

Shi-Jia (James) Zhao

Cell: 979-204-3323

E-mail: shijiazhaojames@gmail.com

HIGHLIGHTS

- ✓ PhD at Texas A&M University with 4.0 GPA / 9 publications / 6 years research experience in power system Power System Reliability (state space, Markov chain, Monte Carlo Simulation, evaluation of line switching operations) Power System Modelling (power flow analysis, short circuit analysis, relay setting, oscillation analysis, energy storage) Data Science Application in Power System (Principle Component Analysis, time series analysis, clustering) Renewable Integration, Power System Economics, Power System Resilience
 - Software: MATLAB, PSCAD, ATP, PSS/E, ASPEN, PowerWorld Language: MATLAB, C, Python, Fortran
 - ✓ Capable of quick adaptation to new and innovative research topics
 - Streamlined 3 project proposals in 2 weeks under 2-month requirement and passed the evaluation of State Grid of China
 - ✓ Excellent teamwork and presentation skills
 - Supervised the discussion and presentation of >10 research projects through collaboration with >100 team members
 - Organized IEEE Texas Power and Energy Conference 2017/2018 as Technical Program Chair and Publication Chair
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EDUCATION

- Aug. 2018 **Ph.D.** Electrical and Computer Engineering, **Texas A&M University** **GPA: 4.0/4.0**
Ph.D. Advisor: **Dr. Chanan Singh**, *Member of National Academy of Engineering, IEEE Fellow*
- June 2012 **B.Eng.** Electrical Engineering, Huazhong University of Sci.&Tech., China **GPA: 3.9/4.0**
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WORK EXPERIENCE

- Internship** Research Assistant February 2018 – May 2018
 GEIRI-North America, PMU & System Analytics Research Group **San Jose, California**
- Streamlined the coordination of innovative research projects
- Projects: AI-based oscillation analysis / Flexible loads aggregation / Energy storage in microgrid
 - Finished 3 project proposals in 2 weeks under 2-month requirement and all passed evaluations
 - Developed software to detect / suppress oscillation and improve power system stability and security
 - Aggregated flexible loads in distribution network to facilitate remedial actions under contingencies
 - Devised a multi-energy flow framework to improve the efficiency of EMS in microgrid
 - Submitted 1 patent application in China and 2 patent applications in the United States
- Engineering Consultant May 2013 – July 2013
 Siemens CT IV TT&B (Technology-To-Business) SHA Team
- Consulted on the design and presentation of micro-grid plan for Tianjin Eco-city
- Examined residential/office/industrial sectors in microgrid and formulated different operation cycle
 - Simulated a 5-year payback cycle to demonstrate the benefit of storage in street lamp
 - Boosted self-sustaining capability and reduced energy cost by more than 20%
 - Convinced municipal government to push forward proposed plan in the final presentation
- Reliability** Proposed reliability evaluation method for line switching operations in power system 2016
- Evaluation** - Reduced more than 60% of computation time and maintained the accuracy higher than 95%
- Projects** - Developed PSS/E powerflow/dynamic model and MATLAB model for RTS and 118-bus system

	<u>Developed MATLAB code for Monte Carlo Simulation of power system reliability</u>	2012
	- Formulated generator / load model with Markov method and unit-addition method	
	- Simulated sequential next event method on IEEE 118-bus system (186 lines and 54 generators)	
Power System Modelling Projects	<u>Formulated PSCAD model for transmission line zero-sequence impedance estimation</u>	2015
	- Proposed a new method for online zero-sequence impedance estimation of transmission lines	
	- Achieved online calculation using real data from DFR without de-energizing transmission line	
	- Solved practical problems observed in utility and updated old recording and settings	
	<u>Formulated ATP model for short circuit study and setting/testing of SEL-551C relay</u>	2014
	- Performed short circuit study based on ATP modelling of overcurrent relays	
	- Simulated 4 faults SLG, DLG, LL, TLG to calculate the relay settings	
	- Validated settings of all cases on SEL-551C overcurrent relays with 100% correct rate	
	<u>Developed MATLAB code for power flow analysis and tested on IEEE-118-bus system</u>	2013
	- Implemented Newton-Rapson method in AC power flow analysis	
	- Simulated on IEEE 118-bus system with convergence time less than 10 seconds	
	- Performed frequency dependent power flow analysis on IEEE-14 bus system	
Data Science Projects	<u>Prepared report for data science application in power system</u>	2015
	- Summarized Principle Component Analysis(PCA), TSA, SVM and applications in power system	
	- Converted frequency/voltage PMU data into 1/3 dimensions using PCA	
	- Proposed update on MCS based on TSA which reduce more than 60% of computation time	
Renewable Integration Projects	<u>Investigated cross-correlation between onshore/offshore wind generation and load</u>	2014
	- Collected real data from ERCOT and windfarms to mimic geographic features of Texas	
	- Obtained correlation coefficient and provide guidance on windfarm location choice	
	<u>Organized IEEE Texas Power and Energy Conference 2017/2018</u>	2017-2018
Professional Service	- Led review team of 28 members to finish reviewing process of 48 submissions in 3 weeks	
	- Coordinated 8 presentation sessions and published 29 accepted submissions in IEEEExplore	
	<u>Teaching Assistant</u>	2014
	- "Power System Reliability" (Lecturer: Dr. Chanan Singh)	
	<u>Reviewer</u>	2017-2018
	- IEEE TSG / IEEE TPWRD / IEEE Access / ITEES / IEEE TPEC	

PUBLICATIONS

- [J2] S. Zhao, Chanan Singh. "A Hybrid Method for Reliability Evaluation of Line Switching Operations"
Accepted, Electric Power Systems Research (2018)
- [J1] S. Zhao, Chanan Singh. "Studying the Reliability Implications of Line Switching Operations"
IEEE Transactions on Power Systems 32.6 (2017): 4614-4625
- [C7] S. Zhao, C. Singh, " Using Contingency Ranking Method in Reliability Evaluation of Line Switching Operation" in T&D-LA 2018
- [C6] S. Zhao, C. Singh, " A Reliability Evaluation Method for Line Switching Operations in Power System " in PSCC 2016
- [C5] C. Singh, S. Zhao, " Investigation of Equivalence between the Interstate Transition Rates and State Probabilities in the Data Analysis and Applications " in International Conference on Probabilistic Methods Applied to Power Systems (PMAPS), 2016
- [C4] J. Perez, A. Makki, and S. Zhao. "The effects of neutral shifts on protective relays." in 68th Annual Protective Relay Conference 2015
- [C3] S. Zhao, C. Singh, "Trajectory Estimation of Transmission Line Zero Sequence Impedance Using Relay Records," in NAPS 2015
- [C2] S. Zhao and C. Singh. "Reliability study of onshore and offshore wind generation and impact of location." in PES-GM 2014
- [C1] S. Zhao, L. Xie, and C. Singh, "Cross-correlation study of onshore/offshore wind generation and load in Texas," in NAPS 2013

HONORS AND AWARDS

- 2017 Recipient of Thomas Powell Fellowship
- Highest recognition for a graduate student in Department of ECE, Texas A&M EPPE group
- 2008 Recipient of China National Scholarship
- China Ministry of Education