Aranya Chakrabortty

Contact Information

Electrical & Computer Engineering Department,
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Research Interests

Power system dynamics, stability, and control, Renewable energy integration, Electrified transportation, Control solutions for climate change, Data-driven control, Cyber-physical systems and cyber-security.

Employment

2020-present, **Professor**
Department of Electrical and Computer Engineering,
North carolina state university, Raleigh, NC.

2024-present, **Associate Department Head for Research**
Department of Electrical and Computer Engineering,
North carolina state university, Raleigh, NC.

2020-2023, **Program Director**
Division of Electrical, Communication, and Cyber Systems (ECCS),
Energy, Power, Control and Networks (EPCN)
National science foundation, Alexandria, VA.

2015-2020, **Associate Professor**
Department of Electrical and Computer Engineering,
North carolina state university, Raleigh, NC.

2010-2015, **Assistant Professor**
Department of Electrical and Computer Engineering,
North carolina state university, Raleigh, NC.

2009-2010, **Assistant Professor**
Department of Electrical and Computer Engineering,
Texas tech university, Lubbock, TX.

Visiting Positions

June - Aug 2019, **Visiting Faculty**
Division of Sensors and Electronic Devices,
Host: Dr. Jemin George
US army research laboratory, adelphi, md.

2016-2017 (Sabbatical leave), **Visiting Researcher**
Coordinated Science Laboratory (CSL),
Host: Dr. Nitin Vaidya
University of illinois urbana-champaign, IL.

Summers of 2016-2019, **Visiting Researcher**
Host: Dr. Jun-ichi Imura
Tokyo institute of technology, Tokyo, Japan.

Education & Training

2008 - 2009, **Post-doctoral Research Associate**
Aeronautics and Astronautics Department,
Supervisor: Dr. Mehran Mesbahi,
University of washington, Seattle, WA.

2005 - 2008, **Ph.D, Electrical Engineering**
RENSSELAER POLYTECHNIC INSTITUTE, Troy, New York
Advisors: Dr. Joe H. Chow, Dr. Murat Arcak
Thesis: *Estimation, Analysis and Control Methods for Large-Scale Electric Power Systems using Synchronized Phasor Measurements*
GPA - 4.0/4.0

2004 - 2005, **M.S, Electrical Engineering**
RENSSELAER POLYTECHNIC INSTITUTE, Troy, New York
Advisor: Dr. Murat Arcak
Thesis: *Study of Nonlinear Control of Membrane Humidity in PEM Fuel Cell Systems*
GPA - 4.0/4.0

2000 - 2004, **B.E, Electrical Engineering**
JADAVPUR UNIVERSITY, Calcutta, India
Specialization: Control Systems (Advisor: Dr. T. K. Ghoshal)
Senior Thesis: *Robust Control of Aerospace Systems*
GPA - 4.7/5.0

RESEARCH EXPERIENCE

2010-present, ECE Department,
NC State University, Raleigh, NC,
−Conduct research and advise graduate students in the context of several projects related to dynamics and controls of electric power systems. Specific topics of research include:

1. Modeling, analysis and control designs for large-scale electric power system networks via concepts of inverse problems using Wide-area Phasor Measurement (WAMS) technology.
2. New problems at the interface of optimal control, reinforcement learning, system identification, and model reduction for scalable data-driven control of transmission and distribution-level power grids.
3. Nonlinear control of power systems integrated with high penetration of distributed energy resources, storage, and power electronic converters
4. Wide-area control of power systems under various cyber-physical uncertainties such as delays, sparsity constraints, pricing constraints, asynchronous communication, and cubersecurity

2009-2010, ECE Department,
Texas Tech University, Lubbock, TX
−Conducted research on modeling, data analysis and sensor placement problems in large power systems using Synchrophasors.

2008-2009, Distributed Space Systems Laboratory (DSSL),
Aeronautics and Astronautics Department,
University of Washington, Seattle, WA
−Conducted research and assisted graduate students in the context of several projects on aircraft power management and control with the Boeing Energy and Electrical Systems Group.

2004 -2008, Nonlinear and Adaptive Control Laboratory,
Electrical, Computer and Systems Engineering Department,
Rensselaer Polytechnic Institute, Troy, NY

1. **Estimation in Electric Power Systems:** *Developed mathematical tools for parameter estimation and transient stability analysis in dynamic models of two-area power systems based on synchronized phasor measurements. Spatial variation of phasor variables are primarily exploited for devising these methods.*
2. **Robust Nonlinear Control:** *Developed a novel time-scale separation control design for stabilization and transient performance recovery of different classes of uncertain nonlinear systems. Applications include safety critical systems like aircrafts, autonomous water vehicles, faulted power systems, visual servoing with uncalibrated camera etc.*

3. **Modeling of Fuel Cells:** *Developed a singular perturbation based model order reduction method for the humidification system of PEM (Proton Exchange Membrane) fuel cells and validated it with simulation results. Subsequent research included the application of adaptive control tools for membrane humidity regulation.*

2003 - 2004, Undergraduate Research Student,
Center for Knowledge Based Systems,
Electrical Engineering Department,
Jadavpur University, Calcutta, India.
– Conducted undergraduate research focussed on controller and observer designs for pitch attitude control of an F-16 fighter aircraft.

Summer 2003, Undergraduate Research Intern Student,
Electrical Engineering Department,
Indian Institute of Technology, Kharagpur, India.
– Conducted research studies and simulations on canonical quadratic distance optimization problems (CQDP) for uncertain linear time-invariant (LTI) systems.

Experience at NSF

Currently serving as a Program Director in the Electrical, Communications and Cyber Systems (ECCS) division under the Engineering directorate since 2020. Participated in the management and execution of the following research programs, handling a cumulative budget of around $50 million US dollars per year:

1. Energy, Power, Control and Networks (EPCN) core program, ECCS division
2. Midscale Research Infrastructure-1
3. Clean Energy Technology DCL
4. CAS Climate: Critical Aspects of Stainability
5. Cyber-Physical Systems (CPS)
6. Addressing System Challenges through Engineering Teams (ASCENT)
7. Engineering Frontiers in Research and Innovation (EFRI)
8. Major Research Instrumentation (MRI)
9. Sustainable Regional Systems (SRS)
10. Smart and Connected Communities (S&CC)
11. Expand-AI

Major activities and achievements at NSF include:

1. Received the *NSF Director's Award for Superior Accomplishment* for outstanding service in the development of the NSF Mid-scale Research Infrastructure program, 2023
2. Cluster lead for the Energy, Power, Control and Networks (EPCN) group, 2020-present
3. Lead for the Engineering directorate working group on Climate Change Solutions, 2021-present
4. Lead for the Engineering directorate on Mid-scale Research Infrastructure (MSRI-1) program, 2021-present
5. ECCS representative for inter-agency working group on Net-zero Power Grid and Electrification 2050 with DOE and the US White House OSTP, 2022-2023
6. ECCS representative for NSF ERVA (Engineering Research Vision Alliance) workshop on Climate Change Solutions, 2021
7. Technical advisor and site-visit coordinator for two center-scale NSF projects - DERConnect (UC San Diego) and ASPIRE ERC (Utah State),2022
8. ECCS representative for NSF/DOE Energy Technology Office on HBCU-MSI Engagement Initiative, 2021-2022

Teaching Experience

2010-present, NC State University, Raleigh, NC

1. ECE 436 Digital Control Systems - Spring 2019
2. ECE 451 Power Systems Analysis - Fall 2012-2013
3. ECE 736 Power Systems Stability & Control - Spring 2010-present
4. ECE 726 Advanced Feedback Control - Fall 2014-present (odd years)
5. ECE 792 Adaptive Control and Estimation - Fall 2018-present (even years)

2009-2010, Texas Tech University, Lubbock, TX

1. EE 5332 Power Systems Dynamics and Stability - Fall 2009
2. EE 5332 Wind Power Modeling and Simulation - Spring 2010

Funded Research

29. US Dept. of Energy (DOE)
Title: Center for Agile and Intelligent Power Systems (CAIPS): Cybersecurity Research, Development, and Workforce Training
NCSU PIs: Aydin Aysu, Aranya Chakrabortty
Award Amount: $300,000
Person months: 0.01
Project Period: Jan. 2025 – Dec. 2027

28. US Dept. of Energy (DOE)
Title: Artificial Intelligence-Enabled Tools (ArtIT) for Cyber Hardening of Power Grids
NCSU PIs: Aranya Chakrabortty, Iqbal Husain
Award Amount: $410,004
Person months: 0.01
Project Period: April. 2023 – Oct. 2025

27. US Dept. of Defense Army STTR (subcontract through Secmation Inc.)
Title: Vehicle Root of Trust - Cryptography and Cybersecurity
NCSU PI: Amro Awad
NCSU co-PI: Aranya Chakrabortty
Award Amount: $54,262
Person months: 0.01
Project Period: April. 2022 – Oct. 2022

26. US Dept. of Energy (DOE) - Advanced Research Projects Agency - Energy (ARPA-E)
Title: Microgrid Control and Coordination Codesign (MicroC3)
NCSU PI: Srdjan Lukic
NCSU co-PIs: Aranya Chakrabortty, Wenyuan Tang, Iqbal Husain
Award Amount: $4,828,980
Project Period: June. 2022 - May. 2025

25. US Army Research Laboratory (ARL)
Title: Hierarchical Reinforcement Learning based Control of Multi-Agent Networks
NCSU PI: Aranya Chakrabortty
Award Amount: $90,000
Project Period: Sep. 2022 - Aug. 2023

24. US Dept. of Energy (DOE) - Advanced Research Projects Agency - Energy (ARPA-E)
Title: Risk Segmentation and Portfolio Analysis for Pareto Dominance in High Renewable Penetration and Storage Reserves
NCSU PI: Aranya Chakrabortty
Award Amount: $416,000
Project Period: Sep. 2020 - Aug. 2023

23. US Department of Education
Title: Cyber-Security of Electric Power Systems
PI: Mesut Baran

Co-PI: Aranya Chakrabortty, Mo-Yuen Chow, Ning Lu, Wenyuan Tang, Alexandra Duel-Hallen
Award Amount: $450,000
Project Period: Sep. 2019 - Aug. 2022

22. National Science Foundation
Title: EAGER: Data-Driven Control of Power Systems using Reinforcement Learning
PI: Aranya Chakrabortty
Award Amount: $220,000
Project Period: Sep. 2019 - Aug. 2021

21. National Science Foundation
Title: CPS: Small: Data-Driven Reinforcement Learning Control of Large CPS Networks using Multi-Stage Hierarchical Decompositions
PI: Aranya Chakrabortty
Award Amount: $353,237
Project Period: Sep. 2019 - Aug. 2022

20. New York Power Authority (via FREEDM Fellowship grant)
Title: Wide-Area Damping Control of the NYPA Power System using FACTS
PI: Aranya Chakrabortty
Award Amount: $55,000
Project Period: Aug 2018 - June. 2019

19. Electric Power Research Institute
Title: Hierarchical Control and Information Sharing Methods for Next-Generation Inverter-Interfaced Power Transmission Networks
PI: Aranya Chakrabortty
Award Amount: $94,426
Project Period: April 2018 - March 2019

18. National Science Foundation
Title: Retrofit Control: A New, Modular Gyrator Control Approach for Integrating Large-Scale Renewable Power
PI: Aranya Chakrabortty
Award Amount: $323,873
Project Period: Sep 2017 - Aug. 2020

17. National Science Foundation
Title: EAGER: Collaborative Research: Spatially Continuous Modeling of Power System Oscillations with Renewable Energy Penetration
PI: Aranya Chakrabortty
Award Amount: $75,000
Project Period: Jan 2018 - April. 2019

16. National Science Foundation
Title: CREDENCE: Collaborative Research on Decentralization, Electrification, Communications and Economics
PI: Aranya Chakrabortty, co-PI: Iqbal Husain
Award Amount: $277,603
Project Period: Jan 2017 - Dec. 2019

15. National Science Foundation
Title: CPS: TTP Option: Synergy: Collaborative Research: Hardening Network Infrastructures for Fast, Resilient and Cost-Optimal Wide-Area Control of Power Systems
PI: Aranya Chakrabortty,
co-PI: Alexandra Duel-Hallen
Award Amount: $600,000
Project Period: Sep. 2015 - Aug. 2018

14. National Science Foundation
Title: US Ignite: Track 1: Collaborative Research: DISTINCT: A Distributed Multi-Loop Networked System for Wide-Area Control of Large Power Grids
PI: Aranya Chakrabortty
Award Amount: $250,000
Project Period: Sep. 2015 - Aug. 2018

13. National Science Foundation
Title: Collaborative Research: Computational Methods for Stability Assessment of Power Systems With High Penetration of Clean Renewable Energy
PI: Aranya Chakrabortty
Award Amount: $170,038
Project Period: Sept. 2015 - Aug. 2017

12. UK-USA-India Research Partnership Grant, British Council
Title: SITARA : Smart grid that harness Satellite based Virtual Power Plants for energy sustenance
Lead Institution: University of Bradford, UK
NCSU PI: Aranya Chakrabortty
Award Amount: $20,000
Project Period: Sept. 2015 - Aug. 2017

11. National Science Foundation
Title: CPS Synergy: Collaborative Research: Distributed Asynchronous Algorithms and Software Systems for Wide-Area Monitoring of Large Power Systems
PI: Aranya Chakrabortty, co-PI: Frank Mueller
Award Amount: $400,000
Project Period: Sept. 2013 - Aug. 2016

10. US Department of Energy (NETL)
Title: Development of a Multi-User Network Testbed for Wide-Area Monitoring and Control of Power Systems Using Distributed Synchrophasors
PI: Aranya Chakrabortty
Award Amount: $250,000
Project Period: Sept. 2013 - Aug. 2015

9. ABB Corporate Research,
Title: Faster than Real Time Simulation of Electro-mechanical Process of Large Scale Electrical Power Grids
PI: Paul Franzon, co-PI: Aranya Chakrabortty
Award Amount: $80,000
Project Period: Dec. 2014 - Dec. 2015

8. ABB Corporate Research,
Title: Distributed Data-Centric Algorithms for Next-Generation Transmission Network Management Systems
PI: Aranya Chakrabortty
Award Amount: $74,000
Project Period: Sep. 2013 - Aug. 2014

7. Renaissance Computing Institute (RENCI),
Faculty Engagement Program 2013,
Title: Adaptive Visualization-in-the-Loop Algorithms for Modeling and Control of Smart Power Systems Using Real-Time Synchrophasors
PI: Aranya Chakrabortty
Award Amount: $12,000
Project Period: Jan. 2013 - Dec. 2013

6. National Science Foundation,

ECCS-1230848: Collaborative Research: Integrating Heterogeneous Energy Resources for Sustainable Power Networks - A Systems Approach
PI: Aranya Chakrabortty
Award amount: $360,000
Lead PI and Organization: Dennice Gayme, Johns Hopkins University
Project Period: 2012 - 2016.

5. Southern California Edison,
Title: Wide-Area Monitoring and Control of WECC Transfer Paths Using Real-Time Digital Simulations
Award amount: $228,726
PI: Aranya Chakrabortty, co-PI: Subhasish Bhattacharya
Project Period: 2011-2013.

4. National Science Foundation,
ECCS-1054394: CAREER - Wide-Area Control of Large Power Systems Using Distributed Synchrophasors: Where Network Theory Meets Power System Dynamics
Award amount: $400,000
PI: Aranya Chakrabortty
Project Period: 2011 - 2016.

3. National Science Foundation,
ECCS-1001845: A Measurement-based Framework for Dynamic Equivalencing of Large-Scale Power Systems using Synchrophasors
Award amount: $297,763
REU Supplement: $11,250
PI: Aranya Chakrabortty
Project Period: 2010 - 2015.

2. NCSU Strategic Research Initiative Program
Title: Workshop on 'Cyber-Physical Challenges for Distributed Monitoring and Control of Smart Power Systems'
Award amount: $5,000
PI: Aranya Chakrabortty
Period: February 2011.

1. NCSU Undergraduate Research Grants
- *Awarded to Jennifer Felder, Joel Anderson and Dr. Aranya Chakrabortty (faculty mentor)*
Project Title: Building a Campus-wide Smart Energy Monitoring Network with Data Logging and Visualization
Award amount: $3,000
Periods: Fall 2010, Summer 2011, Spring 2012.

Honors and Awards

IEEE Fellow, 2025

NSF Director's Award for Superior Accomplishment, 2023

Outstanding Paper Award, IEEE Control Systems Magazine, 2020

University Faculty Scholar,
NC State Office of the Provost, Class of 2019

Thank a Teacher recognition for teaching,
NC State University Office of Faculty Development, Spring 2017 & 2016

Best Internet Application in Energy Award, US Ignite, 2013 and 2014

NSF CAREER Award, 2011

Allen B. Dumont Prize, 2009
ECSE Department, Rensselaer Polytechnic Institute,
Awarded in recognition for the best doctoral thesis by an Electrical Engineering PhD graduate

Best Graduate TA Award, 2006
Eta Kappa Nu Honor Society and ECSE Department, Rensselaer Polytechnic Institute.

Vice-chancellor's silver medal for ranking 2^{nd} with First Class Honors in Bachelor of Electrical Engineering, class of 2004, Jadavpur University, Calcutta, India, 2005.

Publications

Books and Edited Volumes:

E3. A. Annaswamy, J. Stoustrup, A. Chakrabortty, and Z. Qu (Eds.), *Smart Grid Control: Opportunities and Research Challenges*, Springer, MA, Oct. 2018.

E2. C. L. Phillips, H. T. Nagle, and A. Chakrabortty, *Digital Control System Analysis and Design,* Prentice Hall, Feb. 2014.

E1. A. Chakrabortty and M. D. Ilić (Eds.), *Control & Optimization Methods for Electric Smart Grids*, Springer, MA, Jan. 2012.

Book Chapters:

B7. A. Chakrabortty. Wide-Area Control of Power Systems. *Springer Encyclopedia of Systems and Control*, Springer, 2020.

B6. A. Chakrabortty and A. Bose. Smart Grid Simulation and Control. *Power Electronics in Renewable Energy Systems and Smart Grid*, IEEE Press, 2019.

B5. A. Chakrabortty. Wide-Area Communication and Control: A Cyber-Physical Perspective. *Smart Grid Control: Opportunities and Research Challenges*, Springer, 2018.

B4. S. Nabavi, J. Zhang, and A. Chakrabortty. Distributed Algorithms for Wide-Area Monitoring in Power Systems: A Cyber-Physical Perspective. *Invited Chapter for Cyber-Physical-Social Systems and Constructs in Electric Power Engineering*, Eds: Siddharth Suryanarayanan, Robin Roche and Timothy M. Hansen, IET, 2016.

B3. A. Chakrabortty and J. H. Chow. Measurement-based Methods for Model Reduction of Power Systems using Synchrophasors, *Invited Chapter for Coherency and Model Reduction of Large Power Systems*, Springer, MA, 2013.

B2. A. Chakrabortty. A Model Reference Approach for Interarea Modal Damping in Large Power Systems, *Control & Optimization Theory for Electric Smart Grids*, Springer, MA, 2012.

B1. A. Chakrabortty. Transient Stability Assessment Using Synchronized Phasor Measurements, *Invited Chapter for Electric Power Engineering Handbook*, CRC Press, 2011.

Journal Publications:

Total number of GS citations = 6551
H-index = 34
i-10 index: 102

J68. A. Podder, T. Sadamoto, and A. Chakrabortty. Optimal Distribution of Grid-Following and Grid-Forming Converters for Charging Control of Electric Vehicles. *under review in IEEE Transactions on Smart Grid.* 2025

J67. A. Podder, T. Sadamoto, and A. Chakrabortty. Co-Optimization of EV Charging Control and Incentivization for Enhanced Power System Stability. *under review in IEEE Transactions on Control Systems Technology.* 2025

J66. T. Nishino, A. Chakrabortty, and T. Ishizaki. A Necessary and Sufficient Condition for Equilibrium-Independent Passivity of Power Systems with Two-Axis Generators. *under review in IEEE Transactions on Automatic Control*. 2025

J65. R. Chakraborty, M. S Nazir, A. Chakrabortty. Physics-aware Regression for DER Dispatch with Topological Reconfigurations of Radial Feeder. *IEEE Transactions on Industry Applications*, 2024.

J64. P. Khargonekar, T. Samad, S. Amin, A. Chakrabortty, *et al.* Climate Change Mitigation, Adaptation, and Resilience: Challenges and Opportunities for the Control Systems Community. *IEEE Control Systems Magazine*, 2024.

J63. G. Jing, H. Bai, J. George, A. Chakrabortty, P. K Sharma. Distributed Multi-Agent Reinforcement Learning Based on Graph-Induced Local Value Functions. *IEEE Transactions on Automatic Control*, 2024.

J62. T. Sadamoto, A. Kikuya, and A. Chakrabortty. Distributed Reinforcement Learning for Networked Dynamical Systems. *IEEE Transactions on Control of Network Systems*, 2023.

J61. G. Jing, H. Bai, J. George, A. Chakrabortty and P. K. Sharma. Asynchronous Distributed Reinforcement Learning for LQR Control via Zeroth-Order Block Coordinate Descent. *IEEE Transactions on Automatic Control*, 2023.

J60. R. Chakraborty, A. Chakrabortty, E. Farantatos, M. Patel, H. Hooshyar, and A. Darvishi. Hierarchical Frequency and Voltage Control using Prioritized Utilization of Inverter Based Resources. *International Journal of Electrical Power & Energy Systems*, vol. 144, 2022.

J59. P. Shukla, L. An, A. Chakrabortty, and A. Duel-Hallen. A Robust Stackelberg Game for Cyber-Security Investment in Networked Control Systems, *IEEE Transactions on Control Systems Technology*, 2022.

J58. K. Teranishi, T. Sadamoto, A. Chakrabortty, and K. Kosigo. Designing Optimal Key Lengths and Control Laws for Encrypted Control Systems based on Sample Identifying Complexity and Deciphering Time. *IEEE Transactions on Automatic Control*, 2022.

J57. N. Negi and A. Chakrabortty. Optimal Co-Designs of Communication and Control in Bandwidth-Constrained Cyber-Physical Systems. *Automatica*, vol. 142, 2022.

J56. G. Jing, H. Bai, J. George, A. Chakrabortty and P. K. Sharma. Learning Distributed Stabilizing Controllers for Multi-agent Systems. *IEEE Control Systems Letters*, vol.6, 2022.

J55. S. Mukherjee, H. Bai, and A. Chakrabortty. Model-based and Model-Free Designs for Extended Continuous-Time LQR with Exogenous Inputs. *Systems and Control Letters*, vol. 26, June 2021.

J54. T. Sadamoto and A. Chakrabortty. Fast Real-Time Reinforcement Learning for Partially Observable Large-Scale Systems. *IEEE Transactions on Artificial Intelligence*, vol. 1(3), 2021.

J53. R. Minster, A. Saibaba, J. Kar, and A. Chakrabortty. Efficient Randomized Algorithms for Subspace System Identification. *SIAM Journal on Matrix Analysis and Applications*, 2021.

J52. A. Chakrabortty. Hierarchical Reinforcement Learning for Data-Driven Wide-Area Control of Power Systems. *IEEE Electrification Magazine*, vol. 9(1), March 2021.

J51. G. Jing, H. Bai, J. George, and A. Chakrabortty. Model-Free Optimal Control of Linear Multi-Agent Systems via Decomposition and Hierarchical Approximation. *IEEE Transactions on Control of Network Systems*, 2021.

J50. J. Kar and A. Chakrabortty. Scalable Design Methods for Online Data-Driven Wide-Area

Control of Power Systems. *IET Generation, Transmission & Distribution*, vol. 15(14), 2021.

J49. S. Mukherjee, H. Bai, A. Darvishi, A. Chakrabortty, and B. Fardanesh. Scalable Designs for Reinforcement Learning-based Wide-Area Damping Control. *IEEE Transactions on Smart Grid*, 2021.

J48. S. Mukherjee, H. Bai, and A. Chakrabortty. Reduced-Dimensional Reinforcement Learning Control using Singular Perturbation Approximations. *Automatica*, vol. 126, Apr. 2021.

J47. T. Sadamoto, A. Chakrabortty, and J. Imura. Fast Online Reinforcement Learning Control using State-Space Dimensionality Reduction. *IEEE Transactions on Control of Network Systems*, 2021.

J46. M. Inoue, T. Sadamoto, M. Arahata, and A. Chakrabortty. Optimal Power Flow Design for Enhancing Dynamic Performance: Potentials of Reactive Power. *IEEE Transactions on Smart Grid*, vol. 12(1), 2021.

J45. S. Mukherjee, A. Chakrabortty, and S. Babaei. Quantifying the Impact of Wind Power Penetration on Power System Coherency. *IEEE Transactions on Power System*, vol. 36(2), 2021.

J44. T. Sadamoto and A. Chakrabortty. Enhancing Controllability of Wind Farms Against Parametric Resonance: A Series Compensation Approach. *IEEE Control Systems Letters*, vol. 5(4), 2020.

J43. N. Negi and A. Chakrabortty. Sparsity-Promoting Optimal Control of Cyber-Physical Systems over Shared Communication Networks. *Automatica*, vol. 122, Dec. 2020.

J42. G. Jing, H. Bai, J. George, and A. Chakrabortty. Model-Free Reinforcement Learning of Minimal-Cost Variance Control. *IEEE Control System Letters*, vol. 4(4), pp. 916-921, 2020.

J41. S. Mukherjee, S. Babaei, A. Chakrabortty, and B. Fardanesh. Measurement-Driven Optimal Control of Utility-Scale Power Systems: A New York State Grid Perspective. *International Journal of Electrical Power and Energy Systems*, 2019.

J40. T. Sadamoto and A. Chakrabortty. Improving Controllability and Plug-and-Play Operation of Wind Farms using B2B Converters. *IEEE Control System Letters*, 2019.

J39. S. M. Dibaji, M. Pirani, D. Flamholz, A. M. Annaswamy, K. H. Johansson, and A. Chakrabortty. A Systems and Control Perspective of CPS Security. *Annual Reviews in Control*, vol. 47, pp. 394-411, 2019.

J38. V. Katewa, A. Chakrabortty, and V. Gupta. Differential Privacy for Network Identification. *IEEE Transactions on Control of Network Systems*, 2019.

J37. T. Sadamoto, A. Chakrabortty, T. Ishizaki and J. Imura. Dynamic Modeling, Stability, and Control of Power Systems with Distributed Energy Resources. *IEEE Control Systems Magazine*, April, vol. 39(2), pp. 34-65, 2019. (*Best paper award* 2020)

J36. N. Xue and A. Chakrabortty. Control Inversion: A Clustering-based Method for Distributed Wide-Area Control of Power Systems. *IEEE Transactions on Control of Network Systems* (special issue on power and energy networks), 2019.

J35. M. Liao and A. Chakrabortty. Optimization Algorithms for Catching Data-Manipulators in Power System Estimation Loops. *IEEE Transactions on Control System Technology*, vol. 27(3), 2019.

J34. T. Ishizaki, A. Chakrabortty, and J. Imura. Graph-Theoretic Analysis of Power Systems (Invited paper) *Proceedings of the IEEE*, vol. 106(5), pp. 931-952, May 2018.

J33. A. Jain, A. Chakrabortty, and E. Biyik. Distributed Damping Control of Power System Oscillations under Communication Constraints. *IFAC Control Engineering Practice*, vol. 74, pp. 132-143, 2018.

J32. T. Sadamoto, A. Chakrabortty, T. Ishizaki, and J. Imura. Retrofit Control of Wind-Integrated Power Systems. *IEEE Transactions on Power Systems*, vol. 33(3), pp. 2804-2815, 2018.

J31. M. T. Khan, A. A. Milani, A. Chakrabortty, and I. Husain. Dynamic Modeling and Feasibility Analysis of a Solid-State Transformer-Based Power Distribution System. *IEEE Transactions on Industry Applications*, vol. 54(1), pp. 551 - 562, 2018.

J30. A. Milani, M. T. Khan, A. Chakrabortty, and I. Husain. Equilibrium Point Analysis and Power Sharing in Distribution Systems Driven by Solid-State Transformers. *IEEE Transactions on Power Systems*, vol. 33(2), pp. 1473-1483, 2018.

J29. A. Chakrabortty and A. Bose. Smart Grid Simulations and Their Supporting Implementation Methods. *Proceedings of the IEEE*, vol. 105, no. 11, pp. 2220-2243, 2017.

J28. G. Chavan, M. Weiss, A. Chakrabortty, S. Bhattacharya, A. Salazar, and F. Ashrafi, Real-Time Identification and Predictive Analysis of a Multi-Area WECC Power System Model Using Synchrophasors, *IEEE Transactions on Smart Grid*, vol. 8(4), pp. 1977-1986, 2017.

J27. D. Soudbakhsh, A. Chakrabortty, and A. M. Annaswamy. A Delay-Aware Cyber-Physical Architecture for Wide-Area Control of Power Systems. *IFAC Control Engineering Practice*, vol. 60, pp. 171-182, Mar. 2017.

J26. S. Nabavi and A. Chakrabortty. Identification of Reduced-Order Models of Power Systems in a Differential-Algebraic Form. *IEEE Transactions on Power Systems*, vol. 31(1), pp. 198-207, 2017.

J25. F. Lian, A. Chakrabortty, and A. Duel-Hallen. Game-Theoretic Multi-Agent Control and Network Cost Allocation under Communication Constraints. *IEEE Journal on Selected Areas in Communications* (Special issue on Game Theory for Networks), vol. 35(2), pp. 330-340, 2017.

J24. J. Zhang, S. Nabavi, A. Chakrabortty, and Y. Xin. ADMM Optimization Strategies for Wide-Area Oscillation Monitoring in Power Systems under Asynchronous Communication Delays. *IEEE Transactions on Smart Grid*, vol. 7(4), pp. 2123-2133, 2016.

J23. S. Chandra, D. F. Gayme, and A. Chakrabortty. Time-Scale Modeling of Wind-Integrated Power Systems. *IEEE Transactions on Power Systems*, vol. 31(6), pp. 4712-4721, Nov. 2016.

J22. N. Xue and A. Chakrabortty. Parallel Identification of Power System Dynamic Models Under Scheduling Constraints, *IEEE Transactions on Power Systems*, vol. 31(6), pp. 4584-4594, Nov. 2016.

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C27. A. Chakrabortty, G. Michailidis, and Y. Xin. A Decentralized ID Algorithm for Detecting Slow-Fast Oscillations in Power Systems from Overwhelming Volumes of Phasor Data. *in proceedings of* 51^{st} *IEEE Conference on Decision & Control*, Maui, HI, Dec. 2012.

C26. A. Chakrabortty and T. Khan. Graph-Theoretic Modeling and Analysis of Oscillation Propagation in Large Power System Networks. *in proceedings of* 51^{st} *IEEE Conference on Decision & Control*, Maui, HI, Dec. 2012.

C25. D. F. Gayme and A. Chakrabortty. Shaping Power System Inter-area Oscillations through Control Loops of Grid Integrated Wind Farms. *in proceedings of* 51^{st} *IEEE Conference on Decision & Control*, Maui, HI, Dec. 2012.

C24. A. Chakrabortty. Wide-Area Damping Control of Power Systems Using Inversion Techniques: A TCSC-Based Model Reference Approach. *in proceedings of IEEE PES General Meeting*, San Diego, CA, 2012.

C23. J. E. Anderson and A. Chakrabortty. A Minimum Cover Algorithm for PMU Placement in Power System Networks Under Line Observability Constraints. *in proceedings of IEEE PES General Meeting*, San Diego, CA, 2012.

C22. D. F. Gayme and A. Chakrabortty. Impact of Wind Farm Placement on Inter-area Oscillations in Large Power Systems. *in proceedings of the American Control Conference*, Montreal, CA, 2012.

C21. A. Chakrabortty. Wide-Area Damping Control of Power Systems Using Clustering and FACTS-Based Redesigns. *in proceedings of the American Control Conference*, Montreal, CA, 2012.

C20. Y. Xin, I. Baldine, J. Chase, T. Beyene, and A. Chakrabortty. Virtual Smart Grid Architecture and Control Framework. *in proceedings of the* 2^{nd} *IEEE Conference on Smart Grid Communications* (SmartgridComm), Brussels, Oct. 2011.

C19. A. Chakrabortty. Wide-Area Damping Control of Large Power Systems Using a Model Reference Approach. *in Proceedings of the* 50^{th} *IEEE Conference on Decision & Control*, Orlando, FL, Dec. 2011.

C18. A. Chakrabortty and T. R. Khan. Modeling and Analysis of Oscillation Propagation in Complex Power System Networks. *in proceedings of the IEEE Power & Energy Society General Meeting*, Detroit, MI, Jul. 2011.

C17. A. Chakrabortty. Optimal Sensor Placement for Parametric Identification of Electrical Networks Using Mixed Phasor Measurements. *in proceedings of the American Control Conference*, San Francisco, CA, Jul. 2011.

C16. A. Chakrabortty and C. F. Martin. Optimal Sensor Placement for Parametric Model Identification of Electrical Networks, Part II: Estimation under Output Feedback. *in Proceedings of* 49^{th} *IEEE Conference on Decision and Control*, Atlanta, GA, Dec. 2010.

C15. A. Chakrabortty and C. F. Martin. Optimal Sensor Placement for Parametric Model Identification of Electrical Networks, Part I: Open Loop Estimation. *in Proceedings of* 49^{th} *IEEE Conference on Decision and Control*, Atlanta, GA, Dec. 2010.

C14. A. Chakrabortty and J. H. Chow. Macroscopic Modeling of Large Power Systems using

Distributed Dynamic Measurements with Dependence on Network Topology. *in Proceedings of* 49^{th} *IEEE Conference on Decision and Control*, Atlanta, GA, Dec. 2010.

C13. A. Chakrabortty and A. Salazar. Building an Electromechanical Model for the Pacific AC Intertie using PMU Measurements. *in Proceedings of IEEE PES General Meeting*, Minneapolis, MN, Jul 2010.

C12. A. Chakrabortty and M. Szczodrak. Optimal Placement of PMUs for Identification of Power System Models using Noisy Measurement Data. *in Proceedings of IEEE PES General Meeting*, Minneapolis, MN, Jul 2010.

C11. A. Chakrabortty, J. H. Chow and A. Salazar. A Measurement-based Framework for Dynamic Equivalencing of Large Power Systems using WAMS. *in Proceedings of IEEE PES Conference on Innovative Smart Grid Technologies*, Washington, DC, Jan. 2010.

C10. A. Chakrabortty and M. Mesbahi. Performance Oriented High Gain Redesigns for FACTS-controlled SMIB Power Systems. *in Proceedings of the* 48^{th} *IEEE Conference on Decision and Control*, Shanghai, China, 2009.

C9. A. Chakrabortty. Some New Results on the Identification of Two-machine Radial Power Systems with SVC Control. *in Proceedings of the American Control Conference*, St. Louis, MO, pp. 2216-2121, 2009.

C8. A. Chakrabortty and J. H. Chow. Synchronized Phasor Data Estimation of Dynamic Parameters for Radial Power System Transfer Path with Voltage Reinforcement. 11^{th} *Symposium of Specialists in Electric Operational and Expansion Planning (SEPOPE)*, Belem, Brazil, March, 2009.

C7. A. Chakrabortty and M. Arcak. Robust Stabilization and Performance Recovery of Nonlinear Systems with Input Unmodeled Dynamics. *in Proceedings of the* 47^{th} *IEEE Conference on Decision and Control*, Cancun, Mexico, 2008.

C6. A. Chakrabortty, M. Arcak, and P. Tsiotras. Robust Design of a Spacecraft Attitude Tracking Control System with Actuator Uncertainties. *in Proceedings of the* 47^{th} *IEEE Conference on Decision and Control*, Cancun, Mexico, 2008.

C5. A. Chakrabortty and J. H. Chow. Interarea Model Estimation for Radial Power System Transfer Paths with Voltage Support using Synchronized Phasor Measurements. *in Proceedings of the IEEE Power Engineering Society General Meeting*, Pittsburgh, PA, July, 2008.

C4. A. Chakrabortty and M. Arcak. A Three-Time Scale Redesign for Robust Stabilization and Performance Recovery of Nonlinear Systems with Input Uncertainties. *in Proceedings of the* 46^{th} *IEEE Conference on Decision and Control*, New Orleans, LA, 2007.

C3. A. Chakrabortty, E. Scholtz, and M. Arcak. Performance Recovery of Power Systems with Unknown Parameters and Faults. *in Proceedings of the* 46^{th} *IEEE Conference on Decision and Control*, New Orleans, LA, 2007.

C2. A. Chakrabortty and M. Arcak. A Two-Time Scale Redesign for Robust Stabilization and Performance Recovery of Uncertain Nonlinear Systems. *in Proceedings of the American Control Conference*, New York, NY, 2007.

C1. J. H. Chow, A. Chakrabortty, M. Arcak, B. Bhargava, and A. Salazar. Synchronized Phasor Data Based Energy Function Analysis of Power Transfer Paths. *in Proceedings of the IEEE Power Engineering Society General Meeting*, Montreal, Quebec, Canada, June 2006.

STUDENT SUPERVISION

1. Postdoctoral Researcher: Dr. Gangshan Jing (2019-2021), Dr. Myung (Michael) Cho (2018-2019), Dr. Nilanjan Roy Chowdhury (2017-2018), Dr. Rafael Montoya (2016-2018), Dr. Muataz Boker (2014-2015)

2. PhD: Thomas Nudell (Fall 2014), Seyedbehzad Nabavi (Spring 2015), Souvik Chandra (Summer 2015), Matthew D. Weiss (Summer 2016), Jianhua Zhang (Summer 2016), Abhishek Jain (Fall 2017), Mang Liao (Fall 2018), Nan Xue (Fall 2018), Sayak Mukherjee (Summer 2020), Haoqi Ni (Summer 2020), Nandini Negi (Spring 2021), Prathistha Shukla (Summer 2021), Rahul Chakraborty (Spring 2023), Jishnudeep Kar (Spring 2023), Amit Kumer Podder, Rahul Roy, Riddhi Khatua.
3. PhD co-supervision: Feier Lian, Alireza Milani, Tanvir Khan, Amirhassan F. Dizche
4. MS: Tim Gubitz (Spring 2018), Nachiappan Chockalingam (Fall 2015), Sina Parhizi (Summer 2013), Shangmin Lin (Summer 2014), Kathleen Sico (Fall 2014)
5. BS: Andrew Sonnier, Matthew Murray, Jaspal Singh, Steve Qiu, Afsana Chowdhury, Nathan Hansen, Maria Sable, Travis Tippens, Jose Zavala, Seyed Mohsin, Aaron Martin, Carlos Flores, Rusul Altaay, Lizbeth Chavez, Joel Anderson, Jennifer Felder, Brennan Keegan, Rinita Gulliani, Jerene Jacob (TTU), Andrew Bellingsley (TTU), Bilal Bissat (TTU)

Visiting Researchers

1. Dr. Takahiro Kawaguchi, Japan, 2019
2. Dr. Tomonori Sadamoto, Japan, 2017-2019
3. Marcos Alfredo Hernandez, Mexico, 2017-2018
4. Dr. Emrah Biyik, Turkey, 2013
5. Marta A. Szczodrak, Poland, 2009

Poster Presentations

P51. R. Khatua, R. Chakraborty, A. Chakrabortty. Stability Enhanced Power System Operation Using Physics Informed Neural Networks. *FREEDM Annual Research Symposium*, 2025.

P50. A. Podder, T. Sadamoto, A. Chakrabortty. Optimal Distribution of Grid-following and Grid-forming Converters for Charging Control of Electric Vehicles. *NC State University Graduate Research Symposium* 2025.

P49. A. Podder, T. Sadamoto, A. Chakrabortty. Optimal Distribution of Grid-following and Grid-forming Converters for Charging Control of Electric Vehicles. *FREEDM Annual Research Symposium*, 2025.

P48. R. Roy and A. Chakrabortty. μ-Synthesis-Based Generalized Robust Controller Design for an Islanded Microgrid. *FREEDM Annual Research Symposium*, 2025.

P47. R. Khatua, R. Chakraborty, A. Chakrabortty. Data-Driven H2-PFM Using Physics Informed Neural Networks. *FREEDM Annual Research Symposium*, 2024.

P46. R. Khatua, R. Chakraborty, A. Chakrabortty. Power Flow Optimization and Stability Analysis using Physics Informed Neural Networks. *NC State Applied AI in Engineering & Computer Science Symposium*, 2024.

P45. A. Podder, T. Sadamoto, A. Chakrabortty. Co-optimization of EV Charging Control and Incentivization for Enhanced Power System Stability. *FREEDM Annual Research Symposium*, 2024.

P44. A. Podder, T. Sadamoto, A. Chakrabortty. Co-optimization of EV Charging Control and Incentivization for Enhanced Power System Stability. *IEEE HKN Graduate Research Pitch Competition*, 2024.

P43. A. Podder, T. Sadamoto, A. Chakrabortty. Optimal Distribution of Grid-following and Grid-forming Converters for Charging Control of Electric Vehicles. *ECE-GSA Research Symposium*, 2024.

P42. A. Podder and A. Chakrabortty. Optimal Charging Control of Electric Vehicles with Power Grid Dynamical Constraints. *NCSU Graduate Research Symposium Poster Competition*, 2023.

P42. J. Kar and A. Chakrabortty. Neural Network-Assisted Resilient Wide-Area Control of Power Systems under Denial-of-Service Attacks. *NCSU Graduate Research Symposium Poster Competition*, 2021 (second prize winner).

P41. R. Chakraborty, A. Chakrabortty, E. Farantatos, M. Patel. Area-Prioritized Power Flow and Frequency Control using Inverter-based Resources. *Duke Energy Student Poster Competition*, November 2020 (second prize winner).

P40. R. Chakraborty, A. Chakrabortty, E. Farantatos, M. Patel. Area-Prioritized Power Flow and Frequency Control using Inverter-based Resources. *FREEDM Annual Symposium*, NC State University, April 2019.

P39. N. Negi and A. Chakrabortty. Sparse Optimal Control of LTI Systems Under Sparsity-Dependent Delays. *FREEDM Annual Site Visit Conference*, NC State University, June 2018.

P38. P. Shukla, A. Duel-Hallen, and A. Chakrabortty. Game-Theoretic Methods for Security Investment in Cyber-physical Control Systems *FREEDM Annual Site Visit Conference*, NC State University, June 2018.

P37. A. Milani, M. T. Khan, A. Chakrabortty, and I. Husain. Decentralized Passivity-based PI Controller for Asymptotic Stability of a SST-based Power Distribution Network *FREEDM Annual Site Visit Conference*, NC State University, May 2017.

P36. M. T. Khan, A. Milani, A. Chakrabortty, and I. Husain. Feasibility Analysis and Power Sharing of Solid-State Transformers in Power Distribution System *FREEDM Annual Site Visit Conference*, NC State University, May 2017.

P35. A. Milani, M. T. Khan, A. Chakrabortty, and I. Husain. Feasibility Analysis of the FREEDM System Dynamic Models. *FREEDM Annual Site Visit Conference*, Florida State University, Tallahassee, FL, June, 2016.

P34. A. Milani, M. T. Khan, A. Chakrabortty, and I. Husain. Dynamic Analysis of the FREEDM System, Part I: Comprehensive State-Space Modeling. *FREEDM Annual Site Visit Conference*, May, 2015.

P33. A. Milani, M. T. Khan, A. Chakrabortty, and I. Husain. Dynamic Analysis of the FREEDM System, Part II: Existence, Uniqueness and Local Stability of Equilibria. *FREEDM Annual Site Visit Conference*, May, 2015.

P32. A. Boker and A. Chakrabortty. Aggregation-Based Wide-Area Control of Clustered Power System Networks. *FREEDM Annual Site Visit Conference*, May, 2015.

P31. A. Jain, E. Biyik, and A. Chakrabortty. A Model Predictive Control Technique for Selective Modal Damping in Power Systems. *FREEDM Annual Site Visit Conference*, May, 2015.

P30. S. Chandra, D. Mehta, and A. Chakraborty. Equilibria Analysis of Power Systems Using a Numerical Homotopy Method. *FREEDM Annual Site Visit Conference*, May, 2015.

P29. A Boker and A. Chakrabortty. Aggregation-Based Wide-Area Control of Clustered Cyber-Physical Systems. 4^{th} *NCSU Postdoc Research Symposium*, May, 2015.

P28. G. Chavan, M. Weiss, A. Chakrabortty, and S. Bhattacharya. Real-time Identification and Predictive Analysis of a Multi-Area WECC Power System Model Using Synchrophasors. *NASPI User Group Meeting*, San Mateo, CA, Mar. 2015.

P27. S. Nabavi, J. Zhang, and A. Chakrabortty. Distributed Algorithms for Wide-Area Oscillation Monitoring Using Interdependent PMU-PDC Architectures. *FREEDM Industry Conference*, Jan. 2015.

P26. J. Zhang, A. Chakrabortty, and Y. Xin. Distributed Implementation of Wide-Area Monitoring Algorithms for Power Systems Using a US-Wide ExoGENI-WAMS Testbed. *FREEDM Industry Conference*, Jan. 2015.

P25. J. Zhang, P. Jaipuria, A. Chakrabortty, and A. Hussain. Attack-Resilient Distributed Optimization for Wide-Area Oscillation Monitoring of Large Power Systems. *Conference on Decision and Game Theory for Security* (Gamesec), Nov. 2014.

P24. S. Mohsin, J. Zhang, and A. Chakrabortty. Decoy Algorithms for Detection and Mitigation of Cyber Attacks on Wide-Area Monitoring Systems. *NCSU Undergraduate Research Symposium*, July 2014.

P23. A Hussain and A. Chakrabortty. Design and Analysis of Wide-Area Resilient Control Algorithms for Large-Scale Power Systems: Theoretical and Experimental Methods. *Smart America Testbed Demonstration Event*, Washington DC, June 2014.

P22. Y. Xin and A. Chakrabortty. A Study on Group Communication in Distributed Wide-Area Measurement System Networks in Large Power Systems. 1^{st} *IEEE Global Conference on Signal & Information Processing*, Austin, TX, Dec. 2013.

P21. A. Chakrabortty, F. Mueller, R. Bobba, N. Vaidya, and Y. Xin. Distributed Asynchronous Algorithms and Software Systems for Wide-Area Monitoring of Power Systems Using Synchrophasors. *NSF Cyber-Physical System (CPS) PI Meeting*, Arlington, VA, Oct. 2013.

P20. C. Flores and A. Chakrabortty. Correlating Power System Responses with Notions of Electrical Distance: A Statistical Approach. *NCSU Undergraduate Research Symposium*, July 2013.

P19. S. Thakur and A. Chakrabortty. Multi-Dimensional Wide-Area Visualization of Power System Dynamics Using Synchrophasors. *IEEE PES General Meeting*, Jul. 2013

P18. M. D. Weiss, Y. Xin, and A. Chakrabortty. A Multi-User Network Testbed for Wide-Area Monitoring & Control of Power Systems Using Distributed Sychrophasors. *US Ignite Summit*, Chicago, Jun. 2013.

P17. M. D. Weiss, Y. Xin, and A. Chakrabortty. A Multi-User Network Testbed for Wide-Area Monitoring & Control of Power Systems Using Distributed Sychrophasors. *ACM e-Energy Conference*, UC Berkeley, 2013.

P16. J. E. Anderson and A. Chakrabortty. A Minimum Cover Algorithm for PMU Placement in Power System Networks Under Line Observability Constraints. *IEEE PES General Meeting Poster Session*, San Diego, CA, 2012.

P15. T. R. Nudell and A. Chakrabortty. Distance Characterization and Input Localization in Network Dynamic Systems. *NC State ECE Annual Graduate Symposium*, Apr. 2012.

P14. J. Anderson and A. Chakrabortty. Optimal Sensor Placement and Malicious Attack Detection in Power Systems. *NC State Undergraduate Symposium*, Apr. 2012.

P13. J. K. Felder, R. Altay, and A. Chakrabortty. Real-time Algorithms for Power System State Prediction. *NC State Undergraduate Symposium*, Apr. 2012.

P12. T. R. Nudell and A. Chakrabortty. Distances in Node- and Edge-Weighted Networked Dynamic Systems via the Asymmetric Graph Laplacian. *NC State Graduate Symposium*, Mar. 2012.

P11. J. Anderson and A. Chakrabortty. A Visualization Interface Design for Wide-Area Monitoring of Electric Power Systems. *NASPI Working Group Research Meeting*, Orlando, FL, Feb. 2012.

P10. M. Weiss, J. Anderson, and A. Chakrabortty. Synchrophasor Research at NC State University. *FREEDM Industry Review Meeting*, Jan. 2012.

P9. B. Keegan, R. Gulliani, and A. Chakrabortty. Interactive Software Design for Visualization of Power System Disturbances. *NC State Undergraduate Symposium*, Aug. 2011.

P8. J. Anderson, J. K. Felder, and A. Chakrabortty. A Visualization Interface Design for Wide-Area Monitoring of Electric Power Systems. *NC State Undergraduate Symposium*, Raleigh, NC, Apr. 2011.

P7. J. Anderson, J. K. Felder, and A. Chakrabortty. A Visualization Interface Design for Wide-Area Monitoring of Electric Power Systems. *FREEDM Industry Review Meeting*, Raleigh, NC, Jan. 2011.

P6. A. Chakrabortty and M. Mesbahi. Performance Oriented High Gain Redesigns for FACTS-controlled SMIB Power Systems. 48^{th} *IEEE Conference on Decision and Control*, Shanghai, China, 2009.

P5. A. Chakrabortty. Some New Results on the Identification of Power System Models with SVC Control using Phasor Measurements. *Working Group Meeting of North American Synchrophasor Initiative (NASPI)*, Charlotte, North Carolina, October 2008.

P4. A. Chakrabortty and J. H. Chow. Interarea Model Estimation for Two-machine Power Systems using Synchronized Phasor Measurements. *Center for Automation Technologies and Systems (CATS)*, Rensselaer Polytechnic Institute, NY, April 2008.

P3. A. Chakrabortty, L. Vanfretti, J. H. Chow, and M. Arcak. Synchronized Phasor Data Based Dynamic Model Estimation for Two-machine Power Systems. *Student poster presentation session, IEEE Power Engineering Society General Meeting*, Tampa, FL, June 2007.

P2. A. Chakrabortty, J. H. Chow, M. Arcak, B. Bhargava, and A. Salazar. An Energy Function Approach for the Monitoring of Power Systems Dynamics using Synchronized Phasor Data. *Student poster presentation session, IEEE Power Engineering Society General Meeting*, Montreal, Quebec, Canada, June 2006.

P1. A. Chakrabortty, J. H. Chow, M. Arcak, B. Bhargava, and A. Salazar. An Energy Function Approach for the Monitoring of Power Systems Dynamics using Synchronized Phasor Data. *Automation Open House Poster Session, Center for Automation Technologies and Systems (CATS)*, Rensselaer Polytechnic Institute, NY, May 2006.

Invited Talks & Presentations

Presentations on behalf of NSF:

- NSF EPCN program highlights at the IEEE IDEAS (International Decentralized Energy Access Solutions) Conference, Bali, 2025.
- NSF's Roles in Engineering Workforce Development in Power Systems, ECEDHA annual meeting, Albuquerque, NM, 2023
- NSF EPCN program highlights at *AI for Energy Innovation* workshop at the 37^{th} AAAI Conference on Artificial Intelligence, Washington DC, 2023
- NSF Clean Energy Media Briefing, NSF Office of Legislative and Public Affairs (OLPA), 2022
- NSF-sponsored workshops for Dr. Ned Mohan's curriculum development in power systems at Univ. of Minnesota, 2020-present
- Special session on NSF programs in Control Systems, American Control Conference, 2022

- Panel Session on Power Systems and Control, IEEE Conf. on Decision and Control 2021
- IEEE Power and Energy Society Workshop on Machine Learning in Power Systems at Univ. of Tennessee Knoxville, 2021
- Workshop on Transportation CPS, CPS Week 2021
- Inter-Agency Power Group (IAPG) Annual Meeting, 2021
- Workshop on Power System Resilience at Resilience-Week, 2021
- FREEDM Research Symposium 2021 at North Carolina State University
- NSF-Sponsored ECE Department Heads and Faculty Online Workshop at University of Minnesota, 2021
- Virginia Tech Power Engineering Conference (PEC), Aug. 2020

Research Presentations:

87. Invited talk at Power Systems Seminar, Texas A&M University, 2024
Organizers: Xin Chen
Title - *Co-Optimization of EV Charging Control and Incentivization for Enhanced Power System Stability*

86. Invited talk at Power Systems Seminar, Iowa State University, 2024
Organizers: Hugo Villegas Pico
Title - *Co-Optimization of EV Charging Control and Incentivization for Enhanced Power System Stability*

85. Invited talk at Power Systems Seminar, Florida State University, 2024
Organizers: Olugbenga Anubi
Title - *Co-Optimization of EV Charging Control and Incentivization for Enhanced Power System Stability*

84. Invited talk at IEEE CDC Pre-conference workshop on "Learning and control for decarbonized energy and transportation systems", Singapore, 2023
Organizers: Apurva Shukla, Sivaranjini Seetharaman
Title - *Optimal Charging Control and Incentivization Strategies for Electric Vehicles Considering Grid Dynamical Constraints*

83. Invited talk at Power Systems Seminar, University of Houston, 2023
Organizer: Lei Fan
Title - *Scalable Designs for Reinforcement Learning based Optimal Control of Very Large-Scale Networks*

82. Invited talk at General Electric workshop on Control, Communications and AI, 2022
Organizer: Frederick Wheeler, Subhrajit Roychowdhury
Title - *Scalable Designs for Reinforcement Learning based Optimal Control of Very Large-Scale Networks*

81. Invited tutorial at Workshop on Cyber-Physical Systems at Indian Institute of Science (IISC), India, 2022
Organizer: Vaibhav Katewa
Title - *Scalable Reinforcement Learning Control of Very Large-Scale Network Dynamic Systems*

80. Invited talk at IEEE Control Systems Society Workshop on Control for Societal-Scale Challenges, KTH, Stockholm, Sweden
Organizers: Karl Johansson, George Pappas, Anuradha Annaswamy
Title - *Fast Online Control using Hierarchical Reinforcement Learning*

79. Invited talk at Cyber-Physical Systems research group at UNC Chapel Hill, 2022
Organizers: Parasara Duggirela, Samarjit Chakrabarty
Title - *Control Co-Designs for Human-in-the-Loop Cognitive Cyber-Physical Systems*

78. Invited talk at Workshop on Adaptable Transportation and Power Systems, University of Washington Seattle, 2021
Organizers: Cynthia Chen, Anthony Kuh, Vijay Gupta
Title - *Control Co-Designs for Human-in-the-Loop Cognitive Cyber-Physical Systems*

77. Invited talk at Iowa State Power System Webinar, July 2020
Organizer: Zhaoyu Wang
Title - *Wide-Area Control of Power Systems using Structured Reinforcement Learning*

76. Invited talk at INFORMS 2020, special session on Machine Learning in Energy Systems
Organizer: Vassilis Kekatos
Title - *Wide-Area Control of Power Systems using Structured Reinforcement Learning*

75. Invited talk at Canadian Operations Research Conference (CORS), June 2020
Organizer: John Simpson-Porco
Title - *Wide-Area Control of Power Systems using Structured Reinforcement Learning*

74. Invited talk at ECE Department, Clarkson University, March 2020
Organizer: Jianhua Zhang
Title - *Fast Online Control using Hierarchical Reinforcement Learning*

73. Invited talk at ECE Department Control System Seminar Series, University of Michigan Ann Arbor, October 2019
Organizer: Johanna Mathieu
Title - *Fast Online Control using Hierarchical Reinforcement Learning*

72. Invited talk at panel session on "NSF CAREER Awardees: Research Topics on Smart Grid Control," at IEEE PES General Meeting, 2019
Organizer: Anil Pahwa
Title - *Wide-Area Control of Power Systems using Structured Reinforcement Learning*

71. Invited talk at George Washington University, August 2019
Organizer: Payman Dehghanian
Title - *Wide-Area Control of Power Systems using Structured Reinforcement Learning*

70. Invited talk for 2019 Joint JST-NSF-DFG Workshop on Distributed Energy Management Systems, Tokyo, June 2019
Organizer: Zhihua Qu
Title - *Wide-area Control using Reinforcement Learning, but in Severely Reduced Dimension*

69. Invited talk at ESIC seminar series, Washington State University, May 2019
Organizer: Enrique Mallada
Title - *Reinforcement Learning based Wide-Area Control of Power Systems*

68. Invited talk at DOE Workshop on Low Inertia Power Systems, University of Washington, May 2019
Organizer: Brian Johnson and Sairaj Dhople
Title - *A Globally Stabilizing Passivity-based PI Controller for Networked Microgrids with Solid-State Transformers*

67. Invited talk at Conference on Information Sciences and Systems, Baltimore, Maryland, March 2019
Organizer: Enrique Mallada
Title - *Reinforcement Learning based Wide-Area Control of Power Systems using Data-Driven Dimensionality Reduction*

66. Invited talk at NSF-JST-RCN-India Workshop on Power System Controls, IIT Bombay, 2019
Organizer: Vijay Vittal and Anupama Kowli

Title - *Reinforcement Learning based Wide-Area Control of Power Systems using Data-Driven Dimensionality Reduction*

65. Invited participant in pre-conference workshop on 'Learning and Data Science for Power System Resiliency' at IEEE Power and Energy Society General Meeting, 2018
Organizer: Anurag Srivastava

64. Semi-plenary talk at Grand Renewable Energy 2018 International Conference and Exhibition, 2018
Organizer: Jun-ichi Imura
Title - *New Problems on Optimization and Control for Electric Power Systems*

63. Invited talk at Keio University, Japan
Organizer: Toru Namerikawa
Title - *Sparse Optimal Control Designs for Wide-Area Control of Power Systems*

62. Invited talk at CCDC Seminar, University of California Santa Barbara
Organizer: Mahnoush Alizadeh
Title - *Sparse Optimal Control Designs for Wide-Area Control of Power Systems*

61. Invited talk at tutorial session on "NSF CAREER Awardees: Research Topics on Smart Grid Control," at American Control Conference, Milwaukee, 2018
Organizer: Kishan Baheti
Title - *Infusing Autonomy in Networked Microgrids through Optimization and Control*

60. Invited talk for panel session on 'Big Data in Power Systems' at IEEE PES General Meeting, Chicago, 2017
Organizer: Hamed Mohsenian-Rad and Ning Zhou
Title - *Power System Identification Problems using Synchrophasor Measurements*

59. Focus Period talk at Lund Center for Control of Complex Engineering Systems, Lund University, Sweden, June 2017
Organizer: Anders Rantzer and Pontus Gisselson
Title - *Distributed Optimization Algorithms for Eigenvalue Estimation Problems in Power Systems*

58. Invited talk for 2017 Joint JST-NSF-DFG Workshop on Distributed Energy Management Systems, Tokyo, June 2017
Organizer: Sairaj Dhople and Kishan Baheti
Title - *Infusing Autonomy in Power Distribution Systems using Smart Transformers*

57. Invited talk at SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 2017
Organizer: Yoshihiko Susuki and Igor Mezic
Title - *A Data-Driven Distributed Algorithm for Nonlinear Mode Estimation in Power Systems*

56. Invited talk at Internet2 Global Summit, Washington DC, April 2017
Organizer: Florence Hudson
Title - *A Testbed Demo of Cyber Attacks in Power Grids*

55. Invited talk at Conference on Information Sciences and Systems, Baltimore, Maryland, March 2017
Organizer: Enrique Mallada and Dennice Gayme
Title - *Distributed Cyber-Physical Algorithms for Wide-Area Control of Power Systems*

54. Invited talk at Center for Cyber-Physical Systems and the Internet of Things, University of Southern California, 2017
Organizer: Paul Bogdan
Title - *Cyber-Physical Monitoring and Control of Power Systems using Synchrophasors*

53. Invited talk in Workshop on New Opportunities for Research in Systems and Control: *A workshop to celebrate the* 60^{th} *Birthday of Pramod Khargonekar*, IEEE Conference on Decision and Control (CDC), 2016
Organizer: Kameshwar Poolla, Mario Rotea, Kishan Baheti
Title - *New Research Directions in Power System Dynamics and Controls*

52. Invited talk at Purdue University, 2016
Organizer: Shreyas Sundaram
Title - *Distributed Algorithms for Wide-Area Monitoring of Power Systems*

51. Coordinated Science Lab (CSL) Control Seminar, University of Illinois at Urbana Champaign, 2016
Organizer: Prashant Mehta
Title - *Distributed Algorithms for Wide-Area Monitoring of Power Systems*

50. Invited talk at Keio University, Japan, 2016
Organizer: Toru Namerikawa
Title - *Distributed Algorithms for Wide-Area Monitoring of Power Systems*

49. Tokyo Electric Power Company (TEPCO), Japan, 2016
Organizer: Teruo Ohno
Title - *Introduction to Wide-Area Monitoring and Control of Power Systems*

48. Tokyo Institute of technology, Japan, 2016
Organizer: Jun-ichi Imura
Title - *A Tutorial on Wide-Area Monitoring and Control of Power Systems*

47. Osaka Prefecture University, Japan, 2016
Organizer: Yoshihiko Susuki
Title - *A Tutorial on Wide-Area Monitoring and Control of Power Systems*

46. Invited talk and panelist for panel session on 'Wide-Area Control of Power Systems' at IEEE PES General Meeting, Boston, 2016
Organizer: Kevin Tomsovic (Univ. of Tennessee)
Title - *Cyber-Physical Co-Designs for Wide-Area Control*

45. Invited talk and panelist for panel session on 'Synchrophasor Education' at IEEE PES General Meeting, Boston, 2016
Organizer: Anurag Srivastava (Washington State Univ)
Title - *ExoGENI-WAMS: A Cyber-Physical Testbed for Research and Education on Wide-Area Monitoring and Control*

44. Invited talk and panelist for pre-conference workshop on Smart Grid Controls at American Control Conference, Boston, 2016
Organizers: Jakob Stoustrup, Anu Annaswamy, Z. Qu, A. Farid, and U. Vaidya
Title - *Co-designs for Wide-Area Control: A Cyber-Physical Perspective*

43. Invited talk for 2016 Joint JST-NSF-DFG Workshop on Distributed Energy Management Systems, Heidelberg, May 2016
Organizer: Anil Pahwa (Univ of Kansas) and Kishan Baheti (NSF)

42. University of California San Diego, April 2016
Organizer: Sonia Martinez
Title - *Distributed Asynchronous Algorithms for Wide-Area Monitoring and Control of Power Systems using Synchrophasors*

41. Invited talk at NSF workshop on Accesible Remote Testbeds, November 2015
Organizer: Magnus Egerstedt (Georgia Tech)
Title - *Distributed Asynchronous Algorithms for Wide-Area Monitoring and Control of Power*

Systems using Synchrophasors

40. Invited talk at Keio University for NSF-JST CREST workshop, November 2015
Organizer: Toru Namerikawa (Keio University)
Title - *Oscillation Analysis in Power Systems with High Penetration of Wind Power*

39. NSF CURENT ERC Seminar, University of Tennessee, November 2015
Organizer: Donatello Materessi
Title - *Distributed Asynchronous Algorithms for Wide-Area Monitoring and Control of Power Systems using Synchrophasors*

38. Palo Alto Research Center (PARC), October 2015
Organizer: Anurag Ganguli (PARC)
Title - *Distributed Asynchronous Algorithms for Wide-Area Monitoring and Control of Power Systems using Synchrophasors*

37. Stanford Energy Research Group, October 2015
Organizer: Ram Rajagopal (Stanford University)
Title - *Distributed Asynchronous Algorithms for Wide-Area Monitoring and Control of Power Systems using Synchrophasors*

36. Invited presentation in the workshop 'Distributed optimization and control for power systems', 22^{nd} International Symposium on Mathematical Programming (ISMP), July 2015
Organizer: Uday Shanbhag (Pennsylvania State University)
Title - *Synchronous and Asynchronous ADMM Algorithms for Eigenvalue Estimation in Power Systems*

35. Coordinated Systems Lab (CSL) at University of Illinois Urbana Champaign, June 2015
Organizer: Nitin Vaidya
Title - *Distributed Asynchronous Algorithms for Wide-Area Monitoring of Power Systems using Synchrophasors*

34. Invited talk at the 2015 Joint JST-NSF-DFG Workshop on Distributed Energy Management Systems, April 2015
Organizer: Kishan Baheti (NSF) and Kevin Tomsovic (University of Tennessee)
Title - *Distributed Asynchronous Algorithms for Wide-Area Monitoring and Control of Large power Systems*

33. Invited talk at SIAM Computational Science and Engineering Mini-Symposium, Mar. 2015
Organizer- Mahantesh Halappanavar, Mani Venkatasubramanian, Alex Pothen
Title - *ADMM-Based Distributed Optimization Algorithms for Wide-Area Oscillation Monitoring*

32. Invited talk at Information Sciences Institute (ISI), University of Southern California, Nov. 2014
Organizer- Alefiya Hussain
Title - *Attack-Resilient Distributed Algorithms for Wide-Area Monitoring of Power Systems Using Synchrophasors*

31. Invited talk at CISE Seminar Series, Boston University, Oct. 2014
Organizer- Michael Caramanis
Title - *Distributed Algorithms for Wide-Area Monitoring of Power Systems Using Synchrophasors*

30. Invited talk at the 9^{th} CMU Electricity Conference, Mar. 2014
Organizer- Marija Ilic
Title - *Wide-Area Control of Power Systems Using Arbitrated Communication Networks*

29. Invited panelist talk at Power System Conference, Clemson University, Mar. 2014

Title - *Exo-GENI WAMS: A Multi-User Network Testbed for Synchrophasor Research & Education*

28. Invited talk and panelist at IEEE Innovative Smart Grid Technologies (ISGT 2014) Conference, Feb. 2014
Organizer: Arnie De Castro
Title - *Creating Synchrophasor-based Predictive Dynamic Models for Wide-area Monitoring and Control*

27. Invited poster presentation at the 2014 Joint JST-NSF-DFG Workshop on Distributed Energy Management Systems, Jan 2014
Organizer: Kishan Baheti (NSF) and Anthony Kuh (University of Hawaii Manoa)
Title - *Distributed Asynchronous Algorithms and Software Systems for Wide-Area Monitoring of Large power Systems*

26. Invited talk at the IEEE GlobalSIP Symposium on Information Processing in the Smart Grid, Dec. 2013
Organizers: Lalitha Sankar and Shalinee Kishore
Title - *A Study on Group Communication in Distributed Wide-Area Measurement System Networks in Large Power Systems*

25. Invited Cyber-Physical System testbed discussion at the Smart America Challenge, US White House, Dec. 2013
Organizers: Geoff Mulligan and Sokwoo Rhee (NIST)

24. Florida International University, Nov. 2013
Organizer: Arif Islam
Title - *Wide-Area Control of Power Systems using Synchrophasors*

23. A. D. Patel Institute of Technology, Gujarat, India, Oct. 2013
Invited talk at International Workshop on Sensor Network and Wireless Communications
Organizer: Vishvjit Thakar
Title - *Cyber-Physical Algorithms for Distributed Estimation and Monitoring of Power Systems*

22. US Ignite Summit, June 2013
Organizer: Tsege Beyene, CISCO Systems
Title - *Multi-User Network Testbed for Wide-Area Monitoring of Power Systems*

21. Johns Hopkins University, February 2013
Organizer: Dennice F. Gayme
Talk title - *Decentralized Algorithms for Wide-area Monitoring and Control of Power Systems using Synchrophasors*

20. Southern California Edison, February 2013
Organizer: Frank Ashrafi
Talk title - *Wide-area Modeling of WECC Oscillations using Synchrophasor Data*

19. Carnegie Mellon University, January 2013
Organizer: Marija D. Ilic
Talk title - *Wide-area Modeling, Monitoring and Control of Large Power Systems using Synchrophasors*

18. University of California Santa Barbara, September 2012
Organizer: Francesco Bullo
Talk title - *Wide-area Modeling, Monitoring and Control of Large Power Systems using Synchrophasors: Theory, Experiments and Validation*

17. Loughborough University, United Kingdom, September 2012,
Organizer: John Thompson

Talk title - *Distributed Asynchronous Algorithms for Wide-Area Monitoring and Control Using Synchrophasors*

16. Indian Institute of Technology Kharagpur, India, June 2012
Organizer: Dheeman Chatterjee
Talk title - *Wide-area Modeling and Control of Large Power Systems using Distributed Synchrophasors*

15. Los Alamos National Laboratory, NM, Annual Seminar Series, May 2012
Organizer: Michael (Misha) Chertkov, Scott Backhaus, Russell Bent
Talk title - *Wide-area Modeling and Control of Large Power Systems via Real-Time Digital Simulations using Distributed Synchrophasors*

14. Invited talk at the 8^{th} Annual Carnegie Mellon Conference on the Electricity Industry, March 2012
Organizer: Marija Ilic
Talk title - *Distributed Algorithms for PMU Data Processing*

13. Iowa State University, Ames, IA, Feb. 2012,
Organizer: Dionysios Aliprantis
Talk Title - *PMU Placement in Power System Networks Under Line Observability Constraints.*

12. IEEE Smart Grid Vision Meeting, Nov. 2011,
Organizer: Anuradha Annaswamy, Tariq Samad, Massoud Amin

11. Workshop on "The Science and Technology of Smart Grids in Russia and in the World," Moscow, Russia, Nov. 2011,
Organizer: Konstantin Turitsyn, Skolkovo Foundation
Talk Title - *Next-Generation Monitoring and Control of Smart Grids Using Wide-Area Phasor Measurements*

10. University of Florida, Gainesville, FL
Organizer: Pramod Khargonekar, Nov. 2011,
Talk Title - *Control and Optimization for Electric Smart Grids*

9. SAMSI Smart Grid Workshop, Durham, NC, Oct. 2011,
Organizer: George Michailidis
Talk Title - *Wide-Area Control of Power Systems Using Synchrophasors: A Model Reference Approach*

8. TCIPG (Trustworthy Cyber Infrastructure for the Power Grid) Seminar, University of Illinois, Urbana-Champagne, IL, Oct. 2011,
Organizer: Rakesh Bobba
Talk Title - *Wide-Area Modeling, Monitoring and Control of Large Power Systems Using Phasor Measurement Technology*

7. Renaissance Computing Institute (RENCI), UNC Chapel Hill, July. 2011,
Organizer: Yufeng Xin
Talk Title - *Synchrophasor Research at NC State University*

6. 24^{th} UM/Maine Section IEEE Haskell Smart Grid Conference, University of Maine, ME, Jun. 2011, *Organizer*: Mohamad Musavi
Talk title - *Wide-Area Modeling of Wind-Integrated Power Systems Using Phasor Measurement Technology*

5. SIAM Conference on Dynamical Systems, Minisymposium on Smart Grids, UT, May 2011,
Organizer: Konstantin Turitsyn (MIT)
Talk title - *Wide-Area Damping Control of Large Power Systems Using Distributed Synchrophasors: An Optimization Approach*

4. Royal Institute of Technology (KTH), Sweden, May 2011, *Organizer*: Luigi Vanfretti
Talk title - *Optimal Sensor Placement for Parametric Model Identification of Electrical Networks Using Mixed Phasor Measurements*

3. Lund University, Sweden, Workshop on Dynamics, Control and Pricing in Power Systems, May 2011, *Organizer*: Anders Rantzer
Talk title - *Model Reduction, Topology Identification and Distributed Control of Large Power Systems using Wide-Area Phasor Measurements*

2. Los Alamos National Laboratory, NM, Smart Grid Seminar Series, Jan 2011
Organizer: Michael (Misha) Chertkov
Talk title - *A Network-Theoretic Approach for Wide-area Modeling and Control of Large Power Systems using Distributed Synchrophasors*

1. Statistical and Applied Mathematical Sciences Institute (SAMSI), Durham, NC, Oct. 2010
Organizer: Taufiquar Khan
Talk Title - *Wide-area Modeling and Control of Large Power Systems using Distributed Synchrophasors*

Before 2010:
NC State University, University of Tennessee, Texas Tech University, Texas A&M University, Pacific Northwest National Laboratory, University of Washington, American Electric Power.

Publicity and Media

NC State ECE News https://news.ncsu.edu/2020/09/boosting-cyber-physical-systems/

Science Daily, Graph Theory for Synchronization of Power Systems, 2018
https://www.sciencedaily.com/releases/2018/05/180508094958.htm

Science Daily, Smart Transformers, 2017
https://www.sciencedaily.com/releases/2017/07/170705113105.htm

NSF Discoveries, Smarter Smart Grids, 2015
http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=134487&WT.mc_id=USNSF_1

CSO Online, 2014
http://www.csoonline.com/article/2307167/disaster-recovery/university-researchers-test-cyber-defense-for-nations-power-grid.html

National Geographic, 2014
http://energyblog.nationalgeographic.com/2014/01/02/wind-energy-needs-controls-to-minimize-instability-risk-on-the-grid-study-says/

Triangle Business Journal, 2014
http://www.bizjournals.com/triangle/news/2014/01/02/ncsu-and-johns-hopkins-team-up-to.html

Triangle Business Journal, 2013
http://www.bizjournals.com/triangle/news/2013/05/09/nc-state-bags-200k-grant-to-study.html

Five to Watch, 2012
NC State Engineering Magazine, Fall 2012
http://www.engr.ncsu.edu/magazine/fall2012/stars-p3.php

A Hub for Smart Grid Research
http://asiancorrespondent.com/72074/wms-smart-grid

'Handling Data Explosion in Future Power Systems'
IEEE Smart Grid Newsletter, Sep. 2011
http://smartgrid.ieee.org/publications/smart-grid-newsletter

'Power Up! Checking the Grid', Sep. 2011,
American Institute of Physics, Discoveries & Breakthroughs Inside Science
http://www.aip.org/dbis/report8.html

Sciencedaily - "New Approach to Modeling Power System Aims for Better Monitoring and Control of Blackouts," Jan. 2011
http://www.sciencedaily.com/releases/2011/01/110112110434.htm

Arbiter Systems Newsletter, Jan. 2011
http://www.arbiter.com/news/technology.php?id=13

Synergistic Activities & Service

Editor,
IEEE Transactions on Power System, 2018-2022

Associate Editor,
IEEE Transactions on Control Systems Technology, 2016-2020

Associate Editor,
IEEE Control Systems Society (CSS) Conference Editorial Board, 2012-2020

IEEE Fellow, 2025 - present

Conference Operating Committees:

1. Vice-Chair for Invited Sessions,
   American Control Conference (ACC), Philadelphia, July 2019
2. Vice-Chair for Industry and Applications,
   American Control Conference (ACC), Boston, July 2016
3. TPC Chair for the workshop "Communication Applications for Smart Grid"
   7^{th} International Conference on Wireless and Satellite Systems (WiSats 2015)
   Hosted at University of Bradford, United Kingdom, July 2015.
4. Program Co-Chair,
   2^{nd} Virtual Control Conference (VCC) on Smart Power Systems, June 2013
   Organizer: Jakob Stroustrup, Aalborg University
   Program Chair: Anuradha Annaswamy, MIT

Technical Program Committee:

1. American Control Conference, 2013, 2015, 2020, 2024
2. International Conference on Cyber-Physical Systems (ICCPS, CPS Week), 2013, 2016-2020
3. International Advisory Committee member of Grand Renewable Energy Conference, Yokohama city, Japan, 2018
4. IEEE Smart Grid Comm, 2011, 2012, 2013, 2018, 2020
5. IEEE GlobalSIP 2015, 2016
6. IEEE Workshop on Smart Cities (Pre-cursor to CDC 2015), Osaka, Japan, 2015.
7. Indian Control Conference, 2016, 2018
8. IEEE GlobalSIP 2013
9. IEEE Infocom, Workshop on Smart Energy Systems, 2013, 2014.
10. Workshop on Cyber-Physical Systems, Euromicro Conference on Digital System Design (DSD), 2013, 2014, 2015, 2016

Workshop Organization:

1. Full-day workshop on *Control for Climate Change Adaptation and Mitigation*,
   American Control Conference, Atlanta, 2022
   Organizers - Aranya Chakrabortty (NSF), Pramod Khargonekar (UC Irvine), Tariq Samad (Univ of Minnesota)
2. Half-day workshop on *Cognition and Learning in Control Theory*,
   American Control Conference, Austin, 2021
   Organizers - Aranya Chakrabortty (NSF)
3. Full-day workshop on *New Problems on Learning and Data Science in Control Theory*,
   American Control Conference, Milwaukee, WI, 2018
   Organizers - Aranya Chakrabortty and Anthony Kuh (NSF)
4. Co-organizer for *NSF Workshop on Real-time Learning and Decision Making in Dynamical Systems*
   Lead-organizer - Le Xie, Texas A&M University
   Co-organizers - Aranya Chakrabortty, Zhi Tian, Srinivas Shakkotai, Jian Lu, Haibo He
5. Mini-Course, *Composite Control of Networks Via Singular Perturbation Theory: New Results And Applications*,
   22^{nd} International Symposium on Mathematical Theory of Networks and Systems (MTNS 2016),
   University Of Minnesota, MN, July 2016
   Organizers - Muataz Boker, Tom Nudell, and Aranya Chakrabortty
6. Mini-course, *Role of Graph Theory in Power System Modeling, Monitoring and Control*,
   21^{st} International Symposium on Mathematical Theory of Networks and Systems (MTNS 2014),
   University of Groningen, Netherlands, July 2014
   Organizers - Aranya Chakrabortty, Thomas Nudell
7. *Joint NSF-EPSRC Workshop on Enabling Technologies for the Smart Grid*, 2012
   Loughborough University, UK
   Co-Chairs - Sumit Roy, Aranya Chakrabortty
8. *Workshop on Cyber-Physical Applications in Smart Power Systems*, NC State University, Feb. 2011.
   Organizers - Aranya Chakrabortty, Frank Mueller

Conference Session Organization:

1. Special session on *NSF CAREER awards for prospective new faculty*, IEEE PES General Meeting, 2021-present.
   Organizers - Aranya Chakrabortty and Anil Pahwa
2. *Learning and System Identification in Power Systems Systems* - Invited session in IEEE PES General Meeting, Washington DC, 2021.
   Organizers - Lingling Fan and Aranya Chakrabortty
3. *Learning based Control of Multi-Agent Systems* - Invited session in American Control Conference, Denver, CO 2020.
   Organizers - Aranya Chakrabortty, He Bai, and Jemin George
4. *Power System Optimization and Controls* - Invited session in 2^{nd} FREEDM Annual Symposium, NC State University, NC, 2020.
   Organizer - Aranya Chakrabortty
5. *Power System Controls* - Invited session in 1^{st} FREEDM Annual Symposium, NC State University, NC, 2019.
   Organizer - Aranya Chakrabortty
6. *Control of Infrastructure CPS* - Tutorial session in American Control Conference, Boston, MA 2016.
   Organizers - Anu Annaswamy, Aranya Chakrabortty, and Alefiya Hussain
7. *Control Challenges for Smart Grids* - Tutorial session in American Control Conference, Boston, MA 2016.
   Organizers - Anu Annaswamy, Jakob Stroustrup, Aranya Chakrabortty

8. *Wide-Area Monitoring and Control of Power Systems* - Tutorial session in American Control Conference, Washington DC, 2013.
   Organizers - Aranya Chakrabortty and Pramod Khargonekar
9. *Symposium on Wide-Area, Monitoring, Protection and Control* (WAMPAC),
   IEEE Smart Grid Comm, Taiwan, 2012
   Chairs - Dave Bakken, Aranya Chakrabortty and Jiann-Fuh Chen
10. *Applications of Control Theory in Modern Power Systems - A Tutorial Dedicated to Dr. Joe Chow's* 60^{th} *Birthday* - Tutorial session in American Control Conference, San Francisco, CA, 2011.
    Organizers - Aranya Chakrabortty, Massoud Amin
11. *Emerging Applications of Control Theory in Electric Smart Grids* - Invited session in 49^{th} IEEE Conference on Decision & Control, Atlanta, GA, 2010.
    Organizers - Aranya Chakrabortty, Joe H. Chow.
12. *Dynamic Models of Complex Network Systems* - Invited session in 49^{th} IEEE Conference on Decision & Control, Atlanta, GA, 2010.
    Organizers - Clyde F. Martin, Aranya Chakrabortty, Bijoy K. Ghosh.
13. 2009-present Serving as the Chair/Co-chair for various regular sessions in the American Control Conference and IEEE Conference on Decision and Control

Leadership in Research Demonstrations:

1. US Ignite Application Summit and Smart City Challenge - 2014-2017
   - Collaborated with RENCI to demonstrate testbed experiments on the application of cloud computing in wide-area control of power systems
2. Smart America Initiative 2014, Washington, DC
   - Lead faculty from NC State
   - Collaborated with University of Southern California, Iowa State University, Mitre Corporation, National Instruments and Scitor Corporation to demonstrate testbed experiments on cyber-security of power systems
3. US Ignite Application Summit 2013, Chicago, IL
   - Lead faculty from NC State
   - Collaborated with UNC Chapel Hill and CISCO to demonstrate testbed experiments on the application of software defined networking for power system monitoring
   - Won *Best Application in Energy Award* 2013

Participation in Centers:

1. Co-organized the site visit for NSF ASPIRE ERC at Utah State University, 2022
2. Lead the "power system control" sub-thrust of CREDENCE, which is a 3-year collaborative project between NSF, FREEDM, and the Science Foundation of Ireland
3. Served as a Co-Principal Investigator for FREEDM SMC Project (PI: Dr. Iqbal Hussain), 2014 - 2020
4. Technical Coordinator for the FREEDM Systems Center, 2010 - 2011
5. Presented Research to the FREEDM Young Scholars RET program, 2012, 2013
6. Developed a new laboratory infrastructure for research on Synchrophasor-based real-time simulations. A fully functional nationally visible power system testbed is currently operating in Chakrabortty's research lab at FREEDM.
7. Made numerous research presentations to industry and academic visitors at FREEDM, 2010-present

Collaborations with Other Universities:

- Collaborations with universities and organizations inside the US: Massachusetts Institute of Technology, University of Illinois Urbana Champaign, University of Southern California, Johns Hopkins University, Smith College, University of North Carolina Chapel Hill, University of Florida, University of Notre Dame, Boston University, Harvard Electricity Policy Group, Electric Power Research Institute, New York Power Authority, ABB Corporate Research, Southern California Edison, Duke Energy.
- Collaborations with universities outside the US: University of Tokyo (Japan), Tokyo Institute of Technology (Japan), University of Electro-Communication (Japan) Osaka Prefecture University (Japan), KTH (Sweden), CINVESTAV (Mexico), IIT Bombay (India), Indian Institute of Science (India), Bradford University (UK), Queen's University at Belfast (Ireland).

Reviewing Activities: 2010-present, Panel Reviewer for National Science Foundation (NSF) in ENG and CISE divisions

Panel Reviewer for MIT-Skoltech Research Initiative.

Reviewer of Book Proposals for Springer, 2012, and Cambridge University Press, 2016.

2004- present, Reviewer for *IEEE Transactions on Automatic Control, IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, Automatica, IEEE Transactions on Control Systems Technology, IEEE Transactions on Control and Network Systems, IEEE Transactions on Circuits and Systems, IEEE Transactions on Distributed and Parallel Systems, International Journal of Robust Control, SIAM Journal on Control and Optimization, Journal of Process Control, IFAC Journal of Control Engineering Practice, International Journal of Hydrogen Energy, Mathematical Problems in Engineering, International Journal of Adaptive Control and Signal Processing, IEEE Conference on Decision and Control, American Control Conference, AIAA Conference on Guidance, Navigation and Control, IEEE PES General Meeting, Power System Computation Conference.*

Service to NC State University Community:

1. Featured speaker for the Provost Arden's luncheon for newly tenured faculty, 2017
2. 2018, Member of ECE Faculty Search Committee
3. 2013-present, Representative of Control, Robotics and Mechatronics (CRM) group in Graduate Admissions Committee, ECE Dept.
4. ECE Department Open House - Fall 2010-2011, Spring 2011-2014
5. Poster session judge for NC State Undergraduate Research Symposium, Apr. 2011.

Service to IEEE and other Professional Organizations:

Committee member for IEEE Control Systems Society (CSS) 2030 Roadmap on Societal-scale Challenges, 2022
Organizer: Anuradha Annaswamy, George Pappas, Karl Johansson

Committee member for IEEE Control Systems Society (CSS) Smart Grid Vision, 2012
Organizer: Anuradha Annaswamy, Tariq Samad, Massoud Amin

Committee member for IEEE Computer Systems Society (CS) Smart Grid Vision, 2012
Organizer: David Cartes, Dan McCaugherty

2010-2011, Technical Coordinator, FREEDM Systems Center, NC State University.

2009-2015, Member of Research Initiative Task Team (RITT), North American Synchrophasor Initiative (NASPI).

Attendee of *ONR-EPRI-NSF-AEP sponsored Weeklong Summer Workshop on Electric Energy Systems Course Education*, Corvallis, OR, July 2009.

Active Member of the *Power System Research Consortium* (Rensselaer, Virginia Tech, University of Wyoming), 2006-2008.