

## EDUCATION

**Ph. D.** in Electrical Engineering, July 1999

- Tsinghua University, Beijing, China. (GPA: 87/100, Rank #1 out of 50 in the Department)
- Dissertation: “Unified Power Flow Controller (UPFC) Modeling and Control”

**B. Eng.** in Electrical Engineering, July 1994

- Huazhong University of Science and Technology, Wuhan, China. (GPA: 93.6/100, Rank #1 out of 300 in the Department).

## PROFESSIONAL EXPERIENCE

**Technical Advisor**, Oct. 2019-present, Solar Energy Technologies Office (SETO), US Department of Energy, Washington, DC.

- **Technical Lead** in developing a multi-year research and development strategy for solar integration with the power grid, with extensive engagement within SETO, across DOE offices, and with industry and stakeholder communities.

**Research Professor**, Sep. 2019-present, School of Electrical Engineering & Computer Science, Washington State University, Pullman, Washington.

- **Joint Appointment** of PNNL/WSU Advanced Grid Institute (AGI).
- **Principal Investigator** for GridSandbox – the first PNNL/WSU AGI research project. GridSandbox is a high-performance environment with automated workflow management to enable easy construction of complex multi-domain simulation for power grid applications.

**Technical Group Manager**, Nov. 2016-Sep. 2019, Pacific Northwest National Laboratory, Richland, Washington.

**Team Lead**, May 2013-Oct. 2016, Pacific Northwest National Laboratory, Richland, Washington.

- **Technical Group Manager** responsible for capability development of 40 control experts in the areas of advanced controls for power systems, buildings, manufacturing, and transportation, with the aim to improve energy efficiency, sustainability and reliability.
- **Team Lead** of 20 top power systems experts in the areas of power system modeling, simulation and optimization, and applications of multi-disciplinary technologies such as high performance computing, uncertainty quantification and stochastic analysis, data science, and actionable visualization.

**Laboratory Fellow**, Jul. 2017-present, Pacific Northwest National Laboratory, Richland, Washington.

**Chief Engineer**, Jan. 2012-Jun. 2017, Pacific Northwest National Laboratory, Richland, Washington.

**Staff Engineer**, Jan. 2008-Dec. 2011, Pacific Northwest National Laboratory, Richland, Washington.

**Senior Research Engineer**, Jan. 2005-Dec. 2007, Pacific Northwest National Laboratory, Richland, Washington.

**Research Engineer**, Feb. 2003-Dec. 2004, Pacific Northwest National Laboratory, Richland, Washington.

- **Technical Lead** of multi-disciplinary research projects totaling more than \$5M/year. Build multi-disciplinary research teams, provide technical leadership and supervise project progress. The scope of these projects covers areas of power system modeling and simulation, applied mathematics, measurement and control, signal processing, hardware development, renewable integration, and applications of high performance computing. Achieved a best-ever 50 times increase in computational efficiency for a key power system process – state estimation. Pioneered the application of Kalman filter techniques to formulate power grid dynamic state estimation. A resulting operational tool for integrating wind energy uncertainty in power grid operation to mitigate the intermittency of wind generation is currently in pilot testing at a major Independent System Operator. Experienced with Alstom’s Energy Management System, General Electric’s PSLF, and MATLAB-based power system simulation tools.
- **Business Subsector Manager** for PNNL’s advanced power grid analytics subsector. Responsible for technology roadmap development, technical team development, client relationship management, partnership development, and portfolio growth. Federal clients include the US Department of Energy (DOE) Office of Electricity Delivery and Energy Reliability (OE), Advanced Research Program Agency – Energy (ARPA-E), and Office of Science (SC) Advanced Scientific Computing Research (ASCR). Assisted to shape DOE’s programs on advanced power grid

modeling, simulation, and optimization. Significantly grew PNNL's portfolio in ARPA-E and only grid penetration to ASCR. Engaged in strategic discussions with the US Department of Energy Secretary Dr. Steven Chu, Under Secretary for Science Dr. Steven Koonin, Acting Associate Director of Advanced Scientific Computing Research Dr. Daniel Hitchcock, DOE Senior Advisors and Program Managers, and China Delegations on Clean Energy.

- **Initiative Lead** for the PNNL's Future Power Grid Initiative, a five-year effort with a total funding level of \$15M. Achieved the objective of developing new-generation algorithms and tools using data-intensive high-performance computing and visual analytics to address the scale and complexity in future grid operation and planning. Developed the vision and strategy for the Initiative. Responsible for the technical direction, budget, and technical outcomes. Directed a multi-disciplinary team of over 50 scientists and engineers in the areas of power engineering, applied mathematics, high performance computing and visual analytics.
- **Key contributor** to the North American SynchroPhasor Initiative (NASPI. Formerly, EIPP – Eastern Interconnection Phasor Project), leading groups of industry experts to develop industry standard practices for wide-area phasor measurement. Frequently speak at national forums on this subject.
- **Key contributor** of the CERTS (Consortium for Electric Reliability Technology Solutions) research team. Conduct research on critical infrastructure monitoring and security issues including wide-area measurement and model validation. Actively participate in wide-area measurement studies of both the western and eastern North American power grids. Invited speaker at WECC workshops.

**Post-Doctoral Fellow**, Sept. 2001-Jan. 2003, University of Alberta, Edmonton, Canada.

- **Principal Investigator** of a NSERC (Canada) project. Developed an on-line voltage stability monitoring system – a practical and affordable add-on function into standard EMS systems. Innovatively employed advanced optimization techniques to assess power system voltage stability in real time based on measured generator status. For the first time such a stability assessment function could achieve real-time performance. The developed method has been applied to two major Canadian provincial transmission systems and significantly improved their ability to predict and prevent voltage instability.
- Developed a novel and yet practical harmonic resonance guideline based on IEEE Harmonic Standard 519 for shunt capacitor applications in transmission and distribution systems. Bridged power system harmonic assessment to modal analysis, and the resulting method can identify vulnerable components for enforcement, which was not possible by prior methods.
- Developed a generator ranking scheme to determine the importance of generators in terms of reactive power support using modal analysis. Author of the project report.
- Developed a practical method that would significantly simplify the industry practice of assessing the performance of generator islanding protection relays.
- Invented a mode trace method which can greatly improve the applications of modal analysis in small signal stability, voltage stability, harmonic resonance and other cases involving modal analysis.

**Post-Doctoral Fellow**, Sept. 2000-Aug. 2001, McGill University, Montreal, Canada.

- **Principal Investigator** of a project jointly funded by NSERC (Canada) and FCAR (Quebec, Canada). Developed transient simulation models for converter-based HVdc and FACTS (Flexible AC Transmission Systems) and their control systems based on HYPERSIM, a world-class real-time simulator consisting of 15 fast parallel processors. This work pioneered the detailed modeling of power electronic devices using HYPERSIM.
- Discovered the novel dynamic characteristic of generators connected to voltage source converter stations based on real-time stability simulation results, with application to a Canadian HVdc transmission system.

**Software Engineer, Project Manager**, Aug. 1999-May 2000, R&D of Huawei Technology Co. Ltd., Beijing, China.

- Led a project team of six software engineers in the China's largest communication equipment vendor company. Implemented network security protocols in software and hardware based on a real-time embedded operating system and constructed virtual private networks (VPN) over public data networks such as the Internet. The developed security routers have been widely used in many countries.

**Research Assistant**, Apr. 1998-Oct. 1998, Hong Kong University, Hong Kong.

- **Principal Investigator** of a project jointly funded by EPRI (USA) and Research Grant Council (Hong Kong). Developed a novel dynamic model for converter-based Unified Power Flow Controller (UPFC) – a versatile power

electronics device for power system control. This model, for the first time, enabled the stability analysis of UPFCs in large-scale power systems. This work was pioneering and became the foundation for research in this area. One of the resulted papers was cited ~300 times by domain experts all over the world.

**Research Assistant**, Sept. 1994-July 1999, Tsinghua University, Beijing, China.

- **Key contributor** to a Scheme B project funded by the State Science and Technology Commission of China. Discovered characteristics and designed control strategies of FACTS devices for power system stability analysis.
- **Key Member** of the China's Three-Gorge Plant study team. Provided technical suggestions for Three-Gorge Plant operation to the Central China Power Grid Company.
- Developed a resonance analysis software package for the Beijing Electricity Company, China.
- Improved the software package for power flow analysis using OOP-based Visual C++ and Microsoft ACCESS.

## PUBLICATIONS

- 56 Published Peer-Reviewed Journal Papers.
- 136 Peer-Reviewed Conference Papers.
- 4 Book Chapters, 4 Tutorials, 58 Technical Reports.

## AWARDS AND HONORS

- Finalist, R&D100 Award, "HELICS™", 2019.
- Best Conference Paper, "A Multi-Model Adaptive Kalman Filtering Approach to Power System Dynamic State Estimation." Paper number: 19PESGM0324. 2019 IEEE PES General Meeting.
- Best Conference Paper (1 of 4 out of ~1000 papers), "Synthetic Power Grids from Real World Models", 2018 IEEE PES General Meeting.
- Best Conference Paper, "Adaptive Adjustment of Noise Covariance in Kalman Filter for Dynamic State Estimation", 2017 IEEE PES General Meeting.
- Best Conference Paper, "An Innovative Software Tool Suite for Power Plant Model Validation and Parameter Calibration using PMU Measurements", 2017 IEEE PES General Meeting.
- **IEEE Fellow**, "for contributions to dynamic analysis and high performance computing in power systems", 2017-.
- Best Journal Paper Award, "Zhenyu Huang, Pengwei Du, Dmitry Kosterev, and Steve Yang, 'Generator dynamic model validation and parameter calibration using phasor measurements at the point of connection', *IEEE Transactions on Power Systems*, Volume: 28, Issue: 2, Page(s): 1939 - 1949, 2013". IEEE PES Power System Dynamic Performance Committee, 2016.
- PNNL Scientific and Technical Achievement Recognition Award, 2010.
- Outstanding Engineer of the Year, IEEE Richland Section, 2009.
- Outstanding Engineer of the Year, IEEE Sensors Council Richland Chapter, 2009.
- **Outstanding Young Engineer Award**, IEEE Power and Energy Society, "for outstanding contributions in the leadership of technical society activities, leadership in community and humanitarian activities, and evidence of technical competence", 2009.
- IEEE PES Prize Working Group Award, "IEEE Special Publication 07TP190, Blackout Experiences and Lessons, Best Practices for System Dynamic Performance, and the Role of New Technologies" (July 2007), contributor, 2009.
- IEEE PES PSDP Committee Technical Committee Award, "IEEE Special Publication 07TP190, Blackout Experiences and Lessons, Best Practices for System Dynamic Performance, and the Role of New Technologies" (July 2007), contributor, 2009.
- Professional Engineer #45303, Registered in Washington State, 2008.
- Outstanding Engineer of the Year, IEEE PES Richland Chapter, 2008.
- **PNNL Ronald L. Brodzinski's Award for Early Career Exceptional Achievement**, for "Significant contributions to improve the security and reliability of power grids – the most complex engineered system and one of the nation's critical infrastructures", 2008.
- Outstanding Leadership and Professional Service Award, IEEE Region 6 Northwest Area, for "exemplary service and contributions towards the advancement of IEEE goals and the engineering profession", 2008.

- IEEE Service Award, *for notable services and contributions towards the advancement of IEEE and the Engineering Professions*, IEEE Power Engineering Society and Region 6, 2008.
- **IEEE/PES Outstanding Small Chapter Award**, as *Chapter Chair*, 2007.
- Exceptional Contributions, PNNL, 2006.
- PNNL Outstanding Performance Award: “Outstanding Mentoring of ‘Junior’ Staff”, 2007.
- PNNL Outstanding Performance Award: “DOE Restoration Study Proposal”, 2004.
- PNNL Outstanding Performance Award: “Support to the WECC Model Validation Work Group”, 2003.
- PNNL Outstanding Performance Award: “Emerging Contributor”, 2003.

#### TEACHING AND MENTORING EXPERIENCE

- Research Professor, Joint Appointment, Washington State University, 2019-.
- Mentor, Summer Intern, ASCR MACSER Project, 2019.
- Ph.D. Assessment Committee, Technical University of Denmark, 2017.
- Ph.D. Committee, University of North Carolina – Chapel Hill, 2011-2013.
- Adjunct Professor, Washington State University, Course Taught: EE521-Analysis of Power Systems, 2006- .
- Lecturer, University of Alberta, Edmonton, Canada. Course Taught: “Power System Transient Stability Analysis” (4th year undergraduate and graduate level), 2002.
- Mentor over 15 junior and mid-career staff on proposal development, project management, and research directions, with total project funding exceeding \$50M, 2006-2015.
- Mentor of a summer intern by providing technical direction and research guidance at PNNL, 2007.
- Mentored a student under Department of Energy’s Science Undergraduate Laboratory Internship (SULI) Program, 2006. The final paper out of this SULI research was selected for publication in Department of Energy *Journal of Undergraduate Research Volume VII*.
- Co-mentored three students under Department of Energy’s Community College Institute of Science and Technology, 2004. A paper out of this work was published in *IEEE Transactions on Power Systems*.
- Teaching Assistant, Department of Electrical Engineering, Tsinghua University, Beijing, China, 1994-1999.

#### PROFESSIONAL SOCIETY INVOLVEMENT

##### Professional Society Services

##### *IEEE (Institute of Electrical and Electronics Engineers)*

- Fellow, IEEE, 2017-.
- Senior Member, IEEE, 2005-2016.
- Professional Member, IEEE-Eta Kappa Nu (IEEE-HKN) Honors Society, 2014-.
- Chair, IEEE/PES AMPS (formerly PSACE) Computer and Analytical Methods Subcommittee (CAMS), 2019-.
- Chair, IEEE/PES PSDP Power System Stability Controls Subcommittee, 2018-.
- Chair, IEEE/PES PSDP Working Group on Dynamic Security Assessment, 2018-.
- Vice Chair, IEEE/PES AMPS (formerly PSACE) Computer and Analytical Methods Subcommittee (CAMS), 2015-2019.
- Chair, IEEE/PES PSACE Working Group on High Performance Computing Applications to Power Systems, 2010-.
- Liaison (Executive Officer), IEEE/PES PSDP Committee to the Emerging Technology Coordinating Committee (ETCC), 2010-.
- Secretary, IEEE/PES PSDP Power System Stability Controls Subcommittee, 2016-2018.
- Secretary, IEEE/PES PSDP Working Group on Dynamic Security Assessment, 2014-2018.
- Member, IEEE PES PSRC C4 and C19 Standards Working Group, 2014-2015.
- Technical Committee Program Chair, IEEE /PES Power System Dynamic Performance Committee, 2009-2011.
- Chair, IEEE Richland Section Fellows Search Committee, 2009-2010.
- Member, IEEE Richland Section Nominations and Appointments Committee, 2008-2009.
- IEEE Sensors Council Richland Chapter liaison representative to IEEE Sensors Council Technical Operations, 2008-2009.

- Founding Vice Chair, IEEE Sensors Richland Chapter, 2008-2009.
- Liaison, IEEE/PES PSDP Power System Stability Controls Subcommittee to the PSACE Computer and Analytic Methods Subcommittee (CAMS), IEEE, 2007-.
- Task Lead, IEEE/PES PSACE Task Force on Understanding, Prediction, Mitigation and Restoration of Cascading Failures, 2007-2009.
- Chair, IEEE Power Engineering Society Richland Chapter, 2005-2006.
- Secretary, IEEE Power Engineering Society Richland Chapter, 2003-2004;
- Member, IEEE/PES PSDP Task Force on Blackout Experience, Mitigation, and Role of New Technologies, 2006-2008;

**Other**

- Founding Vice President of Public Relations, North American Chinese Power Professional Association, 2010-2012.
- Member, the North American SynchroPhasor Initiative (formerly, Eastern Interconnection Phasor Project) Working Group (Department of Energy), 2004-;
- Member, the Planning Coordination Committee of WECC (Western Electricity Coordinating Council), 2007-;
- Member, the Disturbance Monitoring Work Group of WECC (Western Electricity Coordinating Council), 2004-;
- Member, the Modeling and Validation Work Group of WECC (Western Electricity Coordinating Council), 2003-;

**Technical Conference Services**

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**Technical Committee Member**

- Technical Program Committee (TPC), 2nd IEEE International Conference on Smart Grid Synchronized Measurements and Analytics – SGSMA, Split, Croatia, on May 24 – 27, 2021.
- Technical Program Committee (TPC) and Peer Reviewer, 2020 IEEE PES Transmission & Distribution Latin America (T&D LA 2020), Montevideo, Uruguay, September 28 to October 2, 2020.
- Technical Program Committee (TPC), 1st IEEE International Conference on Smart Grid Synchronized Measurements and Analytics – SGSMA, Texas A&M University, College Station, Texas, on May 21 – 23, 2019.
- Technical Program Committee, POWERCON2018, November 6-8, 2018, Guangzhou, China.
- Technical Program Committee, IEEE SmartGridComm 2016, 2016.
- Technical Program Committee, the IEEE PES Conference on Innovative Smart Grid Technologies – Latin American (ISGT-LA 2015), 2015.
- Publications Chair, IEEE SmartGridComm 2013, 2013.
- Co-Chair, the 2nd SC12 International Workshop on High Performance Computing, Networking and Analytics for the Power Grid (HiPCNA-PG), Salt Lake City, UT, USA, 2012.
- Organizing Committee, Secure Autonomous Electric Power Grids Workshop, the 6th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2012), Lyon, France, 2012.
- Co-Chair, the 1st SC11 International Workshop on High Performance Computing, Networking and Analytics for the Power Grid (HiPCNA-PG), Seattle, WA, USA, 2011.
- General Chair, Organizing Committee, IEEE/PES APPEEC, Wuhan, China, 2013.
- Technical Program Committee, IEEE/PES APPEEC, Wuhan, China, 2012.
- Technical Program Committee, IEEE/PES APPEEC, Wuhan, China, 2011.
- Technical Program Committee, IEEE/PES APPEEC, Wuhan, China, 2010.
- Technical Program Committee, IEEE/PES Asia-Pacific Power and Energy Engineering Conference (APPEEC), Wuhan, China, 2009.
- Technical Program Committee, IEEE/PES Transmission and Distribution Conference and Exposition Latin America, 2006.

**Session Organizer and Chair**

- Workshop Chair, IEEE SGSMA 2019 – the First IEEE International Conference on Smart Grid Synchronized Measurements and Analytics, College Station, Texas, USA, 2019
- IEEE/PES General Meeting , 2019.
- IEEE/PES General Meeting, 2018.
- IEEE/PES General Meeting, 2017.
- IEEE/PES General Meeting, 2016.

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- IEEE/PES General Meeting, 2009.
- IEEE/PES General Meeting, Pittsburgh, USA, 2008.
- 5<sup>th</sup> GridOPTICS Workshop on Next-Generation Analytics for the Future Power Grid, DOE, Richland, WA, 2016.
- 4<sup>th</sup> GridOPTICS Workshop on Next-Generation Analytics for the Future Power Grid, PNNL, Richland, WA, 2015.
- 3<sup>rd</sup> GridOPTICS Workshop on Next-Generation Analytics for the Future Power Grid, PNNL, Seattle, WA, 2014.
- 2<sup>nd</sup> GridOPTICS Workshop on Next-Generation Analytics for the Future Power Grid, PNNL, Richland, WA, 2013.
- 1<sup>st</sup> GridOPTICS Workshop on Next-Generation Analytics for the Future Power Grid, PNNL, Seattle, WA, 2012.
- The 45th Hawaiian International Conference on System Sciences, Maui, Hawaii, 2012.
- IEEE/PES Power System Conference and Exhibition, Seattle, USA, 2009.
- Western Electricity Coordinating Council (WECC) WAMS Workshop, Sacramento, USA, 2005.
- PMU System Performance Panel at the North American SynchroPhasor Initiative Working Group Meeting, Long Beach, USA, 2007.
- Performance Requirements Panel at the Eastern Interconnection Phasor Project (EIPP) Working Group Meeting, Atlanta, USA, 2006.
- WECC System Modeling Workshop, 2006.
- IEEE Power Engineering Society Transmission and Distribution Conference and Exposition Asia and Pacific, 2005.
- Eastern Interconnection Phasor Project (EIPP) Working Group Meeting, St Louis, UA, 2006.
- EIPP PMU Installation and Integration Workshop, St Louis, USA, 2006.
- EIPP PMU Testing Workshop, Washington DC, USA, 2005.

**Peer Reviewer**

- IEEE SGSMA 2019 – the First IEEE International Conference on Smart Grid Synchronized Measurements and Analytics, College Station, Texas, USA, 2019
- IEEE/PES General Meeting, 2019.
- IEEE/PES General Meeting, 2018.
- IEEE/PES General Meeting, 2017.
- IEEE/PES General Meeting, 2016.
- IEEE/PES General Meeting, Denver, CO, USA, 2015.
- IEEE/PES General Meeting, Washington, DC, USA, 2014.
- IEEE/PES General Meeting, Vancouver, Canada, 2013.
- IEEE/PES General Meeting, San Diego, USA, 2012.
- IEEE/PES General Meeting, Detroit, USA, 2011.
- IEEE/PES General Meeting, Minneapolis, USA, 2010.
- IEEE/PES General Meeting, Calgary, Canada, 2009.
- IEEE/PES General Meeting, Pittsburgh, USA, 2008.
- ISGT 2017.
- IREP'2017
- IFAC World Congress, Toulouse, France, 2017.
- PSCC 2018.
- The 19th Power Systems Computation Conference (PSCC), Genoa, Italy, 2016.
- The 18th Power Systems Computation Conference (PSCC), Wroclaw, Poland, 2014.
- The 17th Power Systems Computation Conference (PSCC), Stockholm, Sweden, 2011.
- The 16th Power Systems Computation Conference (PSCC), Glasgow, Scotland, 2008.
- IEEE/PES Transmission and Distribution Conference and Exposition, 2016.
- IEEE/PES PowerTech 2015, Eindhoven, The Netherlands, 2015

- HICCS-52, 2019.
- HICSS-48, 2015.
- HICSS-47, 2014.
- The 46th Annual Hawaii International Conference on System Sciences (HICSS), 2013.
- IEEE International Symposium on Circuits and Systems, Taipei, Taiwan, 2009.
- IEEE/PES Transmission and Distribution Conference and Exposition Latin America, 2006.

#### Peer Reviewer and Editorial Services for Technical Journals

- Editor, IEEE Transactions on Power Systems, 2016-2020.
- Guest-Editor-In-Chief, special issue on “High Performance Computing Applications for a More Reliable and Efficient Power Grid”, IEEE Transactions on Smart Grid, 2015-2016.
- Renewable Energy, Elsevier, 2015-.
- Sustainable Computing, Informatics and Systems, Elsevier, 2014-.
- Utilities Policy, Elsevier, 2014-.
- International Journal of Engineering Science and Technology, Elsevier, 2014-.
- Electric Power Systems Research, Elsevier, 2012-.
- ASME Journal of Dynamic Systems, Measurement and Control, 2009-.
- European Transactions on Electrical Power, 2008-.
- IET Generation, Transmission and Distribution (formerly, IEE Proceedings – Generation, Transmission and Distribution), 2007-.
- International Journal of Energy Technology and Policy, 2006-.
- International Journal of Electrical Power & Energy Systems, 2005-.
- International Journal of Power and Energy Systems, 2003-.
- IEEE Transactions on Power Systems, 2003-.
- IEEE Transactions on Power Delivery, 2003-.
- IEEE Transactions on Energy Conversion, 2003-.
- IEEE Power Engineer Letters, 2003-.

#### COMMUNITY SERVICES

- Speaker, Pasco-Kennewick Rotary Club, December 17, 2015. <http://portal.clubrunner.ca/1814/Stories>.
- Speaker, Technical Seminar Series, North American Chinese Power Professional Association, 2015.
- Vice President of Public Relations, Global Speakers Toastmasters Club, Toastmasters International, 2011.
- Speaker, Career Development Seminar Series, North American Chinese Power Professional Association, 2010.
- Speaker, Pasco-Kennewick Rotary Club, 2009.
- Engineer Mentor, the 17th Annual National Engineers Week Future City™ Competition, 2009.
- Referee, the 3rd Annual FIRST LEGO League Tournament, Tri-cities, WA, 2008.
- Speaker, PNNL Tour for Portland IEEE Section, 2008. (90 attendees)
- Judge, the 53rd Annual Mid-Columbia Science and Engineering Fair, 2008.
- Competent Communicator, Toastmasters International, 2008.
- Certificate of Appreciation, for contributions as Member of the 2008 Tri-Cities Engineers Week Banquet Committee, presented by Washington Society of Professional Engineers Tri-Cities Chapter, 2008.
- Member of the 2008 Tri-Cities Engineers Week Banquet Committee, 2008.
- Speaker, PNNL Tour for Portland IEEE Section, 2007. (70 attendees)
- Member of the Electrical Engineering Faculty Search Committee, Washington State University at Tri-Cities, 2007-.
- Founding President, Global Speakers Toastmasters Club, Toastmasters International, 2004.
- Master of Ceremony, TCCAA Chinese New Year’s Celebration, 2004.
- Master of Ceremony, TCCAA Moon Festival Celebration, 2003.
- Board Member, Tri-Cities Chinese American Association (TCCAA), 2004.

• **Appendix: List of Intellectual Properties**

BOOK CHAPTERS AND TUTORIALS

1. Z. Huang (leading instructor), S.G. Abhyankar A. Bose J.C. Fuller T.D. Hardy D. Krishnamurthy and L. Min et al. 08/04/2019. Tutorial: Integrated Modeling and Simulation of Transmission Distribution and Communication Systems." Presented at IEEE PES GM2019, Atlanta Georgia. PNNL-SA-143958.
2. Huang Z (contributing instructor). 08/04/2019. "Tutorial: Dynamic State Estimation for Power System Dynamic Monitoring Protection and Control: Motivations Tools & Experiences", Presented at IEEE PES GM2019, Atlanta Georgia. PNNL-SA-144137."
3. **Z. Huang** (leading instructor), Abhyankar S., J.C. Fuller, T.D. Hardy, L. Min, B. Palmintier, and P. Top. 04/16/2018. "Tutorial: Integrated Modeling and Simulation of Transmission, Distribution, and Communication Systems." Presented at IEEE PES T&D 2018, Denver, Colorado. PNNL-SA-133469.
4. **Zhenyu Huang** (contributing author), Tutorial: "Implementation of Synchrophasor Systems", presented at the 2014 IEEE Power and Energy Society General Meeting, National Harbor, MD, July 2014.
5. **Zhenyu Huang** (leading author), Chapter: "High-Performance Computing for Smart Grid Analysis and Operation", in Book: *High-Performance Computing in Power and Energy Systems*, Editors: Siddhartha Kumar Khaitan, Anshul Gupta, Srinivas Aluru, and Kasthurirangan Gopalakrishnan, Springer-Verlag, Inc. September 2012.
6. **Zhenyu Huang** (leading author), Chapter "High Performance Computing for Advanced Smart Grid Applications", in Book: *Smart Grids: Infrastructure, Technology, and Solutions*, Editor-in-Chief: Stuart Borlase, CRC Press, January 2012.
7. **Zhenyu Huang** (contributing author), Chapter "Wide-Area Measurement, Protection, and Control", in Book: *Smart Grids: Infrastructure, Technology, and Solutions*, Editor-in-Chief: Stuart Borlase, CRC Press, January 2012.
8. Yousu Chen, **Zhenyu Huang**, Pak-Chung Wong, Patrick Mackey, Craig Allwardt, Jian Ma and Frank Greitzer, Chapter 17: "An Advanced Decision-Support Tool for Electricity Infrastructure Operations", in Book: *Critical Infrastructure Protection*, Editor: Sujet Sheno, Springer, 2010.

PEER-REVIEWED JOURNAL PUBLICATIONS

1. **Zhenyu Huang** (contributor). 2019. "Exascale applications: skin in the game". *Phil. Trans. R. Soc. A*, 20190056. <http://dx.doi.org/10.1098/rsta.2019.0056>.
2. Shaobu Wang, Renke Huang, Xinda Ke, Rui Fan, Junbo Zhao, Hong Wang, **Zhenyu Huang**, Arun Sathanur, Draguna Vrabie, "A Risk-Oriented PMU Placement Approach in Electric Power Systems", to appear *IET Generation, Transmission & Distribution*, 2019.
3. Zhao J., Z. Zheng, S. Wang, R. Huang, T. Bi, L. Mili, and **Z. Huang**. 2019. "Correlation-Aided Robust Decentralized Dynamic State Estimation of Power Systems with Unknown Control Inputs." to appear in *IEEE Transactions on Power Systems*, 2019. PNNL-SA-144597.
4. Rui Fan, Shaobu Wang, Renke Huang, Jianming Lian, and **Zhenyu Huang**. "Wide-Area Measurement-Based Modal Decoupling for Power System Oscillation Damping", *Electric Power Systems Research*, Vol. 178, January 2020.
5. Qihua Huang, Renke Huang, Weituo Hao, Jie Tan, Rui Fan, and **Zhenyu Huang**. "Adaptive Power System Emergency Control using Deep Reinforcement Learning", *IEEE Transactions on Smart Grid*, 2019.
6. IEEE Task Force on Power System Dynamic State and Parameter Estimation, Junbo Zhao (TF Chair), Antonio Go´mez-Expo´sito, Marcos Netto, Lamine Mili, Ali Abur, Vladimir Terzija, Innocent Kamwa, Bikash Pal, Abhinav Kumar Singh, Junjian Qi, **Zhenyu Huang**, and A. P. Sakis Meliopoulos, "Power System Dynamic State Estimation: Motivations, Definitions, Methodologies and Future Work", *IEEE Transactions on Power Systems*, Volume: 34, Issue: 4, Pages: 3188-3198, July 2019. <https://ieeexplore.ieee.org/xpl/topAccessedArticles.jsp?punumber=59>. Digital Object Identifier: [10.1109/TPWRS.2019.2894769](https://doi.org/10.1109/TPWRS.2019.2894769).
7. **Huang Z.** and Y. Chen. 2019. "High Performance Analytics for Grid Flexibility." *Journal of Global Energy Interconnection*. January 2019. PNNL-SA-140365.
8. Wang S, and Z Huang. "An alternative approach for MLE calculation in nonlinear continuous dynamic systems." *Nonlinear Dynamics*, Volume 95, Issue 3, pp 2591–2603, February 2019.
9. Shahrokh Akhlaghi, Ning Zhou, and **Zhenyu Huang**. "A Hybrid Approach for Estimating Dynamic States of Synchronous Generators", *IET Generation, Transmission & Distribution*, 2019. <http://ietdl.org/t/Y8H6l>.
10. David Barajas-Solano, and **Zhenyu Huang**, "Stochastic Resonance When Uncertainty Meets Dynamics", *Notices of the American Mathematical Society*, January 2019.
11. Shaobu Wang, Junbo Zhao, **Zhenyu Huang**, and Ruisheng Diao, "Assessing Gaussian Assumption of PMU Measurement Error Using Field Data", *IEEE Transactions in Power Delivery (IEEE Power Engineering Letters)*, Volume: 33, Issue: 6, On Page(s): 3233-3236, December 2018. Digital Object Identifier: 10.1109/TPWRD.2017.2762927
12. Akhlaghi, Shahrokh; Zhou, Ning; **Huang, Zhenyu**, "A Multi-Step Adaptive Interpolation Approach to Mitigating the Impact of Nonlinearity on Dynamic State Estimation", *IEEE Transactions on Smart Grid*, Volume: 9, Issue:4, Page(s): 3102-3111, July 2018. Digital Object Identifier: 10.1109/TSG.2016.2627339.
13. W. Steven Rosenthal, Alexandre Tartakovsky, and **Zhenyu Huang**, "Ensemble Kalman Filter for Dynamic State Estimation of Power Grids Stochastically Driven by Time-correlated Mechanical Input Power", *IEEE Transactions on Power Systems*, Volume:

- 33, Issue:4, Page(s): 3701-3710, July 2018. Digital Object Identifier: 10.1109/TPWRS.2017.2764492.
14. Zhao J, S Wang, BG Amidan, R Huang, and **Z Huang**. "A Robust State Estimation Framework Considering Measurement Correlations and Imperfect Synchronization." *IEEE Transactions on Power Systems*, Volume: 33, Issue:4, Page(s): 4604-4613, July 2018. Digital Object Identifier: 10.1109/TPWRS.2018.2790390.
  15. Renke Huang, Ruisheng Diao, Yuanyuan Li, Juan Sanchez-Gasca, **Zhenyu Huang**, Brian Thomas, Pavel Etingov, Slaven Kincic, Shaobu Wang, Rui Fan, Gordon Matthews, Dmitry Kosterev, and Steve Yang, "Calibrating Parameters of Power System Stability Models using Advanced Ensemble Kalman Filter", *IEEE Transactions on Power Systems*, Volume: 33, Issue:3, Page(s): 2895-2905, May 2018. Digital Object Identifier: 10.1109/TPWRS.2017.2760163.
  16. M. A. Elizondo, N. Mohan, J. O'Brien, Q. H. Huang, D. Orser, W. Hess, H. Brown, W. C. Zhu, D. Chandrashekhara, Y. V. Makarov, D. Osborn, J. Feltes, H. Kirkham, D. Duebnerm, and **Z. Y. Huang**, "HVDC macrogrid modeling for power-flow and transient stability studies in North American continental-level interconnections," *CSEE Journal of Power and Energy Systems*, vol. 3, no. 4, pp. 390-398, Dec. 2017.
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