

# HAO ZHU

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## WORK EXPERIENCE

<b>The University of Texas at Austin</b> Assistant Professor at the Dept. of ECE	Austin, TX 2017 – present
<b>University of Illinois at Urbana-Champaign</b> Assistant Professor at the Dept. of ECE Assistant Professor at the Information Trust Institute (ITI)	Urbana, IL 2014 – 2017 2014 – 2017
<b>University of Illinois at Urbana-Champaign</b> Postdoc Research Associate at ECE and ITI	Urbana, IL 2012 – 2013
<b>University of Minnesota</b> Research Assistant at the SPiNCOM group	Twin Cities, MN 2006 – 2012
<b>NEC Labs America</b> Research Intern at the Mobile & Comm. Networks Group	Princeton, NJ 2011

## EDUCATION

<b>University of Minnesota</b> Ph.D. in Electrical and Computer Engineering <i>Advisor:</i> Prof. Georgios B. Giannakis <i>Thesis:</i> “Sparsity-Cognizant Algorithms with Applications to Communications, Signal Processing, and the Smart Grid”	Twin Cities, Minnesota August 2012
<b>University of Minnesota</b> M.Sc. in Electrical Engineering (minor: Mathematics) <i>Advisor:</i> Prof. Georgios B. Giannakis <i>Thesis:</i> “Distributed Tracking, Decoding, and Demodulation Using Wireless Sensor Networks”	Twin Cities, Minnesota December 2009
<b>Tsinghua University</b> B.Sc. in Electrical Engineering (with honors) <i>Advisor:</i> Prof. Xiqin Wang <i>Thesis:</i> “Polynomial Phase Signal Radar Waveform Design”	Beijing, China July 2006

## TEACHING EXPERIENCE

<b>The University of Texas at Austin</b>	Austin, TX
• EE 394V: Data Analytics in Power Systems (New Course)	Spring 2019
• EE 369: Power System Engineering	Fall 2018
• EE 394V: Power System Operations & Control (New Course)	Fall 2017
• EE 464K: Capstone Design Projects (Mentor)	Fall 2017 - present
<b>University of Illinois at Urbana-Champaign</b>	Urbana, IL

- ECE 445: Senior Design Laboratory (Instructor) Fall 2016
- ECE 498HZ: Power Distribution System Analysis (New Course) Spring 2016
- ECE 530: Analysis of Large-Scale Electrical Systems Fall 2014,15
- ECE 398BD: Making Sense of Big Data Spring 2015
- ECE 330: Power Circuits & Electromechanics Spring 2013-17
- ECE 530: Analysis of Large-Scale Electrical Systems (Guest Lecturer) Fall 2013
- ECE 333: Green Electric Energy (Guest Lecturer) Nov 2012

**University of Minnesota**

Twin Cities, MN

- EE 8581: Detection & Estimation Theory (Guest Lecturer) April 2011
- EE 8231: Optimization Theory (TA) Fall 2009
- EE 3025: Statistical Methods in ECE (TA) Fall 2008/09
- EE 5501: Digital Communications (TA) Fall 2008

## ADDITIONAL TEACHING EXPERIENCE

- Attended the FIC Workshop on “Collaborative Learning: Assessment,” The University of Texas at Austin 2019
- Attended the CSE Workshop on “Making Up Missed Lectures,” The University of Texas at Austin 2019
- Attended the College of Engineering AE3 Collins Scholar program, University of Illinois, Urbana 2013-2014
- Attended workshop on “Mentoring with a Difference: Guiding graduate students toward their own goals,” University of Illinois, Urbana January 2014
- Attended workshop on “Mentoring Undergraduate and Graduate Researchers,” University of Illinois, Urbana December 2012
- Attended workshop on “Designing Courses to Support Student Learning and Teacher Satisfaction,” University of Minnesota, Minneapolis December 2010
- Completed graduate school course on “Teaching in Higher Education,” offered through the UMN “Preparing Future Faculty” program Fall 2010

## FUNDING EXPERIENCE

- PI: “SCC-IRG-PG: ECET: Empowering Community-centric Electrified Transportation,” US NSF-SCC Program, (pending) 2019-2022
- PI: “SCC-IRG Track 1: Learning Enabled Self Healing Resilient Communities,” US NSF-SCC Program, (pending, led by Northeastern) 2019-2022
- co-PI: “Scalable Learning for Edge Computing (SLEC),” US DOE-OE Program, (pending, led by VT) 2019-2022
- PI: “HDR TRIPODS: Harnessing Incidental Data for Analysis of Complex Network Dynamics,” US NSF-TRIPODS Program, (pending, led by WSU) 2019-2022
- PI: “CPS: Medium: SIP: Scalable and Intelligent Protection for Next-Generation Power Systems,” US NSF-CPS Program, (pending) 2019-2022
- Co-PI: “SOLAr Critical Infrastructure Energization System (SOLACE),” US DOE-SETO Program, \$1,000k (led by EPRI) 2019-2022

- PI: "CAREER: Cyber-Physical Situational Awareness for the Power Grid Infrastructures," US NSF ECCS Program, \$500k 2017-2022
- Co-PI: "INGRESS: Integration of Green Renewable Energy Sources Securely with the Buildings and Electric Power," US DOE-NETL CEDS Program, \$900k (led by UTRC) 2016-2019
- PI: "Aggregating Distributed Energy Resources as Secure Virtual Power Plants," US DOE Sandia National Lab Academic Alliance Program, \$70k 2016-2017
- PI (lead): "Collaborative Research: Towards Communication-Cognizant Voltage Regulation and Energy Management for Power Distribution Systems," US NSF ECCS Program, \$228k 2016-2019
- Co-PI: "Collaborative Research: A Holistic Approach to Wind Energy Integration: From the Atmospheric Boundary Layer to the Power Grid," US NSF ECCS Program, \$267k 2016-2019
- Co-PI: "GridData: Synthetic Data for Power Grid R&D," US DOE ARPA-E GRIDDATA Program, \$1,028k 2016-2018
- PI: "Leveraging CVR for Energy Efficiency, Demand Side Control and Voltage Stability Enhancement in Integrated T&D Systems," Power Systems Engineering Research Center (PSERC), \$70k 2016-2018
- PI: "A Data-Driven Network Tomography Approach for Evaluating and Improving the Resilience of Power Grids," Siebel Energy Institute, \$50k 2016
- Co-PI: "Improved System Modeling for GMD and EMP Assessments," US DOE Bonneville Power Administration (BPA), \$251k 2015-2017
- Co-PI: "Hazards SEES: Improved prediction of geomagnetic disturbances and their impacts on power distribution systems," US NSF EAR Program, \$2,670k 2015-2017
- PI: "Energy Analytics: Advanced Metering for Non-intrusive Load Identification and Monitoring," Texas Instrument Inc. University Grant, \$60k 2014-2016
- PI (lead): "Load Model Complexity Analysis and Real-Time Load Tracking," Power Systems Engineering Research Center (PSERC), \$80k July 2014-2016
- Contributed to the proposal granted for FY13 on "Distributed and Resilient Voltage Control of Distributed Energy Resources in the Smart Grid," ABB Research Grant Program, PI: A. Dominguez-Garcia (co-PI: T. J. Overbye) July 2013
- Prepared yearly proposals and quarterly reports for the Army Research Lab Collaborative Technology Alliance (ARL-CTA) program sponsored by the Communications and Networking Consortium. 2007-2009

## PATENTS

- "State Estimation of Electrical Power Networks using Semidefinite Relaxation," (with G. B. Giannakis); U.S. Patent #9,863,985 Jan 2018
- "Robust Parametric Power Spectral Density (PSD) Construction," (with G. B. Giannakis *et al*); U.S. Patent #9,363,679 June 2016
- "Precoder Design for Physical Layer Multicasting," (with N. Prasad and S. Rangarajan); U.S. Patent #8917648 Dec 2014

## PROFESSIONAL AFFILIATIONS AND SERVICES

- IEEE Senior Member
- Special Session Co-Chair, 2019 IEEE Data Science Workshop (DSW)
- Treasurer, Ninth ACM International Conference on Future Energy Systems (ACM e-Energy 2019)
- Co-chair, IEEE Comm. Society (ComSoc) SiG of Energy Internet and Energy System Integration 2018 - present
- Steering Committee Member, IEEE Smart Grid 2015-2018
- IEEE SP Society's Representative, IEEE Trans. Smart Grid 2015-2018
- Invited Attendee, NSF Workshops on:
  - Real Time Data Analytics for the Resilient Electric Grid, Aug 2018
  - Real-Time Learning and Decision Making in Dynamical Systems, Feb 2018
  - Cyber-Physical Systems Applications to the Power Grid, July 2016
  - Control, Computing, and Signal Processing Challenges in Future Power Systems, Nov 2013
- Publicity Committee Member, Eighth ACM International Conference on Future Energy Systems (ACM e-Energy 2017)
- Guest co-Editor, *IET Gen., Tran., & Dist.* journal's special issue on "Distributed & autonomous dispatch and control for active distribution networks/microgrids." 2016
- Special session Organizer, "Smart Grids" at the Asilomar Conf. on Signals, Systems, & Computers 2016-17
- Panel Session Chair, "Integration of Distributed Energy Resources (DERs): Challenges and Opportunities" at the IEEE PES ISGT Conference 2016
- Panelist, "Measurements and Their Integration Challenges for Distribution State Estimation" and "Big Data Empirical Assessment of Demand Response" panels at the IEEE PES General Meeting 2016
- Technical Co-Chair, IEEE GlobalSIP *Symposium on Signal and Information Processing for Optimizing Future Energy Systems* 2015
- Faculty advisor for the Power & Energy Conf. at Illinois (PECI) 2015-present
- Invited Attendee, National Research Council Workshop on Power Grid Feb 2014
- Reviewer for IEEE Trans. Smart Grid, IEEE Trans. Power Systems, IEEE Trans. Energy Conversion, IEEE Power Engineering Letters, IEEE Trans. Signal Processing, IEEE Journal of Selected Topics in Signal Processing, IEEE Journal on Selected Areas in Communications, IEEE Trans. Wireless Communications, IEEE Trans. Communications, IEEE Trans. Vehicle Technology, IEEE Communications Letters, IEEE Trans. Control over Networks, IEEE Trans. Control Systems Technology, IEEE Sensors Journal, IEEE Trans. Industrial Informatics, EURASIP Journal on Advances in Signal Processing, regular reviewer of conference papers.
- Technical Program Committee (TPC) member for 2016-2015 IEEE Intl. Conf. on Smart Grid (ISGT), 2016 PSCC, 2016 ICC, 2014-2015 IEEE SmartGridComm, 2015 IEEE Globe-Com.

#### HONORS AND AWARDS

- Outstanding Engineer Award (IEEE Central Texas Chapter) 2019
- NSF CAREER Award (ENG-ECCS Program) 2017
- AFRL Summer Faculty Fellowship, Directorate of Information 2016

- Siebel Energy Institute Seed Grant Award 2016
- Doctoral Dissertation Fellowship, University of Minnesota 2011-2012
- Graduate School Fellowship, University of Minnesota 2006-2008
- First-class Undergraduate Scholarship, Tsinghua University 2003-2006

## STUDENT HONORS AND AWARDS

- Yuqi Zhou: Best Poster Award, *LANL Grid Science Winter School & Conf.* Jan. 2019
- Kaiqing Zhang: Hong, McCully and Allen Fellowship, *ECE, UIUC* Sep. 2018
- Max Liu: Siebel Scholar, *Siebel Energy Institute* Oct. 2016
- Max Liu: Best Paper Award (2nd-place), *North American Power Symp.* Sep. 2016
- Jamie Padilla: Outstanding Poster Award, *UIUC UG Research Symp.* May 2016
- Kaiqing Zhang: Best Poster Award, *PSERC IAB Meeting* Dec. 2015
- Ceci Klauber: Best Poster Award (2nd-place), *Society of Women Engr. (SWE) Conf.* 2015
- Ceci Klauber: NSF Graduate Research Fellowship (NSF-GRF) 2015-2018
- Ceci Klauber: Natl. Defense Sci. & Engr. Grad. (NDSEG) Fellowship (declined) 2015
- Shamina Hossain: Best Student Paper Award (3rd-place), *NAPS* Sep. 2014

## GRADUATE STUDENTS

**The University of Texas at Austin**

Austin, TX

- Shaohui Liu, PhD student, 2019-present
- Kyung-bin Kwon, PhD student, 2019-present
- Shanny Lin, PhD student, 2018-present
- Yuqi Zhou, PhD student, 2018-present

**University of Illinois at Urbana-Champaign**

Urbana, IL

- Kaiqing Zhang, PhD student (co-advised), 2015- present, MS 2017, Thesis: *Modeling and management of dynamic loads in power systems*
- Max Liu, Phd 2017, Thesis: *Decentralized optimization approach for power distribution network and microgrid controls*
- Ceci Klauber, MS 2017, Thesis: *Advanced modeling and computational methods for distribution system state estimation*
- Phuc Huynh, MS 2017, Thesis: *Parameter estimation for single-phase induction motor from transient measurements*
- Matt Backes, MS 2017, Thesis: *Cyber security threat modeling and experimental mitigation mechanisms in microgrids*

## PUBLICATIONS

**Book chapters**

- [B3] **H. Zhu**, and C. Chen, “ A Sparse Representation Approach to Anomaly Identification,” in *Advanced Data Analytics for Power Systems*, edited by A. Tajer, Cambridge Press, 2019.

- [B2] V. Kekatos, G. Wang, **H. Zhu**, and G. B. Giannakis, "PSSE Redux: Convex Relaxation, Decentralized, Robust, and Dynamic Approaches," in *Advances in Static State Estimation*, edited by Mo El. Hawary, Wiley, 2018 (invited).
- [B1] G. B. Giannakis, Q. Ling, G. Mateos, I. D. Schizas, and **H. Zhu**, "Decentralized Learning for Wireless Communications and Networking," in *Splitting Methods in Communication and Imaging, Science and Engineering*, co-edited by R. Glowinski, S. Osher, W. Yin, Springer, 2016 (invited).

### Journal papers

- [J35] A. Koppel, K. Zhang, **H. Zhu**, and T. Basar, "Projected Stochastic Primal-Dual Method for Constrained Online Learning with Kernels," *IEEE Tans. Signal Processing*, vol. 67, no. 10, pp. 2528-2542, 2019.
- [J34] Y. Liang, **H. Zhu**, and D. Chen, "Optimal Blocker Placement Algorithms for Power Systems Geomagnetic Induced Currents Mitigations," *IEEE Trans. Power Delivery*, 2019 (accepted).
- [J33] L.-Y. Lu, H.-J. Liu, **H. Zhu**, and C.-C. Chu, "Intrusion Detection in Distributed Frequency Control of Isolated Microgrids," *IEEE Trans. Smart Grid*, 2019 (accepted).
- [J32] M. Bazrafshan, N. Gatsis, **H. Zhu**, "Optimal Power Flow with Step-Voltage Regulators in Multi-Phase Distribution Networks," *IEEE Trans. Power Systems*, 2019 (accepted).
- [J31] G. Wang, **H. Zhu**, G. B. Giannakis and J. Sun, "Robust Power System State Estimation from Rank-One Measurements," *IEEE Trans. Control of Network Systems*, 2019 (accepted).
- [J30] H.-J. Liu, W. Shi, and **H. Zhu**, "Hybrid Voltage Control in Distribution Networks Under Limited Communication Rates," *IEEE Trans. Smart Grid*, 2018 (accepted).
- [J29] P. Huynh, **H. Zhu**, Q. Chen, and A. Elbanna, "Data-Driven Estimation of Frequency Response from Ambient Synchrophasor Measurements," *IEEE Trans. Power Systems*, vol. 33, no. 6, pp. 6590 - 6599, 2018.
- [J28] K. Zhang, W. Shi, **H. Zhu**, E. Dall'Anese, and T. Basar, "Dynamic Power Distribution System Management With a Locally Connected Communication Network," *IEEE Journal of Special Topics in Signal Processing*, vol. 12, no. 4, pp. 673 - 687, 2018.
- [J27] K. Zhang, L. Lu, C. Lei, **H. Zhu**, and Y. Ouyang, "Dynamic Operations and Pricing of Electric Unmanned Aerial Vehicle Systems and Power Networks," *Transportation Research Part C*, vol. 92, pp. 472 - 485, 2018.
- [J26] H.-J. Liu, W. Shi, and **H. Zhu**, "Distributed Voltage Control in Distribution Networks: Online and Robust Implementations," *IEEE Trans. Smart Grid*, vol. 9, no. 6, pp. 6106 - 6117, 2018.
- [J25] M. D. Butala, M. Kazerooni, J. J. Makela, F. Kamalabadi, J. L. Gannon, **H. Zhu**, and T. J. Overbye, "Modeling Geomagnetically Induced Currents from Magnetometer Measurements: Spatial Scale Assessed with Reference Measurements," *Space Weather*, vol. 15, no. 10, pp. 1357-1372, 2017.
- [J24] K. P. Schneider, B. A. Mather, B. C. Pal, C. -W. Ten, G. J. Shirek, **H. Zhu**, J. C. Fuller, J. L. R. Pereira, L. F. Ochoa, L. R. de Araujo, R. C. Dugan, S. Matthias, S. Paudyal, T. E. McDermott, and W. Kersting, "Analytic Considerations and Design Basis for the IEEE Distribution Test Feeders," *IEEE Trans. Power Systems*, vol. 33, no. 3, pp. 3181 - 3188, 2017.
- [J23] M. Kazerooni, **H. Zhu**, and T. J. Overbye, "Mitigation of Geomagnetically Induced Currents Using Corrective Line Switching," *IEEE Trans. Power Systems*, vol. 33, no. 3, pp. 2563 - 2571, 2017.

- [J22] H.-J. Liu, W. Shi, and **H. Zhu**, "Decentralized Dynamic Optimization for Power Network Voltage Control," *IEEE Trans. Signal and Information Processing over Networks*, vol. 3, no. 3, pp. 568-579, 2017.
- [J21] K. Zhang, **H. Zhu**, and S. Guo, "Dependency Analysis and Improved Parameter Estimation for Dynamic Composite Load Modeling," *IEEE Trans. Power Systems*, vol. 32, no.4, pp. 3287-3297, 2017.
- [J20] M. Kazerooni, **H. Zhu**, and T. J. Overbye, "Improved Modeling of Geomagnetically Induced Currents Utilizing Derivation Techniques for Substation Grounding Resistance," *IEEE Trans. Power Delivery*, vol. 32, no. 5, pp. 2320-2328, 2017.
- [J19] M. Kazerooni, **H. Zhu**, T. J. Overbye, and D. A. Wojtczak, "Transmission System Geomagnetically Induced Current Model Validation," *IEEE Trans. Power Systems*, vol. 32, no. 3, pp. 2183-2192, 2017.
- [J18] K. An, H. J. Liu, **H. Zhu**, Z. Y. Dong, and K. Hur, "Evaluation of Conservation Voltage Reduction with Analytic Hierarchy Process: A Decision Support Framework in Grid Operations Planning," *Energies*, vol. 9, no. 12, p. 1074, 2016.
- [J17] **H. Zhu** and H.-J. Liu, "Fast Local Voltage Control Under Limited Reactive Power: Optimality and Stability Analysis," *IEEE Trans. Power Systems*, vol. 31, no. 5, pp. 3794-3803, 2016.
- [J16] B. A. Robbins, **H. Zhu**, and A. D. Dominguez-Garcia, "Optimal Tap Setting of Voltage Regulation Transformers in Unbalanced Distribution Systems," *IEEE Trans. Power Systems*, vol. 31, no. 1, pp. 256-267, 2016.
- [J15] N. Tobbin, **H. Zhu**, and L. Chamorro, "Spectral behavior of the turbulence-driven power fluctuations of wind turbines," *Journal of Turbulence*, vol. 16, no. 9, pp. 832-846, 2015.
- [J14] **H. Zhu** and T. J. Overbye, "Blocking Device Placement for Mitigating the Effects of Geomagnetically Induced Currents," *IEEE Trans. Power Systems*, vol. 30, no. 4, pp. 2081-2089, 2015.
- [J13] **H. Zhu** and G. B. Giannakis, "Power System Nonlinear State Estimation using Distributed Semidefinite Programming," *IEEE Journal of Special Topics in Signal Processing*, vol. 8, no. 6, pp. 1039-1050, 2014.
- [J12] C. Chen, **H. Zhu** and J. Wang, "Effects of Phasor Measurement Uncertainty on Power Line Outage Detection," *IEEE Journal of Special Topics in Signal Processing*, vol. 8, no. 6, pp. 1127-1139, 2014.
- [J11] N. Prasad, H. Zhang, **H. Zhu**, and S. Rangarajan, "Multi-User Scheduling in the 3GPP LTE Cellular Uplink," *IEEE Trans. Mobile Computing*, vol. 13, no. 1, pp. 130 - 145, Jan. 2014.
- [J10] E. Dall'Anese, **H. Zhu**, and Georgios B. Giannakis, "Distributed Optimal Power Flow for Smart Microgrids," *IEEE Trans. Smart Grid*, vol. 4, no. 3, pp. 1464-1475, Sep. 2013.
- [J9] G. B. Giannakis, N. Gatsis, V. Kekatos, S.-J. Kim, **H. Zhu**, and B. Wollenberg, "Monitoring and optimization for power grids: A signal processing perspective," *IEEE Signal Processing Magazine (Feature Article)*, vol. 30, no. 5, pp. 107 - 128, Sep. 2013.
- [J8] N. Prasad, H. Zhang, **H. Zhu**, and S. Rangarajan, "Multi-User MIMO Scheduling in the Fourth Generation Cellular Uplink," *IEEE Trans. Wireless Communications*, vol. 12, no. 9, pp. 4272-4285, Sep. 2013.
- [J7] **H. Zhu** and G. B. Giannakis, "Sparse Overcomplete Representations for Efficient Identification of Power Line Outages," *IEEE Trans. Power Systems*, vol. 27, no. 4, pp. 2215-2224, November 2012.
- [J6] **H. Zhu**, N. Prasad, and S. Rangarajan, "Precoder Design for Physical Layer Multicasting,"

*IEEE Trans. Signal Processing*, vol. 60, no. 11, pp. 5932 - 5947, November 2012.

- [J5] **H. Zhu**, G. Leus, and G. B. Giannakis, "Sparsity-Cognizant Total Least-Squares for Perturbed Compressive Sampling," *IEEE Trans. Signal Processing*, vol. 59, no. 5, pp. 2002-2016, May 2011.
- [J4] **H. Zhu** and G. B. Giannakis, "Exploiting Sparse User Activity in Multiuser Detection," *IEEE Trans. Communications*, vol. 59, no. 2, pp. 454-465, February 2011.
- [J3] **H. Zhu**, A. Cano, and G. B. Giannakis, "Distributed Demodulation using Wireless Sensor Networks," *IEEE Trans. Wireless Communications*, vol. 9, no. 6, pp. 2044-2054, June 2010.
- [J2] **H. Zhu**, G. B. Giannakis, and A. Cano, "Distributed In-Network Decoding," *IEEE Trans. Signal Processing*, vol. 57, no. 10, pp. 3970-3983, October 2009.
- [J1] **H. Zhu**, I. D. Schizas and G. B. Giannakis, "Power-Efficient Dimensionality Reduction for Distributed Channel-Aware Kalman Tracking Using Wireless Sensor Networks," *IEEE Trans. Signal Processing*, vol. 57, no. 8, pp. 3193-3207, August 2009.

#### **Pending journal papers**

- [P2] Y. Lan, **H. Zhu**, and X. Guan, "Fast Nonconvex SDP Solvers for Large-scale Power System State Estimation," (revised).
- [P1] J. Song, E. Dall'Anese, A. Simonetto, and **H. Zhu**, "Dynamic Distribution State Estimation Using Synchrophasor Data," (revised).

#### **Conference papers**

- [C57] Y. Zhou, **H. Zhu**, and G. A. Hanasusanto, "Optimal Transmission Switching under Uncertainty using Linear Decision Rule," *Proc. Power Systems Comp. Conf.*, July 2020 (submitted).
- [C56] S. Lin and **Hao Zhu**, "Enhancing the Spatio-Temporal Observability of Residential Loads," *Proc. HICSS*, Jan. 2020 (submitted).
- [C55] K. Zhang, A. Koppel, **H. Zhu**, and T. Basar, "Convergence and Iteration Complexity of Policy Gradient Method for Infinite-horizon Reinforcement Learning," *Proc. IEEE Control & Decision Conf.*, Dec. 2019 (accepted).
- [C54] Y. Zhou and **H. Zhu**, "Bus Split Sensitivity Analysis for Enhanced Security in Power System Operations," *Proc. NAPS*, Oct. 2019 (accepted).
- [C53] C. Niddodi, S. Lin, S. Mohan, and **H. Zhu**, "Secure Integration of Electric Vehicles with the Power Grid," *Proc. SmartGridComm*, Oct. 2019 (accepted).
- [C52] M. Bazrafshan, **H. Zhu**, A. Khodaei, and N. Gatsis, "Online Demand-Response of Voltage-Dependent Loads for Corrective Grid De-Congestion," *Proc. SmartGridComm*, Oct. 2019 (accepted).
- [C51] K. Zhang, **H. Zhu**, T. Basar, and A. Koppel, "Projected Stochastic Primal-Dual Method for Constrained Online Learning with Kernels," *Proc. IEEE Control & Decision Conf.*, Dec. 2018.
- [C50] Y. Lan, **H. Zhu**, X. Guan, "Fast Nonconvex SDP Solver for Large-scale Power System State Estimation," *Proc. IEEE GlobalSIP Conf.*, Nov. 2018.
- [C49] K. Zhang, W. Shi, **H. Zhu**, and T. Basar, "Distributed Equilibrium-Learning for Power Network Voltage Control with a Locally Connected Communication Network," *Proc. American Control Conf.*, 2018.
- [C48] M. Bazrafshan, N. Gatsis, **H. Zhu**, "Optimal Tap Selection of Step-Voltage Regulators in



- Multi-Phase Distribution Networks,” *Proc. of Power Systems Comp. Conf.* June 2018.
- [C47] K. Zhang and **H. Zhu**, “A Game-theoretic Approach for Communication-free Voltage-VAR Optimization,” *Proc. IEEE Global Conf. Signal & Info. Proc. (GlobalSIP)*, Nov. 2017.
  - [C46] P. Huynh, Q. Chen, A. Elbanna, and **H. Zhu**, “Studying the Electromechanical Oscillations using Ambient Synchrophasor Data,” *Proc. 10th Bulk Power Systems Dynamics & Control Symp. (IREP)*, Aug. 2017.
  - [C45] S. Guo, K. S. Shetye, T. J. Overbye, and **H. Zhu**, “Impact of Measurement Selection on Load Model Parameter Estimation,” *Proc. Power & Energy Conf. at Illinois (PECI)*, Feb. 2017.
  - [C44] K. Zhang, S. Guo, and **H. Zhu**, “Parameter Sensitivity and Dependency Analysis for the WECC Dynamic Composite Load Model,” *Proc. 47th Hawaii Intl. Conf. System Sciences*, Jan. 2017.
  - [C43] C. Klauber and **H. Zhu**, “Power Network Topology Control for Mitigating the Effects of Geomagnetically Induced Currents,” *Proc. 50th Asilomar Conf. Signals, Systems, & Computers*, Nov. 2016.
  - [C42] P. Huynh, **H. Zhu**, and D. Aliprantis, “Parameter Estimation for Single-Phase Induction Motors Using Test Measurement Data,” *Proc. 48th North America Power Symposium (NAPS)*, Sep. 2016.
  - [C41] L.-Y. Lu, H.-J. Liu, and **H. Zhu**, “Distributed Secondary Control for Isolated Microgrids Under Malicious Attacks,” *Proc. 48 North America Power Symposium (NAPS)*, Sep. 2016 (**2nd Best Paper Award**).
  - [C40] H.-J. Liu, W. Shi, and **H. Zhu**, “Dynamic Decentralized Voltage Control for Power Distribution Networks,” *Proc. IEEE Statistical Signal Processing Workshop*, Jun. 2016.
  - [C39] **H. Zhu** and N. Li, “Asynchronous Local Voltage Control in Power Distribution Networks,” *Proc. Intl. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, Mar. 2016.
  - [C38] C. Klauber and **H. Zhu**, “Distribution System State Estimation using Semidefinite Programming,” *Proc. IEEE NAPS*, Oct. 2015.
  - [C37] Y. Liang, **H. Zhu**, and D. Chen, “Optimal Blocker Placement for Mitigating the Effects of Geomagnetic Induced Current Using Branch-and-Cut Algorithm,” *Proc. IEEE NAPS*, Oct. 2015.
  - [C36] M. Kazerooni, **H. Zhu**, and T. J. Overbye, “Use of Sparse Magnetometer Measurements for Geomagnetically Induced Current Model Validation,” *Proc. IEEE NAPS*, Oct. 2015.
  - [C35] P. Huynh, **H. Zhu**, and D. Aliprantis, “Non-intrusive parameter estimation for single-phase induction motors using transient data,” *Proc. of IEEE PECO*, Feb. 2015.
  - [C34] M. Kazerooni, **H. Zhu**, and T. J. Overbye, “Singular value decomposition in geomagnetically induced current validation,” *Proc. IEEE Innovative Smart Grid Technologies Conf.*, Feb. 2015.
  - [C33] **H. Zhu**, “Power Network Flow Blocking for Mitigating the Effects of Geomagnetically Induced Currents,” *Proc. IEEE GlobalSIP*, pp. 862-866, Dec. 3-5, 2014.
  - [C32] H.-J. Liu, R. Macwan, N. Alexander, and **H. Zhu**, “A Methodology to Analyze Conservation Voltage Reduction Performance Using Field Test Data,” *Proc. IEEE Intl Conf. on Smart Grid Comm. (SmartGridComm)*, pp. 535-540, Nov. 3-6, 2014.
  - [C31] M. Hong and **H. Zhu**, “Power-Efficient Operation of Wireless Heterogeneous Networks using Smart Grids,” *Proc. IEEE SmartGridComm*, pp. 236-241, Nov. 3-6, 2014.
  - [C30] M. Kazerooni, **H. Zhu**, and T. J. Overbye, “Dynamic modeling and filtering in geomagnetically induced current validation,” *Proc. 46th NAPS*, Sep. 7-9, 2014.

- [C29] S. Hossain, **H. Zhu**, and T. J. Overbye, "Distribution high impedance fault location using localized voltage magnitude measurements," *Proc. 46th NAPS*, Sep. 7-9, 2014. (**3-place Best Student Paper**)
- [C28] M. Kazerooni, **H. Zhu**, and T. J. Overbye, "Literature review on the applications of data mining in power systems," *Proc. IEEE Power and Energy Conference at Illinois (PECI)*, pp. 1-8, Feb. 22-23, 2014.
- [C27] **H. Zhu**, and Y. Shi, "Phasor Measurement Unit Placement for Identifying Power Line Outages in Wide-Area Transmission System Monitoring," *Proc. 47th Hawaii Intl. Conf. System Sciences*, pp. 2483-2492, Jan. 2014.
- [C26] N. Prasad, H. Zhang, **H. Zhu**, and S. Rangarajan, "Multi-user MIMO scheduling in the fourth generation cellular uplink," *Proc. Asilomar Conf. on Signals, Systems, and Computers*, pp. 1855-1859, Nov. 2013.
- [C25] B. A. Robbins, **H. Zhu**, and A. D. Dominguez-Garcia, "Optimal tap settings for voltage regulation transformers in distribution networks," *Proc. 45th North America Power Symposium (NAPS)*, Sep. 2013.
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### Conference presentations

- [P9] **H. Zhu**, “Cyber-physical Situational Awareness for the Power Grid Infrastructure,” *IEEE PES GM Panel on NSF CAREER Program*, Atlanta, GA, Aug. 2019.
- [P8] **H. Zhu**, “Enhancing the Spatio-Temporal Visibility of Grid-Edge Resources,” *IEEE PES GM Panel on DER Integration*, Atlanta, GA, Aug. 2019.
- [P7] **H. Zhu**, “Power Grid Tomography using Ambient Synchrophasor Data,” *IEEE SGSMA Tutorial on Synchrophasor Data Analytics*, College Station, TX, May 2019.
- [P6] **H. Zhu**, “Data-driven Recovery of Frequency Response from Ambient Synchrophasor Data,” *NREL Workshop on Autonomous Systems*, Golden, CO, Apr. 2019.
- [P5] **H. Zhu**, “Data Analytics Approaches for Improved Resilience of the Power Grids,” *ARL-South Advanced Power Workshop*, Austin, TX, Mar. 2019.
- [P4] **H. Zhu**, “Data Analytics Approaches for Improved Resilience of the Power Grids,” *Condition Based Online Monitoring Conference (Comet)*, Austin, TX, Feb. 2019.
- [P3] **H. Zhu**, “Dynamic Power Distribution System Management,” *Grid Science Winter School & Conference*, Santa Fe, NM, Jan. 2019.
- [P2] **H. Zhu**, “Fast Nonconvex SDP Solver for Large-scale Power System State Estimation

(PSSE) Problem,” *Informs Annual Meeting*, Phoenix, AZ, Nov. 2018.

- [P1] **H. Zhu**, “Diffusion Inference for Oscillator Networks: Applications to Power System Dynamic Studies,” *2017 Graph Signal Processing Workshop*, Pittsburgh, PA, June 2017.

#### INVITED TALKS

1. *Data-Driven Recovery of Frequency Response from Ambient Synchrophasor Data*

- Power Group Seminar, Technical University of Denmark (DTU), Apr. 2018
- GEIRI North America, Apr. 2018
- ECE Colloquium, UT San Antonio, Feb. 2018
- Smart Grid Seminar, Texas A&M, Nov. 2017

2. *Dynamic Power Distribution System Management*

- LANL Grid Science Winter School & Conference, Jan. 2019
- Simons Energy Seminar, UC-Berkeley, Apr. 2018