Xiaoyang Wang

PhD student
Department of Electrical and Computer Engineering
Energy and Power Group
Texas A&M University, College Station, USA

(979)-575-7061
wangxy@tamu.edu
Xiaoyang-Wang-TAMU.github.io

Education

•Texas A&M University *2024.8-*
PhD Student, Electrical Engineering
– Supervisor: Prof. *Xin Chen*

•Xi'an Jiaotong University *2021.9-2024.6*
M.S., Electrical Engineering CGPA: 3.64/4
– Supervisor: Prof. *Zhaohong Bie*, Prof. *Haipeng Xie*

•Xi'an Jiaotong University *2017.9-2021.6*
B.E., Electrical Engineering CGPA: 3.87/4.3

Experience

•The Hong Kong Polytechnic University *2019.7-2019.8*
International summer school

•Shaanxi Bicluck Education Technology Co., Ltd. *2020.8-2020.12*
Instructor of Circuit and Analog Electronics Technology Xi'an Shannxi
– Deliver undergraduate *Circuit* and *Analog Electronics Technology* courses in the form of online recorded lectures targeting students preparing for the college transfer examination from junior college to university

•Xi'an Jiaotong University *2022.2-2022.6*
Teaching Assistant for Undergraduate Advanced Mathematics Courses Xi'an Shannxi
– Assist the course professor in grading assignments
– Provide Q&A sessions for undergraduate course-related questions

•Xi'an Jiaotong University *2021.9-2023.10*
Research Assistant Xi'an Shannxi
– Assisting the supervisor with scientific research

Publications and Patent

• 1. **Xiaoyang Wang**, Haipeng Xie, Lingfeng Tang, Chen Chen and Zhaohong Bie, Decentralized Privacy-Preserving Electricity Theft Detection for Distribution System Operators, *IEEE Transactions on Smart Grid*, vol. 15, no. 2, pp. 2179-2190, March 2024, doi: 10.1109/TSG.2023.3313771

• 2. Lingfeng Tang, Haipeng Xie, **Xiaoyang Wang** and Zhaohong Bie, Privacy-Preserving Knowledge Sharing for Few-Shot Building Energy Prediction: A Federated Learning Approach, *Applied Energy*, 2023, 337, 120860, doi: https://doi.org/10.1016/j.apenergy.2023.120860.

• 3. **Xiaoyang Wang** and Haipeng Xie, Identification Method for Load Redistribution Attacks in Distribution Networks Based on proactive Reactive Power Triggering (in Chinese), *Intelligent Power and Energy Security High-end Forum Conference under the carbon peaking and carbon neutrality goals*, 2023. [The best paper]

• 4. Haipeng Xie, **Xiaoyang Wang**, Hao, Zhu and Zhaohong Bie, A method, apparatus, equipment, and medium for detecting load redistribution attacks in distribution networks (in Chinese), Public invention patent in China: CN113946787A.

• 5. **Xiaoyang Wang**, Lingfeng Tang and Haipeng Xie, Stealth FDIA Localization in Power Systems using Spatio-Temporal Graph Neural Networks, 2023 IEEE 7th Conference on Energy Internet and Energy System Integration (EI2), Hangzhou, China, 2023, pp. 4977-4982, doi: 10.1109/EI259745.2023.10513234.

• 6. Jian Zhong, Yuqi Qian, **Xiaoyang Wang**, et al., Mobile Charging Platform Improves Distribution System Resilience and Electric Vehicles Charging Service, 2023 IEEE 6th International Conference on Industrial Cyber-Physical Systems (ICPS), Wuhan, China, 2023, pp. 1-7, doi: 10.1109/ICPS58381.2023.10128001.

•7. Yue Wang, Zhongjian Kang, **Xiaoyang Wang** "Capacity Optimization of Island Integrated Energy System Considering Hydrogen Energy Access," 2023 International Conference on Power System Technology (PowerCon), Jinan, China, 2023, pp. 1-6, doi: 10.1109/PowerCon58120.2023.10330974.

•8. Dongrui Quan, Lingfeng Tang, **Xiaoyang Wang** and Haipeng Xie, "Battery-storage-centered Microgrids: Modelling and Simulation Demonstration," 2023 IEEE Sustainable Power and Energy Conference (iSPEC), Chongqing, China, 2023, pp. 1-6, doi: 10.1109/iSPEC58282.2023.10402889.

RESEARCH INTERESTS

–**Key Words: Inverter Based Resource, Control and Optimization, Data-Driven, Energy and Power System**

–**Distributed Optimal Control of Grid-Forming and Grid-Following Inverters for Power System**
To achieve Voltage Control and Frequency Regulation in IBR-Rich Power System, advanced Distributed Optimal Control Algorithm are developed based on zero-order control, projected primal-dual gradient algorithm and the physical system dynamics structure.

–**AI-enabled Control and Optimization for Cyber-Physical Energy Systems**
To achieve advanced situational awareness, control, and optimization based on Physics-Informed AI for Cyber-Physical Energy Systems combining known and unknown models. Accurate modeling of cyber-physical systems and the extensive mining of massive data are crucial aspects of the problem.

–**Privacy-Preserving Distributed Algorithms for Multi-Area Smart Grid Collaboration**
To achieve privacy-preserving and decentralized computing by federated learning during multi-area smart grid cooperation (e.g. state estimation and FDIA detection).

∗ **Tools & technologies used**: Python, MATLAB, PSCAD, RTDS, markdown and LaTeX
∗ **Mathematical:** Machine Learning

Research Project participated in during Master's degree

•**National Key Research and Development Program (China, 2021YFB2401300):** *2021.1-*
Coordination and Interoperability of Distribution Network Business Resources

– As a research assistant, research data ownership technology in scenarios involving multiple entities and developed multi-layered privacy protection techniques and end-to-end risk management technology based on it.

•**State Grid Corporation Science and Technology Project (China):** *2023.1-*
Coordinated Operation and Market Mechanism of Source-Grid-Load-Storage Integration in Power Systems

– As a research assistant, research on Autonomous Consumption Optimization and Configuration Methods for Source-Grid-Load-Energy Storage Integrated Projects Considering Electric Carbon Comprehensive Benefits

•**National-Level Undergraduate Innovation Training Program:** *2020.6-2021.6*
Data Mining and Cloud Technology-Based Microgrid Optimization Control System

– As a key participant, I built a microgrid control platform using LabVIEW, developed a microgrid simulation model using Simulink, designed data mining software, and registered the software for copyright. The project was ultimately recognized as excellent

Selected HONORS and AWARDS

–**Graduate Merit Fellowship, Texas A&M University** *2024*
–**IEEE EI2 2023, Best Reviewer** *2023*
–**ABB Inc Scholarship,** CNY 50,000 in total *2018, 2019, 2020*
–**China Aeromodelling Design Challenge - Solar-powered air plane,** The first prize *2019*
–**The Mathematical Contest in Modeling,** Honorable Mention *2020*
–**National Undergraduate Mathematics Competition (Non-mathematical major),** The second prize *2020*
– **Electrical and Electronic Engineering Innovation Competition** The second prize *2023*
–**Texas Instruments(Ti) Cup - Student Electronic Design Competition,** The second prize *2020*
–**Xi'an Jiaotong University Outstanding Student** *2018, 2019*
–**Xi'an Jiaotong University Outstanding Student Cadre** *2020*
–**Xi'an Jiaotong University Outstanding Graduating Student Cadre** *2021*
–**Xi'an Jiaotong University Mathematical Modeling Competition,** The second prize *2019*
–**Xi'an Jiaotong University Innovation and Entrepreneurship Competition** The first prize *2023*
–**Xi'an Jiaotong University Outstanding Graduate Student Cadre** *2023*
–**First-Class Academic Scholarship** CNY 30,000 in total *2021, 2022, 2023*

REFERENCES

–**Xin Chen** *# PhD Supervisor*
Assistant Professor, Texas A&M University
Email: *xin_ chen@tamu.edu*
–**ZHAOHONG BIE** *# M.S Supervisor*
Professor, Xi'an Jiaotong University
Email: *zhbie@mail.xjtu.edu.cn*
–**CHEN CHEN** *# Professor in cooperation*
Professor, Xi'an Jiaotong University
Email: *morningchen@xjtu.edu.cn*
–**HAIPENG XIE** *# M.S. Supervisor*
Associate Professor, Xi'an Jiaotong University
Email: *haipengxie@xjtu.edu.cn*