - Exchange Scholar Program (Done under the U.S.-Pakistan Centers for Advanced Studies in Energy (USPCAS-E) Program funded **U.S. Agency for International Development**); USD 67,501; 07/2018-06/2019.
  - “SSDIM: Generation of Simulated and Synthetic Data for Interdependent Power and Communication Networks” (**U.S. National Science Foundation**); USD 31,500; 07/2017-10/2018.
  - “Research on Adaptive Control Strategy for the Power System Connected with Large-scale Renewable Energy Resource” (**Chinese National Science Foundation**)
  - “Synchrophasor Data Conditioning and Validation” (**U.S. Department of Energy**)

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## COURSES TAUGHT

- **Face-to-Face:**
  - EEE 598 – Wide Area Measurement System (WAMS)-Based Applications in Power Systems (Arizona State University)
  - EEE 471/591 – Power System Analysis (Arizona State University)
  - EEE 360 – Energy Systems and Power Electronics (Arizona State University)
  - ECE 3054 – Electrical Theory (Virginia Tech)

- **Online/Hybrid:**
  - EEE 360 – Energy Systems and Power Electronics (Arizona State University)

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## PROFESSIONAL TALKS

- **International Workshop on Critical Infrastructure Network Security (CINS):**  
Invited speaker at the 3<sup>rd</sup> International Workshop on CINS held in conjunction with ACM Sigmetrics on June 28, 2019.
- **The Atlantic Magazine:** Approached by The Atlantic Magazine to talk about the future prospects of Puerto Rico's electric grid after Hurricane Maria destroyed its built infrastructure. My comments were published on the September 30, 2017 issue of The Atlantic. [Online]. Available:  
[https://www.theatlantic.com/business/archive/2017/09/puerto-rico-hurricane/541641/?utm\\_source=feed](https://www.theatlantic.com/business/archive/2017/09/puerto-rico-hurricane/541641/?utm_source=feed)
- **Birla Institute of Technology & Science (BITS), Goa, India:** Delivered an invited lecture in Oct' 15 on synchrophasor measurement-based applications for damping power system oscillations.
- **New York ISO (NYISO):** Gave a talk at NYISO in Albany in Dec' 14 on phasor measurements and the role they play in modern power systems with a special emphasis on state estimation.
- **International Workshop on Synchrophasor Measurements for Smart Grid:**  
Delivered an invited lecture remotely (via-Skype) to the students of MVGR College of Engineering in Vizianagaram, India in Nov' 14.
- **Dominion Virginia Power (DVP):** Presented the results of my research on the synchrophasor data condition and validation project during a demonstration at the DVP office in Richmond, Virginia in Apr' 14.
- **North China Electric Power University (NCEPU):** Invited by NCEPU in Beijing for two weeks in Sep' 12 under Chinese Universities' Subject Innovation and Expert Invitation Project sponsored by the Chinese Ministry of Education and State Administration of Foreign Experts Affairs to give talks about my research.
- **University of California, Los Angeles (UCLA):** Visited the Smart Grid Energy Research Center (SMERC) at UCLA in Jul' 12 to talk about my work done at EPG as well as research done previously at Virginia Tech.
- **North American Synchro-Phasor Initiative (NASPI):** Presented results of my research done at Virginia Tech on Damping Low Frequency Oscillations at the Work Group meeting of NASPI in Feb' 12 in Orlando, Florida.

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## STUDENTS CURRENT/GRADUATED/MENTORED

- **Current Students**
  - Malhar Padhee (Ph.D.)
  - Reetam Sen Biswas (Ph.D.)

- Pooja Gupta (Ph.D.)
- Behrouz Azimian (Ph.D.)
- Antos C. Varghese (Ph.D.)
- John Patterson (M.S.)
- Hashem A M H S Albhrani (M.S.)
- Harish Chandrasekaran (M.S.)
- **Graduated Students**
  - Anubhav Nath (M.S.) – Software Development Engineer, Electric Power Group, LLC, in Pasadena, CA
  - Prashanth Kumar Mansani (M.S.) – Power Engineer at ETAP in Irvine, CA
  - Meghna Barkakati (M.S.) – Power Systems Engineer, GHD, Perth, Australia
- **Mentored Students**
  - Tamojit Chakraborty (Power Systems Dynamics Model Writer in Siemens PTI, Schenectady, NY)
  - Praneeth Varma Mudunuri (Transmission Planning Engineer II at Tucson Electric Power, Tucson, AZ)
  - Rajiv Jha (Indian Institute of Technology (IIT), Delhi, India)
  - Taufan Roekman (Arizona State University, USA)
  - Fareeha (University of Engineering & Technology (UET), Peshawar, Pakistan)
  - Shazmina Jamil (University of Engineering & Technology (UET), Peshawar, Pakistan)
  - Atif Naveed Khan (National University of Science & Technology (NUST), Islamabad, Pakistan)
  - Muhammad Nadeem (National University of Science & Technology (NUST), Islamabad, Pakistan)
  - Muhammad Zulqarnain Zeb (National University of Science & Technology (NUST), Islamabad, Pakistan)

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## PROFESSIONALS MENTORED

- Dr. Kashif Imran (Visiting Scholar from National University of Science & Technology (NUST), Islamabad, Pakistan; Spring 2019)
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## HONORS AND AWARDS

- Elevated to grade of **IEEE Senior Member** in November 2019
- **2019 Outstanding IEEE Young Professional Award** (IEEE Phoenix Section): In recognition “For Outstanding Education and Research Contributions to Critical Infrastructures and Network Security for Electric Power Systems”
- **2018 Young CRITIS Award**: Recognized for my contributions to the field of critical infrastructure protection (CIP)
- Co-author of the **Third Best Paper Award** at the 2017 IEEE Texas Power and Energy Conference (my Ph.D. student was the only other author)

- **Best New Employee of the Year** (Jul'08 – Jun'09), Tata Steel Ltd., Jamshedpur, India
- **Institute Gold Medal**: Awarded for achieving highest CGPA in Electrical Engineering as an undergraduate student
- **Tata Steel Scholar** (Jan'07 – Jun'08): Awarded for consistently getting the highest GPA in Electrical Engineering
- **Sahara Scholarship** (Mar'06): Awarded for maintaining Academic Excellence while continuing to be an active member of the National Cadet Corps (NCC)

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### ACCOLADES WON BY MY STUDENTS

- **Behrouz Azimian** (Ph.D. student): Received the University Graduate Fellowship for the academic year 2019-2020
- **John Patterson** (M.S. student): Received the Gerald T. Heydt Scholarship in Electric Power Engineering for the year 2019
- **Reetam Sen Biswas** (Ph.D. student): Selected by the IEEE Phoenix Section Awards Committee for the Atluri award for the year 2018
- **Meghna Barkakati** (M.S.): Selected by the IEEE Phoenix Section Awards Committee for the Dieter Schroder Student Scholarship for the year 2018
- **Reetam Sen Biswas** (Ph.D. student): Third Best Paper Award at the 2017 IEEE Texas Power and Energy Conference
- **Ngoni Mugwisi** (UG, did his senior design project with me): Awarded Rhodes Scholarship in 2017.

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### SOFTWARE SKILLS

- Power System Simulators
  - Siemens-PSS/E
  - Powertech-DSA Tools
  - GE-PSLF
  - MATPOWER
  - Power System Toolbox (PST)
- Programming Languages
  - C/C++
  - Python
  - EPCL
- MATLAB
- GUROBI

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### SYNERGISTIC ACTIVITIES

- Volunteer for the TryEngineering Together program of IEEE (an eMentorship program) to inspire and educate the next generation (grades 3 to 5) of engineers, scientists and technical professionals.

- Student Program Chair for the 52<sup>nd</sup> North American Power Symposium (NAPS) to be held in Phoenix, AZ, in October 2020.
- Industry Liaison for the IEEE SmartGridComm 2020 (2020 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)) to be held in Phoenix, AZ, in October 2020.
- Co-chair for the Paper Forum session titled “Power System Modeling and Analysis Paper Forum #1” at the IEEE PES General Meeting 2019 that will be held in Atlanta, GA, from August 4-8, 2019.
- IEEE Young Professional Chair of the IEEE Phoenix Section.
- Panel member for the session on “Big Data Analytics Platforms Architecture Requirements and Analysis Techniques” at the North American SynchroPhasor Initiative (NASPI) Work Group Meeting on 16 April 2019.
- Session Chair for the session titled “Challenges and solutions to operation of transmission and distribution systems with utility-scale deployment of renewable generation” of the 50<sup>th</sup> North American Power Symposium (NAPS) held in Fargo, ND, from 9-11 September 2018.
- Technical Program Committee (TPC) member of the ACM SIGMETRICS International Workshop on Critical Infrastructure Network Security (CINS) in 2017, 2018, and 2019.
- TPC member of IEEE SmartGridComm'18 (2018 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)) held in Aalborg, Denmark, on October 29-31, 2018.
- Organizer of “Computing for Ebola Challenge” at Virginia Tech in October 2014.
- Part of a team led by Ms. Bachendri Pal (first Indian woman to climb Mt. Everest) for a “Two Week Adventure/Survival Expedition” in the Himalayas in May-June, 2009.
- Member of Tata Steel Rural Development Society (TSRDS) from 2008-10:
  - Visited rural villages located in vicinity of Jamshedpur, India, to help them become self-reliant (Focus was on providing clean drinking water and cheap electricity)
- Active member of the National Cadet Corps (NCC) from 2004-06.

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## MISCELLANEOUS

- Reviewer of high-impact journals and conferences:
  - IEEE Transactions on Power Systems
  - IEEE Transactions on Power Delivery
  - IEEE Transactions on Smart Grid
  - IEEE Transactions on Sustainable Energy
  - IEEE Transactions on Instrumentation & Measurement
  - IEEE Access
  - IEEE Power Engineering Letters
  - IET Generation, Transmission, and Distribution

- International Journal of Electrical Power and Energy Systems (Elsevier)
  - Electric Power Systems Research (Elsevier)
  - Measurement (Elsevier)
  - Computers & Electrical Engineering (Elsevier)
  - Ain Shams Engineering Journal (Elsevier)
  - Electric Power Components and Systems (Taylor & Francis)
  - International Transactions on Electrical Energy Systems (Wiley)
  - Energies-Open Access Energy Research, Engineering and Policy Journal (MDPI)
  - Sensors-Open Access Journal (MDPI)
  - Sustainability-Open Access Journal (MDPI)
  - Mathematical Problems in Engineering (Hindawi)
  - Recent Advances in Electrical & Electronic Engineering (Bentham Science)
  - IEEE Power & Energy Society General Meeting
  - IEEE Power & Energy Society T&D Conference and Exposition
  - IEEE International Conference on Smart Grid Communications (SmartGridComm): Cyber Security and Privacy
  - IEEE North American Power Symposium (NAPS)
  - International Conference on Intelligent Systems Applications to Power Systems (ISAP)
  - IEEE SusTech
  - Emerging Trends for Smart Grid Automation and Industry (ICETSGAI) (Springer)
  - Future Professoriate Certificate (Preparing graduate students to become faculty)
  - IEEE Graduate Student Member (2011-2014), IEEE Member (2014-2019), IEEE Senior Member (2019-Present)
  - Graduate Student Member of Tau Beta Pi (2011-2014), Member (2014 onwards)
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**PUBLICATIONS****Journals:**

1. T. Wang, J. Yang, M. Padhee, A. Pal, J. Bi, and Z. Wang, "Robust coordinated control of sub-synchronous oscillation in wind integrated power system," accepted for publication in *IET Renewable Power Generation*.
2. M. Nadeem, K. Imran, A. Khattak, A. Ulasyar, A. Pal, M. Z. Zeb, A. K. Khan, and M. Padhee, "Optimal placement, sizing and coordination of FACTS devices in transmission network using whale optimization algorithm," accepted for publication in *MDPI Energies*.
3. M. Padhee, A. Pal, C. Mishra, and K. A. Vance, "A fixed-flexible BESS allocation scheme for transmission networks considering uncertainties," accepted for publication in *IEEE Transactions on Sustainable Energy*.
4. C. Mishra, R. S. Biswas, A. Pal, and V. A. Centeno, "Critical clearing time sensitivity for inequality constrained systems," accepted for publication in *IEEE Transactions on Power Systems*.
5. M. Ghamsari-Yazdel, M. Esmaili, F. Aminifar, P. Gupta, A. Pal, and H. A. Shayanfar, "Incorporation of controlled islanding scenarios and complex substations in optimal WAMS design," *IEEE Trans. Power Syst.*, vol. 34, no. 5, Sep. 2019.
6. C. Mishra, A. Pal, J. S. Thorp, and V. A. Centeno, "Transient stability assessment of prone-to-trip renewable generation rich power systems using Lyapunov's direct method," *IEEE Trans. Sustainable Energy*, vol. 10, no. 3, Mar. 2019.
7. P. Chatterjee, A. Pal, J. S. Thorp, J. De La Ree, and V. A. Centeno, "Error reduction of phasor measurement unit (PMU) data considering practical constraints," *IET Gener., Transm. Distrib.*, vol. 12, no. 10, pp. 2332-2339, May 2018.
8. R. Subbiah, A. Pal, E. K. Nordberg, A. Marathe, and M. V. Marathe, "Energy demand model for residential sector: A first principles approach," *IEEE Trans. Sustain. Energy*, vol. 8, no. 3, pp. 1215-1224, Jul. 2017.
9. T. Wang, A. Pal, J. S. Thorp, and Y. Yang, "Use of polytopic convexity in developing an adaptive inter-area oscillation damping scheme," *IEEE Trans. Power Syst.*, vol. 32, no. 4, pp. 2509-2520, Jul. 2017.
10. A. Pal, A. K. S. Vullikanti, and S. S. Ravi, "A PMU placement scheme considering realistic costs and modern trends in relaying," *IEEE Trans. Power Syst.*, vol. 32, no. 1, pp. 552-561, Jan. 2017.
11. A. Pal, C. Mishra, A. K. S. Vullikanti, and S. S. Ravi, "General optimal substation coverage algorithm for phasor measurement unit placement in practical systems," *IET Gener., Transm. Distrib.*, vol. 11, no. 2, pp. 347-353, Jan. 2017.
12. A. Pal, G. A. Sanchez-Ayala, J. S. Thorp, and V. A. Centeno, "A community-based partitioning approach for phasor measurement unit placement in large systems," *Elect. Power Compon. Syst.*, vol. 44, no. 12, pp. 1317-1329, Jun. 2016.

13. C. Mishra, K. D. Jones, A. Pal, and V. A. Centeno, "Binary particle swarm optimisation-based optimal substation coverage algorithm for phasor measurement unit installations in practical systems," *IET Gener. Transm. Distrib.*, vol. 10, no. 2, pp. 555-562, Feb. 2016.
14. A. Pal, P. Chatterjee, J. S. Thorp, and V. A. Centeno, "On-line calibration of voltage transformers using synchrophasor measurements," *IEEE Trans. Power Del.*, vol. 31, no. 1, pp. 370-380, Feb. 2016.
15. T. Wang, A. Pal, J. S. Thorp, Z. Wang, J. Liu, and Y. Yang, "Multi-polytope based adaptive robust damping control in power systems using CART," *IEEE Trans. Power Syst.*, vol. 30, no. 4, pp. 2063-2072, Jul. 2015.
16. K. D. Jones, A. Pal, and J. S. Thorp, "Methodology for performing synchrophasor data conditioning and validation," *IEEE Trans. Power Syst.*, vol. 30, no. 3, pp. 1121-1130, May 2015.
17. F. Gao, J. S. Thorp, S. Gao, A. Pal, and K. A. Vance, "A voltage phasor based fault classification method for phasor measurement unit only state estimator output," *Elect. Power Compon. Syst.*, vol. 43, no. 1, pp. 22-31, Jan. 2015.
18. A. Pal, G. A. Sanchez, V. A. Centeno, and J. S. Thorp, "A PMU placement scheme ensuring real-time monitoring of critical buses of the network," *IEEE Trans. Power Del.*, vol. 29, no. 2, pp. 510-517, Apr. 2014.
19. M. Li, A. Pal, A. G. Phadke, and J. S. Thorp, "Transient stability prediction based on apparent impedance trajectory recorded by PMUs," *Int. J. Elect. Power Energy Syst.*, vol. 54, pp. 498-504, Jan. 2014.
20. A. Pal, J. S. Thorp, T. Khan, and S. S. Young, "Classification trees for complex synchrophasor data," *Elect. Power Compon. Syst.*, vol. 41, no. 14, pp. 1381-1396, Sep. 2013.
21. A. Pal, J. S. Thorp, S. S. Veda, and V. A. Centeno, "Applying a robust control technique to damp low frequency oscillations in the WECC," *Int. J. Elect. Power Energy Syst.*, vol. 44, no. 1, pp. 638-645, Jan. 2013.

### Conferences:

1. S. Roy, H. Chandrasekaran, A. Pal, and A. Sen, "A new model to analyze power and communication system intra-and-inter dependencies," to be presented at *IEEE Conference on Technologies for Sustainability (SusTech)*, Santa Ana, CA, Apr. 2020.
2. Z. Chu, A. Pinceti, R. S. Biswas, O. Kosut, A Pal, and L. Sankar, "Can predictive filters detect gradually ramping false data injection attacks against PMUs?" in *Proc. IEEE International Conf. Communications, Control, and Computing Technologies Smart Grids (SmartGridComm)*, Beijing, China, pp. 1-6, 21-23 Oct. 2019.
3. M. Barkakati, R. S. Biswas, and A. Pal, "A PMU based islanding detection scheme immune to additive instrumentation channel errors," in *Proc. IEEE North American Power Symposium (NAPS)*, Wichita, KS, pp. 1-6, 13-15 Oct. 2019.
4. A. Nath, R. S. Biswas, and A. Pal, "Application of machine learning for online dynamic security assessment in presence of system variability and additive instrumentation

- errors,” in *Proc. IEEE North American Power Symposium (NAPS)*, Wichita, KS, pp. 1-6, 13-15 Oct. 2019.
5. M. Barkakati, and A. Pal, “A comprehensive data driven outage analysis for assessing reliability of the bulk power system,” in *Proc. IEEE Power Eng. Soc. General Meeting*, Atlanta, GA, pp. 1-5, 4-8 Aug. 2019.
  6. C. Mishra, A. Pal, and V. A. Centeno, “Critical clearing time sensitivity for inequality constrained systems,” in *Proc. IEEE Power Eng. Soc. General Meeting*, Atlanta, GA, pp. 1-5, 4-8 Aug. 2019.
  7. P. Gupta, A. Pal, C. Mishra, and T. Wang, “Design of a coordinated wide area damping controller by employing partial state feedback,” in *Proc. IEEE Power Eng. Soc. General Meeting*, Atlanta, GA, pp. 1-5, 4-8 Aug. 2019.
  8. R. Meyur, A. Vullikanti, M. V. Marathe, A. Pal, M. Youssef, and V. Centeno, “Cascading effects of targeted attacks on the power grid,” in *Proc. Int. Workshop Complex Networks and their Applications*, Cambridge, UK, pp. 1-13, 2 Dec. 2018.
  9. T. Wang, J. Yang, J. Liu, P. Gupta, A. Pal, and J. Deng, “SDAE-based probabilistic stability analysis of wind integrated power systems,” in *Proc. 2<sup>nd</sup> IEEE Conf. Energy Internet and Energy System Integration (EI2)*, Beijing, China, pp. 1-6, 20-22 Oct. 2018.
  10. K. Basu, M. Padhee, S. Roy, A. Pal, A. Sen, M. Rhodes, and B. Keel, “Health monitoring of critical power system equipments using identifying codes,” in *Proc. 13<sup>th</sup> Int. Conf. Critical Information Infrastructures Security (CRITIS)*, Kaunas, Lithuania, pp. 1-12, 24-26 Sep. 2018.
  11. M. Padhee, and A. Pal, “Effect of solar PV penetration on residential energy consumption pattern,” in *Proc. IEEE North American Power Symposium (NAPS)*, Fargo, ND, pp. 1-6, 9-11 Sep. 2018.
  12. P. Mansani, A. Pal, M. Rhodes, and B. Keel, “Estimation of transmission line sequence impedances using real PMU data” in *Proc. IEEE North American Power Symposium (NAPS)*, Fargo, ND, pp. 1-6, 9-11 Sep. 2018.
  13. V. Chakati, M. Pore, A. Banerjee, A. Pal, and S. K. S. Gupta, “Impact of false data detection on cloud hosted linear state estimator performance,” in *Proc. IEEE Power Eng. Soc. General Meeting*, Portland, OR, pp. 1-5, 5-10 Aug. 2018.
  14. C. Mishra, J. S. Thorp, V. A. Centeno, and A. Pal, “Transient stability assessment of cascade tripping of renewable sources using SOS,” in *Proc. IEEE Power Eng. Soc. General Meeting*, Portland, OR, pp. 1-5, 5-10 Aug. 2018.
  15. C. Mishra, J. S. Thorp, V. A. Centeno, and A. Pal, “Estimating relevant portion of stability region using Lyapunov approach and sum of squares,” in *Proc. IEEE Power Eng. Soc. General Meeting*, Portland, OR, pp. 1-5, 5-10 Aug. 2018.
  16. A. Pal, P. Rangudu, S. S. Ravi, and A. K. Vullikanti, “Using activity patterns to place electric vehicle charging stations in urban regions,” in *Proc. IEEE Workshop Parallel Distributed Processing Computational Social Systems (IPDPS)*, Vancouver, BC, Canada, pp. 1143-1152, 21-25 May 2018.

17. M. Padhee, J. Banerjee, K. Basu, S. Roy, A. Pal, and A. Sen, "A new model to analyze power system dependencies," in *Proc. IEEE Texas Power Energy Conf. (TPEC)*, College Station, TX, pp. 1-6, 8-9 Feb. 2018.
18. M. Padhee, A. Pal, and K. A. Vance, "Analyzing effects of seasonal variations in wind generation and load on voltage profiles," in *Proc. IEEE North American Power Symposium (NAPS)*, Morgantown, WV, pp. 1-6, 17-19 Sep. 2017.
19. T. Chakraborty, and A. Pal, "Controller tuning of generic positive sequence solar PV models used in interconnection studies," in *Proc. IEEE North American Power Symposium (NAPS)*, Morgantown, WV, pp. 1-6, 17-19 Sep. 2017.
20. C. Mishra, J. S. Thorp, V. A. Centeno, and A. Pal, "Stability region estimation under low voltage ride through constraints using sum of squares," in *Proc. IEEE North American Power Symposium (NAPS)*, Morgantown, WV, pp. 1-6, 17-19 Sep. 2017.
21. V. Chakati, M. Pore, A. Pal, A. Banerjee, and S. K. S. Gupta, "Challenges and trade-offs of a cloud hosted phasor measurement unit-based linear state estimator," in *Proc. IEEE Power Eng. Soc. Innovative Smart Grid Technologies (ISGT) Conf.*, Washington DC, pp. 1-5, 23-26 Apr. 2017.
22. R. S. Biswas, and A. Pal, "A robust techno-economic analysis of PMU-based islanding detection schemes," in *Proc. IEEE Texas Power Energy Conf. (TPEC)*, College Station, TX, pp. 1-6, 9-10 Feb. 2017.
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