

# Hongxun Hui

Post-doctoral Fellow  
State Key Laboratory of Internet of Things for Smart City  
Department of Electrical and Computer Engineering  
University of Macau

N21, Avenida da Universidade, Taipa, Macau, China  
Tel: +86-18143465355  
E-mail: hongxunhui@um.edu.mo  
Personal website: <https://huihongxun.github.io>

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## Research Interests

- **Demand Response in Smart Grid:** Modeling, optimization and control of flexible loads for providing frequency regulation, operating reserve and peak-shaving services.
- **Communication Technologies and Internet of Things:** Developing non-invasive measurement equipment and smart controllers for data acquisition, load regulation, distributed energy storage and photovoltaic utilization.
- **Electricity Market:** Incentive mechanism design for motivating consumers to participate in demand response.

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## Education

<b>Ph.D., College of Electrical Engineering, Zhejiang University</b> Supervisor: Prof. Yonghua Song & Prof. Yi Ding	Hangzhou, China 09/2015 – 06/2020
<b>Visiting Scholar, Advanced Research Institute, Virginia Tech</b> Supervisor: Prof. Saifur Rahman	Arlington, USA 10/2018 – 10/2019
<b>Visiting Scholar, CURENT Research Center, University of Tennessee</b> Supervisor: Prof. Fangxing (Fran) Li	Knoxville, USA 06/2019 – 07/2019
<b>B.S., College of Electrical Engineering, Zhejiang University</b> Outstanding Graduates, Overall GPA: 3.88/4.0 (Top 3%)	Hangzhou, China 09/2011 – 06/2015

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## Working Experience

<b>Post-doctoral Fellow, SKL-IoTSC, University of Macau</b> Supervisor: Prof. Yonghua Song	Macau, China 10/2020 – Present
<b>Researcher, Zhuhai UM Science &amp; Technology Research Institute</b> Smart City Research Center	Zhuhai, China 07/2020 – 09/2020

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## Publications

### Books

1. Yi Ding, Yonghua Song, **Hongxun Hui** and Changzheng Shao. Integration of Air Conditioning and Heating into Modern Power Systems. *Springer*; 2019.

### Journal Publications

2. **Hongxun Hui**, Pierluigi Siano, Yi Ding, Peipei Yu, Yonghua Song, Hongcai Zhang and Ningyi Dai, "A Transactive Energy Framework for Inverter-based HVAC Loads in a Real-time Local Electricity Market Considering Distributed Energy Resources", *IEEE Transactions on Industrial Informatics*, Early Access.
3. **Hongxun Hui**, Yi Ding, Zhenzhi Lin, Pierluigi Siano, Yonghua Song, "Capacity Allocation and Optimal Control of Inverter Air Conditioners in Multi-area Power Systems," *IEEE Transactions on Power Systems*, vol. 35, no. 1, pp. 332-345, Jan. 2020.
4. **Hongxun Hui**, Yi Ding, Qingxin Shi, Fangxing Li, Yonghua Song, Jinyue Yan, "5G Network-based Internet of Things for Demand Response in Smart Grid: A Survey on Application Potential," *Applied Energy*, vol. 257, pp. 113972, Jan. 2020. (ESI Highly Cited Paper, Top 1%)
5. **Hongxun Hui**, Yi Ding, Tao Chen, Saifur Rahman, Yonghua Song, "Dynamic and Stability Analysis of the Power System with the Control Loop of Inverter Air Conditioners," *IEEE Transactions on Industrial Electronics*, vol. 68, no. 3, pp. 2725-2736, Feb. 2020.
6. **Hongxun Hui**, Yi Ding, Menglian Zheng, "Equivalent Modeling of Inverter Air Conditioners for Providing Frequency Regulation Service", *IEEE Transactions on Industrial Electronics*, vol. 66, no. 2, pp. 1413-23, Feb. 2019.
7. **Hongxun Hui**, Yi Ding, Yonghua Song, "Adaptive Time-Delay Control of Flexible Loads in Power Systems Facing Accidental Outages," *Applied Energy*, vol. 275, pp. 115321, Oct. 2020.
8. **Hongxun Hui**, Yi Ding, Yonghua Song, Saifur Rahman, "Modeling and Control of Flexible Loads for Frequency

Regulation Services Considering Communication Latency and Detection Error,” *Applied Energy*, vol. 250, pp. 161-74, Sep. 2019.

9. **Hongxun Hui**, Yi Ding, Weidong Liu, You Lin, Yonghua Song, “Operating Reserve Evaluation of Aggregated Air Conditioners”, *Applied Energy*, vol. 196, pp. 218-228, Jun. 2017.
10. Jiātu Hong, **Hongxun Hui\***, Hongcai Zhang, Ningyi Dai and Yonghua Song, “Distributed Control of Large-scale Inverter Air Conditioners for Providing Operating Reserve Based on Consensus With Nonlinear Protocol”, *IEEE Internet of Things Journal*, Early Access.
11. Dunjian Xie, **Hongxun Hui**, Yi Ding, Zhenzhi Lin, “Operating Reserve Capacity Evaluation of Aggregated Heterogeneous TCLs with Price Signals,” *Applied Energy*, vol. 216, pp. 338-47, Apr. 2018.
12. Qiangqiang Xie, **Hongxun Hui**, Yi Ding, Chengjin Ye, Zhenzhi Lin, Jiadong Cui and Peng Wang, “Use of Demand Response for Voltage Regulation in Power Distribution Systems with Flexible Resources,” *IET Generation, Transmission & Distribution*, vol. 14, no. 5, pp. 883-92, Jan. 2020.
13. Kang Xie, **Hongxun Hui**, Yi Ding, “Modeling and Control Strategy of Thermostatically Controlled Loads for Virtual Energy Storage System,” *Protection and Control of Modern Power Systems*, Oct. 2019.
14. Yi Ding, Dunjian Xie, **Hongxun Hui**, Yan Xu, Pierluigi Siano, “Game-Theoretic Demand Side Management of TCLs for Smoothing Tie-line Power of Microgrids,” *IEEE Transactions on Power Systems*, vol. 36, no. 5, pp. 4089-4101, Sep. 2021.
15. Wenqi Cui, Yi Ding, **Hongxun Hui**, Zhenzhi Lin, Pengwei Du, Yonghua Song, Changzheng Shao, “Evaluation and Sequential Dispatch of Operating Reserve Provided by Air Conditioners Considering Lead-Lag Rebound Effect,” *IEEE Transactions on Power Systems*, vol. 33, no. 6, pp. 6935-50, Nov. 2018.
16. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, “Fast Wasserstein-distance-based Distributionally Robust Chance-constrained Power Dispatch for Multi-zone HVAC Systems,” *IEEE Transactions on Smart Grid*, vol. 12, no. 5, pp. 4016-4028, Sep. 2021.
17. Ge Chen, Hongcai Zhang, **Hongxun Hui**, Ningyi Dai and Yonghua Song, “Scheduling thermostatically controlled loads to provide regulation capacity based on a learning-based optimal power flow model,” *IEEE Transactions on Sustainable Energy*, Early Access, Jul. 2021.
18. Yongzhu Hua, Qiangqiang Xie, **Hongxun Hui**, Yi Ding, Weiran Wang, Huibin Qin, Xiangrong Shentu, Jiadong Cui, “Collaborative Voltage Regulation By Increasing/decreasing the Operating Power of Aggregated Air Conditioners Considering Participation Priority,” *Electric Power Systems Research*, vol. 199, pp. 107420, Jun. 2021.
19. Tao Chen, Meng Song, **Hongxun Hui** and Huan Long, “Battery electrode mass loading prognostics and analysis for lithium-ion battery-based energy storage systems,” *Frontiers in Energy Research*, vol. 9, p. 754317, Oct. 2021.
20. Tao Chen, Ciwei Gao, **Hongxun Hui**, Qiushi Cui and Huan Long, “A generalized additive model-based data-driven solution for lithium-ion battery capacity prediction and local effects analysis,” *Transactions of the Institute of Measurement and Control*, Nov. 2021.
21. Yi Ding, Wenqi Cui, Shujun Zhang, **Hongxun Hui**, Yiwei Qiu, Yonghua Song, “Multi-state Operating Reserve Model of Aggregate Thermostatically-Controlled-Loads for Power System Short-term Reliability Evaluation,” *Applied Energy*, vol. 241, pp. 46-58, May 2019.
22. Xinran Zhuang, Chengjin Ye, Yi Ding, **Hongxun Hui**, “Data-driven Reserve Allocation with Frequency Security Constraint Considering Inverter Air Conditioners,” *IEEE Access*, Aug. 2019.
23. Qingxin Shi, Wenxia Liu, Bo Zeng, **Hongxun Hui** and Fangxing Li, “Enhancing distribution system resilience against extreme weather events: Concept review, algorithm summary, and future vision,” *International Journal of Electrical Power & Energy Systems*, vol. 138, p. 107860, Jun. 2022.
24. Shuyang Xu, Xingying Chen, Jun Xie, Saifur Rahman, Jixiang Wang, **Hongxun Hui**, Tao Chen, “Agent-based Modelling of Electricity Market with Residential DR,” *CSEE Journal of Power and Energy Systems*, vol. 7, no. 2, pp. 368-380, Mar. 2021.
25. Yi Ding, **Hongxun Hui**, Zhenzhi Lin, Menglian Zheng, Xinyao Qu and Wenqi Cui, “Design of Business Model and Market Framework Oriented to Active Demand Response,” *Automation of Electric Power Systems*, vol. 41, no. 14, Jul. 2017. **(TOP 5 Highly Cited Papers of this Journal in 3 Years)**
26. Xunhu Yin, Yi Ding, **Hongxun Hui**, Minglei Bao, Lizhong Xu, Xueyong Tang and Maosheng Sang, “Design of Demand Response Mechanism in Initial Electricity Spot Market Considering Response Behaviors of Customers,” *Automation of Electric Power Systems*, Early Access, Jun. 2021.
27. Yi Ding, Kaining Luan, **Hongxun Hui**, “Energy Saving and Emission Reduction From the Glowworm Project—Coupon-based Demand Response Demonstration in Flat Rate Market,” *IEEE Spectrum*, vol. 78, pp. 76-78, Jan. 2019. **(Invited Paper)**

28. Yi Ding, Huahua Wu, **Hongxun Hui**, Jun Zhang, "Analysis and Related Suggestions on Power Market Mechanism of Demand Side Response in China," *Southern Power System Technology*, vol. 10, no. 3, pp. 24-31, Mar. 2016.
29. Weidong Liu, **Hongxun Hui**, Lijun Zhang, Chenbo Xu, Yikai Sun, Yi Ding, "Analysis on Peak Load Regulation Potential and Evaluation Model of Residential Loads," *Southern Power System Technology*, vol. 10, suppl. 1, pp. 256-263, Dec. 2016.
30. Taoyi Qi, **Hongxun Hui**, Lizhong Xu, Xiang Ma, Yi Ding, "Modeling and Control of Generalized Demand Response in Micro-grids Based on GridLAB-D," *Distribution & Utilization*, vol. 37, no. 7, pp. 3-10, Aug. 2020.
31. Kang Xie, Kaijie Zhang, Kaining Luan, **Hongxun Hui**, Yishuang Hu, Yi Ding, "Exploration of Demand Response Score Scheme Under Electric Power System Reform," *Power Demand Side Management*, vol. 21, no. 3, May 2019.
32. Zuofeng Li, Wenqi Cui, Zhenyu Chen, **Hongxun Hui**, Kaining Luan, Bin Yang, Yi Ding, "Research and Practice of Interruptible Load in the Market Environment (I)," *Power Demand Side Management*, vol. 18, no. 6, Nov. 2016.
33. Zhenyu Chen, Wenqi Cui, **Hongxun Hui**, Bin Yang, Kaining Luan, Yi Ding, "Research and Practice of Interruptible Load in the Market Environment (II)," *Power Demand Side Management*, vol. 19, no. 1, Jan. 2017.

### International Conference

34. **Hongxun Hui**, Peipei Yu, Hongcai Zhang, Ningyi Dai, Wei Jiang and Yonghua Song, "Regulation Capacity Evaluation of Large-scale Heterogeneous Residential Air Conditioning Loads," *IEEE Sustainable Power and Energy Conference (iSPEC)*, Nanjing, China, pp. 1-6, Nov. 2021.
35. **Hongxun Hui**, Qifan Yang, Ningyi Dai, Hongcai Zhang, Yi Ding and Yonghua Song, "Anticipatory Control of Flexible Loads for System Resilience Enhancement Facing Accidental Outages," *13th International Conference on Power System Technology (PowerCon 2021)*, Haikou, China, pp. 1-6, Nov. 2021.
36. **Hongxun Hui**, Yi Ding, Shihai Yang, "Modeling and Analysis of Inverter Air Conditioners for Primary Frequency Control Considering Signal Delays and Detection Errors," *Energy Procedia*, vol. 158, pp. 4003-4010, Feb. 2019.
37. **Hongxun Hui**, Yi Ding, Yonghua Song and Saifur Rahman, "Modelling and Dynamic Performance Analysis of the Power System Under Unit Contingency Shutdown Accidents Considering DR," *Energy Proceedings*, vol. 3, pp. 1-6, Aug. 2019.
38. **Hongxun Hui**, Yi Ding, Kaining Luan and Daoqiang Xu, "Analysis of 815 Blackout in Taiwan and the Improvement Method of Contingency Reserve Capacity Through DLC," *IEEE PES General Meeting*, Portland, USA, 2018.
39. **Hongxun Hui**, Xing Jiang, Yi Ding, Yonghua Song and Li Guo, "Demonstration of Friendly Interactive Grid Under the Background of Electricity Market Reform in China," *EEEIC/I&CPS Europe*, pp. 1-5. *IEEE*, Milan, Italy, 2017.
40. **Hongxun Hui**, Weidong Liu and Yi Ding, "Quantitative Analysis of Air Conditioner Aggregation for Providing Operating Reserve," *Energy Procedia*, vol. 104, pp. 50-55, Dec. 2016.
41. Peipei Yu, **Hongxun Hui\***, Hongcai Zhang\*, Chao Huang and Yonghua Song, "Frequency Regulation Capacity Offering of District Cooling System based on Reinforcement Learning," *IEEE PES General Meeting*, Denver, USA, 2022.
42. Yanqi Liu, **Hongxun Hui**, Hongcai Zhang and Liang Gao, "Risk Assessment of Offshore Wind Farm Outages Under Typhoon Conditions," *IEEE PES General Meeting*, Denver, USA, 2022.
43. Xinyao Qu, **Hongxun Hui**, Yi Ding and Kaining Luan, "Optimal Control of Intelligent Electricity Consumption for Residential Customers Considering Demand Response," *Energy Procedia*, vol. 145, pp. 510-515, Jul. 2018.
44. Sheng Wang, **Hongxun Hui**, Yi Ding and Chengzhi Zhu, "Cooperation of Demand Response and Traditional Power Generations for Providing Spinning Reserve," *Energy Procedia*, vol. 421, pp. 2035-2041, Dec. 2017.
45. Xinyao Qu, **Hongxun Hui**, Shengchun Yang, Yaping Li and Yi Ding, "Price Elasticity Matrix of Demand in Power System Considering Demand Response Programs," *IOP Conf. Series: Earth and Environmental Science*, vol. 121, no. 5, Feb. 2018.
46. Wenqi Cui, Yi Ding, **Hongxun Hui** and Maozhen Li, "Two-stage Payback Model for the Assessment of Curtailment Services Provided by Air Conditioners," *Energy Procedia*, vol. 142, pp. 2050-2056, Dec. 2017.
47. Haiyue Yu, Kang Xie, **Hongxun Hui**, Yi Ding, "Review of Flexible Loads for Participating in Frequency Regulation," *IEEE Conf. on Energy Internet and Energy System Integration*, Wuhan, China, pp. 1-5, Oct. 2020.

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## Invited Talks

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1. Adaptive Control of Flexible Loads for Enhancing the Power System Resilience Facing Accidental Outages, the *5th IEEE Conference on Energy Internet and Energy System Integration (EI2 2021)*, Taiyuan, China, Oct. 2021.
2. Real-time Local Electricity Market Considering High-penetration Distributed Energy Resources and Flexible Loads, the *5th IEEE Conference on Energy Internet and Energy System Integration (EI2 2021)*, Taiyuan, China, Oct. 2021.
3. Control of Thermostatically Controlled Loads for Providing Regulation Services in Power Systems, *International Conference on Renewable Energy*, Rome, Italy, Nov. 2020. (Plenary Speaker)
4. Equivalent Modeling and Control of Inverter Air Conditioners for Providing Frequency Regulation Service, the *4th IEEE Conference on Energy Internet and Energy System Integration (EI2 2020)*, Wuhan, China, Oct. 2020. (Outstanding Presentation)
5. Modelling and Dynamic Performance Analysis of the Power System Under Unit Contingency Shutdown Accidents Considering DR, *International Conference on Applied Energy*, Västerås, Sweden, Aug. 2019.
6. Modeling and Analysis of Inverter Air Conditioners for Primary Frequency Control Considering Signal Delays and Detection Errors, *International Conference on Applied Energy*, Hong Kong, China, Aug. 2018.
7. Demonstration of Friendly Interactive Grid Under the Background of Electricity Market Reform in China, *IEEE EEEIC17 and I&CPS Europe*, Milan, Italy, Jun. 2017.
8. Electricity Distribution Pricing Mechanism in China. *IEEE PES General Meeting*, Boston, USA, Jul. 2016.
9. Quantitative Analysis of Air Conditioner Aggregation for Providing Operating Reserve, *Low-carbon Cities & Urban Energy*, Jinan, China, Jun. 2016.

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## Issued Invention Patents (已授权中国发明专利)

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1. **Hongxun Hui**, Yi Ding, Weidong Liu, Lijun Zhang, Yikai Sun and Chenbo Xu, “A Calculation Method of Aggregated Air Conditioners for Providing Regulation Services for Power Systems,” No. CN201610821647.X, Dec. 2018.
2. **Hongxun Hui** and Chuangxin Guo, “A Self-powered Pinch Meter Based on Micro-generator and SCM,” No. CN201410009920.X, Jul. 2016.
3. **Hongxun Hui** and Chuangxin Guo, “A Dismantling Equipment for Electronic Devices Based on SCM,” No. CN201410010721.0, May 2016.
4. **Hongxun Hui**, Yibai Lu, Lequan Yu, Litong Lv and Hui Sun, “An Electrocardiogram Detection Device Based on Bluetooth Communication,” No. CN201410094326.5, Mar. 2016.
5. Yi Ding, **Hongxun Hui**, Zhenyu Chen, Kaining Luan, Chunyu Xie, Wenqi Cui, Kang Xie, “One Demand Response Method Considering the Total Cost Risk of Power System,” No. CN201811050910.5, Jul. 2020.
6. Yi Ding, **Hongxun Hui**, Yonghua Song, “Hybrid Control Method of Integrated Inverter Air Conditioners for Providing Frequency Regulation Services,” No. CN201910511062.1, Nov. 2020.
7. Yi Ding, **Hongxun Hui** and Yonghua Song, “An Intelligent Meter with Multi-time Scale Electricity Prices,” No. CN201610543375.1, May 2019.
8. Yi Ding, Kang Xie, **Hongxun Hui**, Kaijie Zhang, “Frequency Regulation Controller of Inverter Air Conditioners Considering Incentive Signals,” No. CN201910576119.6, Oct. 2020.
9. Yong Xia, Yi Ding, **Hongxun Hui**, Zhenyu Chen, Kaining Luan, Wenqi Cui and Xinyao Qu, “An Incentive Demand Response Method Based on Coupons,” No. CN201811051906.0, Jul. 2021.

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## Computer Skills and Software Copyrights

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### Computer Skills

- Programming languages: Matlab, C, C++, Java, Python
- Professional software: LabVIEW, Altium Designer, OrCAD, Altera Quartus, AutoCAD

### Software Copyrights (软件著作权)

- **Hongxun Hui**, Yi Ding and Wenqi Cui, “Software for Coupon Computing and Settlement in Friendly Interactive Smart Grid,” No. 2018SR449433, May 2018.  
Chinese Name: 城区用户与电网供需友好互动系统示范工程积分政策计算与用户积分值结算软件
- Yi Ding, Dunjian Xie and **Hongxun Hui**, “Software for Game Theory-Based Collaborative Optimization Control of Thermostatically Controlled Loads,” No. 2019SR0481590, Mar. 2019.  
Chinese Name: 一种基于博弈框架的温控负荷能量协同优化管理控制器软件
- Dunjian Xie, Yi Ding and **Hongxun Hui**, “Simulation Software for Optimal Coordination of Thermostatically



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## Research Projects

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### **Friendly Interactive Smart Grid Between Supply- and Demand-Sides, \$1100K**

Nanjing, China

Supported by Ministry of Science and Technology of China (国家科技部 No. 2016YFB0901100)

07/2016 – 06/2020

Principal Student Investigator

- Cooperative control strategies of supply-side (generating units) and demand-side (flexible loads).
- Business model design for flexible loads participating in demand response, including electricity prices, transaction method, and settlement method.
- Field demonstration in Suzhou and Changzhou Cities, around 110,000 customers are equipped with smart devices to participate in this project. It is one of the largest demand response projects in the world.

### **Reliability Analysis and Optimization of Smart Grid Considering the Coordinated Operation of Flexible Resources and Wind Power, \$130K**

Hangzhou, China

Supported by National Natural Science Foundation of China (国家自然科学基金 No. 51577167)

01/2016 – 12/2019

Principal Student Investigator

- Multiple uncertainties' analysis of various flexible resources, especially HVACs.
- Reliability models and optimization of power systems, considering wind power and flexible resources.

### **Control Method and Peak-shaving Capacity Evaluation of Flexible Loads, \$160K**

Hangzhou, China

Supported by State Grid Zhejiang Electric Power Company (国网浙江省公司 No. 5211JY15001S)

01/2016 – 12/2017

Principal Student Investigator

- Control method of flexible loads, especially air conditioners, considering user's behavior and comfort.
- Quantitative evaluation of peak-shaving capacities provided by flexible loads, considering multiple uncertainties.
- Comparison of reliability and economy of the power system before and after integrating demand response.

### **Research and Application of Consumer Demand Response, \$120K**

Nanjing, China

Supported by State Grid Jiangsu Electric Power Company (国网江苏省公司 No. KH20161699)

03/2016 – 11/2016

Principal Student Investigator

- Market mechanism and implementation plan of demand response for the existing electricity market in China.
- The new spike price policy is proposed and implemented for the first time in China.
- According to the energy efficiency evaluation report by State Grid Jiangsu Electric Power Company, the construction investments in power plants and transmission lines are postponed around 16.78 billion Chinese Yuan.

### **Modeling and Regulation Potential Evaluation of Air Conditioners, EVs, and Batteries, \$50K**

Nanjing, China

Supported by China Electric Power Research Institute (中国电力科学研究院 No. DZ71-15-004)

09/2015 – 06/2016

Principal Student Investigator

- Mathematical and physical model of typical flexible loads, including air conditionings, EVs and batteries.
- The operation performance and regulation potential of flexible loads with dynamic electricity prices.
- The proposed models and methods were tested and implemented in State Grid Jiangsu Electric Power Company.

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## Additional Information

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### **Professional Services**

- **Vice President:** IEEE Industry Applications Society Student Branch Chapter in Zhejiang University (2018-2020)
- **Program Committees:** 2021 International Conference on Power System and Energy Internet
- **Member of a Council:** IEEE PES China Electric Vehicle Technical Committee, Technical Sub-Committee on Integration of Electric Vehicle and Energy Transportation System
- **Journal Reviewers:** IEEE Transactions on Industrial Electronics (Since 2017), International Journal of Electrical Power & Energy Systems (Since 2017), Applied Energy (Since 2018), Journal of Modern Power Systems and Clean Energy (Since 2018), IEEE Transactions on Sustainable Energy (Since 2019), IEEE Transactions on Power Systems (Since 2019), IEEE Transactions on Smart Grid (Since 2019), IEEE Access (Since 2019), CSEE Journal of Power & Energy Systems (Since 2019), Journal of Electrical Engineering & Technology (Since 2019), International Transactions on Electrical Energy Systems (Since 2019), Renewable & Sustainable Energy Reviews (Since 2019), Economic Alternatives (Since 2019), IET Energy Systems Integration (Since 2019), IEEE Transactions on Industry Applications (Since 2019), IEEE Transactions on Circuits and Systems I: Regular Papers (Since 2019)
- **Conference Reviewers:** IEEE PES General Meeting, International Conference on Applied Energy, IEEE Sustainable Power & Energy Conference, International Conference on Smart Energy Systems and Technologies, IEEE International Conference on Environment and Electrical Engineering and IEEE Industrial and Commercial Power Systems Europe.

## Teaching

- Teaching Fellow, *Power System Operation and Control* (Instructor: Prof. Yi Ding and Prof. Pierluigi Siano), College of Electrical Engineering, Zhejiang University, 2016.

## Selected Honors & Rewards

- Winning Prize, the 1st China Postdoctoral Innovation & Entrepreneurship Competition, 2022.
- Best Paper Award of the 3rd IEEE Conference on Sustainable Power and Energy, 2021.
- The First Prize and the only Best Innovation Award at a national competition on artificial intelligence (AI) application in power dispatching, Oct. 2021.
- The Second Prize and the only Best Innovation Award at a national competition on artificial intelligence (AI) application in power dispatching, Jan. 2021.
- National Scholarship, 2019. (The first ranking among 58 Ph.D. students in the major of power systems)  
国家奖学金, 58 位电气工程专业博士生中排名第 1 位获奖
- First Batch of the Academic Rising Star Program, ZJU, 2018. 入选首届浙江大学学术新星计划
- Wang Guo Song Scholarship, 2019. (The highest honor in College of EE, 4 students among 180 Ph.D. students)  
王国松奖学金, 浙江大学电气工程学院最高荣誉, 获奖者载入院史
- Tang Lixin Scholarship, 2017. 唐立新奖学金, 电气工程学院首位/年度唯一获奖者
- Excellent Postgraduate Students' Award, 2020. 浙江省优秀毕业生 及 浙江大学优秀毕业研究生
- Postgraduate Students' Scholarship, 2020. 毕业研究生奖学金
- Outstanding Reviewer Award from Journal of Modern Power Systems and Clean Energy, 2018. 优秀审稿人
- Award of Honor for Graduate, 2016, 2017, 2018, 2019. 连续获得优秀研究生
- Graduate of Merit/Triple A graduate, 2016, 2019. 三好研究生
- Outstanding Graduates of Zhejiang University, 2015. 浙江大学优秀毕业本科生
- Excellent Honor in Edison Class, Zhejiang University, 2015. 爱迪生班优秀荣誉
- Scholarship for Excellence in Research and Innovation, 2015. 创新创业奖学金
- Meritorious, Interdisciplinary Contest in Modeling (ICM), Consortium for Mathematics and Its Application, 2014.  
国际数学建模 ICM 竞赛一等奖
- First Price, 7th Science Contest on Energy Saving & Emission Reduction, 2014. 节能减排竞赛一等奖
- Fifth (5/149), 9th University Student Robot Contest (My Super Shopper), 2014. 机器人竞赛 149 队伍第 5 名
- Best Design Award, 9th University Student Robot Contest (My Super Shopper), 2014. 机器人竞赛最佳设计奖
- Third Price, 7th Intelligent Car Competition of Zhejiang University, 2014. 智能车竞赛三等奖
- Bosch Scholarship, 2015. 博世奖学金
- Outstanding Student Leader Awards, 2012, 2014. 优秀学生干部
- Excellent Student Awards, 2012, 2013, 2014. 优秀学生奖学金
- First-Class Scholarship for Outstanding Merits/Students, 2012. 浙江大学一等奖学金