# Yuqi Zhou

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## Education

**08/2018-12/2022**   **The University of Texas at Austin (Doctor of Philosophy)**

- Department of Electrical and Computer Engineering
- Major: Energy Systems (Advisor: Prof. Hao Zhu)
- Research Interests: Power system operation and planning under uncertainty
- Major Courses: Numerical Analysis, Electricity Markets, Optimization Under Uncertainty, Reinforcement Learning, etc.

**08/2015-05/2018**   **Texas A&M University (Master of Science)**

- Department of Electrical and Computer Engineering
- Major: Electric Power Systems and Power Electronics (Advisor: Prof. Le Xie)
- Major Courses: Modern Control, Stochastic Systems, Physical and Economical Operations of Sustainable Energy Systems, Convex Optimization, Distribution Theory, etc.

**09/2011-06/2015**   **Xi'an Jiaotong University (Bachelor of Engineering)**

- School of Electronics & Information Engineering (Major: Information Engineering)
- Major Courses: Signals and Systems, Information Theory, Communication Principle, Principle of Automatic Control, Computation Methods, etc.

## Honors and Awards

- **Best Paper Award (1st Place), IEEE North American Power Symposium**
- **Second Place in Elevator Pitch Competition, IEEE North American Power Symposium**
- **Third Place in UT Energy Week Student Research Poster Competition**
- **Graduate School Fellowship of University of Texas at Austin**
- **Best Paper Award (1st Place), IEEE Texas Power and Energy Conference**
- **Best App Award, Smart Grid Student Symposium**
- **Departmental Merit Scholarship of Texas A&M University**
- **Siyuan Scholarship of Xian Jiaotong University**
- **Third Place in Electronics Design Competition of Xian Jiaotong University**
- **Championship in College Freshman Basketball Tournament**
- **Second Prize in Provincial Olympics Mathematics Competition**

## Publications

- **Y. Zhou**, H. Zhu, and G. A. Hanasusanto, "Distributionally Robust Chance-Constrained Optimal Transmission Switching for Renewable Integration," 2022 IEEE Trans on Sustainable Energy
- **Y. Zhou**, J. Park, H. Zhu, "Scalable Learning for Optimal Load Shedding Under Power Grid Emergency Operations," 2022 IEEE Power & Energy Society General Meeting
- **Y. Zhou**, A. S. Nair, D. Ganger, A. Tripathi, C. Baone, H. Zhu, "Appliance Level Short-term Load Forecasting via Recurrent Neural Network" 2022 IEEE Power & Energy Society General Meeting
- **Y. Zhou** and H. Zhu, "Efficient Identification of Bus Split Events Using Synchrophasor Data," 2021 IEEE Trans on Power Systems
- **Y. Zhou,** A. S. Zamzam, A. Bernstein and H. Zhu, "Substation-Level Grid Topology Optimization Using Bus Splitting," 2021 American Control Conference
- **Y. Zhou**, H. Zhu, and G. A. Hanasusanto, "Transmission Switching Under Wind Uncertainty Using Linear Decision

Rules," 2020 IEEE Power & Energy Society General Meeting

- **Y. Zhou** and H. Zhu, "Bus Split Sensitivity Analysis for Enhanced Security in Power System Operations," 2019 IEEE North American Power Symposium (**Best Paper Award, 1st place**)
- C. Yuan, **Y. Zhou**, G. Liu, R. Dai, Y. Lu, and Z. Wang, "WLS Fast Decoupled State Estimation based on Graph Computing," 2019 IEEE Trans on Smart Grid
- **Y. Zhou**, J. Cisneros-Saldana, and L. Xie, "False Analog Data Injection Attack Towards Topology Errors: Formulation and Feasibility Analysis," 2018 IEEE Power & Energy Society General Meeting
- C. Yuan, **Y. Zhou**, G. Zhang, G. Liu, R. Dai, X. Chen, and Z. Wang, "Exploration of Graph Computing in Power System State Estimation," 2018 IEEE Power & Energy Society General Meeting
- B. Xia, H. Ming, K. Lee, Y. Li, **Y. Zhou**, S. Bansal, S. Shakkottai, and L. Xie, "EnergyCoupon: A Case Study on Incentive-based Demand Response in Smart Grid," 2017 ACM e-Energy Conference (**Best Paper Finalist**)
- **Y. Zhou** and L. Xie, "Detection of Bad Data in Multi-area State Estimation," 2017 IEEE Texas Power and Energy Conference (**Best Paper Award, 1st place**)
- **Y. Zhou**, K. Sundar, D. Deka, H. Zhu, "Optimal Power System Topology Control Under Uncertain Wildfire Risk" (submitted)
- "Safe Decentralized Learning for Optimal Load Shedding Under Contingencies " (working journal paper)

# Internships

| 10/2021-05/2022 | **Los Alamos National Laboratory (LANL)** | **Research Intern** |
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- Applied Mathematics and Plasma Physics Group (T-5) (Mentor: Dr. Deepjyoti Deka, Co-mentor: Dr. Kaarthik Sundar)
- Optimal topology control under climate change for improved power grid resilience

| 06/2021-08/2021 | **Eaton Research Laboratory (ERL)** | **Research Intern** |
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- Power Systems Control and Optimization Engineer (Managers: Dr. David Ganger, Dr. Chaitanya Baone)
- Develop an efficient and accurate recurrent neural network-based algorithm to help with short-term load forecasting of disaggregated residential load

| 06/2020-08/2020 | **National Renewable Energy Laboratory (NREL)** | **Research Intern** |
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- Autonomous Energy Systems group (Managers: Dr. Ahmed S. Zamzam, Dr. Andrey Bernstein)
- Develop a real-time transmission grid topology optimization algorithm that can incorporate substation level topology changes
- The proposed algorithm can help achieve an additional cost saving of 4.9% - 7.5% when compared with the traditional line switching operation

| 06/2017-09/2017 | **Global Energy Interconnection Research Institute (GEIRINA)** | **Research Intern** |
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- Graph Computing & Grid Modernization group (Advisor: Dr. Guangyi Liu)
- Develop a parallel computing algorithm that can reduce computing time of state estimation by more than 10 times for large-scale power systems (<0.5s for 10000 bus system)
- The proposed graph-based algorithm perfectly handles the sparsity of measurement Jacobian matrix and gain matrix in state estimation

| 07/2014-09/2014 | **Telefonaktiebolaget LM Ericsson (Ericsson)** | **Integration Engineer Intern** |
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- Packet Core Network group (Advisor: Eric Zhu)
- Knowledge of LTE/EPC architecture and configuration of IP-based interfaces
- Operation and maintenance on MME, GGSN (PGW), SGSN (SGW), PCRF, PCEF and configuration of Ericsson product SGSN-MME MKVIII
- Return offer from Ericsson after the internship

## Teaching Experience

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| 06/2022-08/2022 | **ECE Next Research Program Mentor (The University of Texas at Austin)** |
| 08/2018-05/2019 | **Teaching Assistant (The University of Texas at Austin)** |

- EE 394V Data Analytics in Power Systems (2019 Spring)
  (TA evaluation: 4.9/5, university average: 4.4/5)
- EE 369 Power System Engineering (2018 Fall, 2022 Fall)
  (TA evaluation: 4.5/5, 4.7/5, university average: 4.4/5)

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| 12/2017-05/2018 | **Teaching Assistant (Texas A&M University)** |

- ECEN 214 Electrical Circuit Theory (2017 Spring)
- ECEN 614 Power System State Estimation (2016 Fall)

## Professional Services

- **Reviewer for IEEE Transactions on Power Systems**
- **Reviewer for IEEE Transactions on Smart Grid**
- **Reviewer for IEEE Transactions on Control of Network Systems**
- **Reviewer for Mathematics**
- **Reviewer for Energies**
- **Reviewer for IET Renewable Power Generation**
- **Reviewer for CSEE Journal of Power and Energy Systems**
- **Reviewer for IEEE Power Engineering Letters**
- **Reviewer for IEEE Power & Energy Society General Meeting**
- **Reviewer for IEEE Conference on Decision and Control**
- **Reviewer for ACM International Conference on Future Energy Systems (ACM e-Energy)**
- **Reviewer for IEEE SmartGridComm**
- **Reviewer for IEEE PES Transmission and Distribution Conference & Exposition**
- **Reviewer for IEEE Texas Power & Energy Conference**

## Skills

- **MATLAB**
- **SQL/Graph SQL**
- **HTML/CSS/JavaScript**
- **MATPOWER/PSAT**
- **Python**
- **C++**
- **Powerworld/OpenDSS**
- **Julia**

## Invited Talks & Guest Lectures

- **"Scalable Learning for Optimal Load Shedding Under Power Grid Emergency Operations"**, 2022 INFORMS Annual Meeting, Invited Talk, 10/2022
- **"Mixed-Integer Programming in Power System Operations"**, ECE 394J Power System Operations/Control, The University of Texas at Austin, Guest Lecture, 04/2022
- **"Distributionally Robust Chance Constrained Power Grid Topology Optimization Under Resource Uncertainty"**, 2021 INFORMS Annual Meeting, Invited Talk, 10/2021
- **"Efficient Real-time Transmission Switching Under Wind Uncertainty"**, 2021 IISE Annual Conference and Expo, Invited Talk, 05/2021
- "**Substation-Level Grid Topology Optimization Using Bus Splitting**", 2021 American Control Conference, Oral Presentation, 05/2021
- **"Real-time Identification of Substation Topology Changes Using Synchrophasor Data"**, 2020 INFORMS Annual Meeting, Invited Talk, 10/2020
- **"Efficient Network Topology Optimization Using Bus Splitting"**, Power Systems Engineering Center, National Renewable Energy Laboratory, Invited Talk, 08/2020
- **"Optimal Transmission Switching Under Uncertainty Using Linear Decision Rules"**, 2019 INFORMS Annual Meeting, Seattle, Invited Talk, 10/2019
- **"Graph-based Distributed State Estimation"**, 2019 Grid Science Winter School & Conference, Santa Fe, Invited