

**JESSICA JIANHUA ZHANG**  
8 Clarkson Avenue, Potsdam, NY 13699  
(505)-504-2302 • [jzhang@clarkson.edu](mailto:jzhang@clarkson.edu)  
IEEE Women In Engineering member - 92181483

## EDUCATION

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Ph.D., Electrical and Computer Engineering, North Carolina State University	2016
M.S., Electrical Engineering, New Mexico Institute of Mining and Technology	2010
M.S., Systems Engineering, Xiamen University, Xiamen, China	2005
B.S., Industrial Automation, Jimei University, Xiamen, China	2002

## FUNDING

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Startup funding - Clarkson University

Title: Development of Cyber-physical Hardware-in-Loop Testbed

PI: Jianhua Zhang • Award Amount: \$252,500 • Project Period: Aug. 2019 - July 2021

Startup funding - Clarkson University

Title: Development and Case Study of Cyber-physical Co-Simulation Platform

HELICS (High Engine for Large-scale Infrastructure Co-Simulation)

PI: Jianhua Zhang • Award Amount: \$276,730 • Project Period: Aug. 2020 - Aug. 2022

## MAIN RESEARCH/ACADEMIC EXPERIENCE

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**Assistant Professor, Center for Electric Power Systems Research**, Clarkson University, 2019-present

**Postdoctoral Research Associate, Power Systems Engineering Center**, NREL, 2016-2019

*DOE SuNLAMP Project: Opportunistic Hybrid Smart Meter Networks for Distributed PV Coordination, Technical Lead*

*GMLC Project: Development of Hierarchical Engine for Large-Scale Infrastructure Co-Simulation (HELICS), Technical Lead*

*Industrial Project-I: PRE-Configuring Inverter SET-point(PRECISE)*

*Industrial Project-II: Design of 100% Renewable Energy Niijima Island Power Systems for Tokyo Electric Power Company (TEPCO)- Technical Lead*

**Research Assistant, FREEDM center/Wireless Lab**, NC State University 2011-2016

*Conduct research on cyber-physical algorithms for wide-area monitoring and control of large-scale power system.*

## HONORS AND AWARDS

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Best Internet Application in Energy Award, US Ignite, June 2014

Student Travel Grant Award of PESGM, Aug., 2016

Student Travel Grant Award of GENI Engineering Conference 22, March 2015

Student Travel Grant Award of US Ignite, June, 2014

## PUBLICATIONS

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### Book Chapters

S. Nabavi, **J. Zhang**, and A. Chakraborty. 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, IET, 2015.**

### Journal Papers

**J. Zhang**, A. Hasandka, J. Wei, S. Alam, A. Florita, T. Elgindy, and B. Hodge. Hybrid

Communications Architectures for Distributed Smart Grid Applications. *Energies*, vol. 11, no. 4, 2018. [Online]. Available: <http://www.mdpi.com/1996-1073/11/4/871>.

**J. Zhang**, S. Nabavi, A. Chakraborty, 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, no. 4, pp. 2123-2133, July 2016.

S. Nabavi, **J. Zhang**, and A. Chakraborty. Distributed Optimization Algorithms for Wide-Area Oscillation Monitoring in Power Systems Using an Inter-Regional PMU-PDC Architecture. *IEEE Transactions on Smart Grid*, vol. 6, no. 5, pp. 2529-2538, Sep. 2015.

### Conference Papers

**J. Zhang**, A. Hasandka, S. Alam, A. Florita, T. Elgindy, and B. Hodge. Analysis of Hybrid Smart Grid Communication Network Designs for Distributed Energy Resources Coordination. *2019 IEEE Power Energy Society Innovative Smart Grid Technologies Conference (ISGT)*, pp.1-5, Washington, DC, USA, 2019.

A. Hasandka, **J. Zhang**, A. Florita, T. Elgindy, and B. Hodge. Simulation-based Parameter Optimization Framework for Large-Scale Hybrid Smart Grid Communications Systems Design. *2018 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)*, pp. 1-7, Aalborg, Denmark, 2018.

M. Weiss, **J. Zhang**, A. Chakraborty. Wide-area Control of Power Systems using Cloud-in-the-loop Feedback. *in proceedings of IEEE Global Conference on Signal and Information*, Washington D.C., USA, Dec .2016.

T. Qian, H. Xu, **J. Zhang**, A. Chakraborty, F. Mueller, and Y. Xin. A Resilient Software Infrastructure for Wide-Area Measurement Systems. *in proceedings of IEEE PES General Meeting*, Boston, MA, 2016.

**J. Zhang**, S. Nabavi, A. Chakraborty, and Y. Xin. Convergence Analysis of ADMM-Based Power System Mode Estimation Under Asynchronous Wide-Area Communication Delays. *in proceedings of IEEE Power & Energy Society General Meeting (PESGM)*, Denver, CO, July 2015.

**J. Zhang**, P. Jaipuria, A. Hussain, and A. Chakraborty. Attack-Resilient Estimation of Power System Oscillation Modes using Distributed and Parallel Optimization: Theoretical and Experimental Methods. *5th International Conference on Decision and Game Theory for Security (GameSec 2014)*, Los Angeles, CA, Nov. 2014.

**J. Zhang**, A. Chakraborty, and Y. Xin. Distributed Implementation of Wide-Area Monitoring Algorithms for Power Systems Using a US-Wide ExoGENI-WAMS Testbed. **Invited paper for the 1st International Workshop on Trustworthiness of Smart Grids (ToSG 2014)**, Atlanta, GA, June 2014.

**J. Zhang**, W. Wang, and S. Bhattacharya. Architecture of Solid State Transformer-based Energy Router and Models of Energy Traffic. *in proceedings of IEEE PES on Innovative Smart Grid Technologies (ISGT)*, Washington, DC, Jan. 2012.

Y. Xu, **J. Zhang**, W. Wang, A. Juneja, and S. Bhattacharya. Energy Router: Architectures and Functionalities Toward Energy Internet. *in proceedings of IEEE International Conference on Smart Grid Communications (SmartGridComm)*, Brussels, Belgium, Oct. 2011.

### TUTORIAL AND TECHNICAL REPORT

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**J. Zhang**. HELICS Use Case: NS3+GridLab-D (OpenLoop) for multiple national laboratories, May, 2018.

**J. Zhang**, B. Mather, B. Lundstrom, and B. Kroposki. Literature Review on Grid-Supportive End-Use Electronics, submitted to DOE, Feb. 2019.

## SELECTED PRESENTATIONS

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- J. Zhang.** Development and Case Study of HELICS-NS3 High-Performance Distribution- Communication Framework. *GE Electrification Symposium*, Niskayuna, NY, Sept 17-18, 2019. (Oral)
- J. Zhang.** Simulation-based Parameter Optimization Framework for Large-Scale Hybrid Smart Grid Communications Systems Design. *IEEE SmartGridComm*, Aalborg, Denmark, Oct 29-31, 2018. (Oral)
- J. Zhang.** ExoGENI-WAMS: A Cyber-Physical Testbed for Wide-Area Monitoring and Control of Power Systems using Distributed Cloud Computing. **Smart Cities Innovation Summit 2016**, Austin, TX, June 13-15, 2016. (Poster)
- J. Zhang.** ExoGENI-WAMS: A Cyber-Physical Testbed for Wide-Area Monitoring and Control of Power Systems using Distributed Cloud Computing. *NASPI 1st International Synchrophasor Symposium*, Atlanta, GA, March 22-24, 2016. (Oral)
- J. Zhang,** A. Chakraborty, and Y. Xin. Distributed Monitoring and Control of the US Power Grid. *GENI (Global Environment for Network Innovations) Engineering Conference 22 (GEC22) and US Ignite Application Summit*, Washington DC, March 2015. (Poster+Demo)
- S. Nabavi, **J. Zhang,** and A. Chakraborty. Distributed Algorithms for Wide-Area Oscillation Monitoring Using Interdependent PMU-PDC Architectures. *FREEDM Industry Conference*, Raleigh, NC, Jan. 2015. (Poster)
- A. Chakraborty, **J. Zhang,** and Y. Xin. Secure-WAMS: Using ExoGENI for Attack-Resilient Monitoring and Control of Next-Generation Power Grids. *US Ignite Application Summit*, Sunnyvale, CA, June 2014. (Poster+Demo)
- A. Hussain, A. Chakraborty, **J. Zhang,** and P. Jaipuria. 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. (Poster+Demo)
- J. Zhang,** A. Chakraborty, and Y. Xin. Wide-Area Monitoring and Control of Power Systems using an ExoGENI-WAMS Testbed. *FREEDM Industry Conference*, Raleigh, NC, Jan. 2014. (Poster)
- J. Zhang,** W. Wang, and S. Bhattacharya. Architecture of Solid State Transformer-based Energy Router and Models of Energy Traffic, ISGT, Washington, DC, 2012. (Oral)
- R. Sonnenfeld, S. Hunyady, **J. Zhang,** V. Alvidrez, K. Morris, J. LaPierre, G. Vaive, and T.Wang. Development of the Langmuir Electric Field Array (LEFA). in *American Geophysical Union*, AE43B-0265, San Francisco, CA, Dec. 2009. (Poster)

## PROFESSIONAL ACTIVITIES

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- Member of IEEE and IEEE Power and Energy Society (IEEE PES)
- Reviewer for IEEE PES General Meeting, Annual IEEE Green Technologies Conferences (Green Tech)
- Reviewer for IEEE PES GID Grand International Conference and Exposition Asia 2019
- Reviewer for IEEE Transactions on Control Systems Technology, IEEE Transactions on Smart Grid, IEEE Transactions on Sustainable Energy, Journal of Energy Engineering, International Transactions on Electricity Energy Systems, Energies
- Session Chair of Data Analysis and Communication for the Smart Grid at IEEE SmartGridComm 2018 at Aalborg, Denmark