CV – HONGCAI ZHANG

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RESEARCH INTEREST

- Operation and optimization of urban low-carbon integrated energy systems, with a focus on active distribution grid or microgrid, electrified transportation system, and district heating/cooling system
- Demand-side energy resources, e.g., electric vehicle, energy storage, and thermostatically controlled load
- Decision making under uncertainty, data-driven and machine learning assisted optimization & control

APPOINTMENT

Associate Professor (Apr. 2025 – present) State Key Laboratory of Internet of Things for Smart City and Department of Electrical and Computer Engineering, University of Macau

Assistant Professor (Apr. 2019 – Aug. 2025) State Key Laboratory of Internet of Things for Smart City and Department of Electrical and Computer Engineering, University of Macau

Postdoctoral Scholar (Mar. 2018 – Mar. 2019) University of California, Berkeley

Research Affiliate (May 2018 – Mar. 2019) Lawrence Berkeley National Laboratory

EDUCATION

PhD, Electrical Engineering (Aug. 2013 – Jan. 2018) Tsinghua University

Visiting Student Researcher, Civil Engineering (Jan. 2016 – Jan. 2017) University of California, Berkeley

B.E., Electrical Engineering (Aug. 2009 – Jul. 2013, graduation with honors) Tsinghua University

SELECTED PUBLICATION

As the first or corresponding author, published 65 SCI journal papers (all are in JCR Q1 journals), including 1 in Nature Energy (equal contribution, 2nd) and 35 in IEEE Transactions series journals (18 TSG, 6 TSE, 6 TPS, 3 TTE, 1 TII, 1 TITS, 1 TIA). Six journal papers are identified as ESI Highly Cited.
Total citations $\geq$ 8300, h-index = 45, i10-index = 91 (see details: Google Scholar).
"**H. Zhang**" for myself; "$*$" for corresponding author; "underline" for students supervised.

Doctoral Thesis

S1. Zhenyi Wang, "Towards Intelligent Demand Response in Smart Power Grids: A Data Availability and Model Generalization Perspective," University of Macau, 2025.

S2. Zuntao Hu, "Physics-Informed Neural Networks for Solving Optimal Power Flow Problems," University of Macau, 2025.

S3. Bin Zou, "Risk-aware Operation Strategies of Geo-distributed Data Centers in Power Markets," University of Macau, 2025.

S4. Y. Liu, "Resilience Enhancement and Optimal Operation of Power Systems with Offshore Wind Integration under Typhoon Conditions," University of Macau, 2024.

S5. L. Kong (co-advise), "Strategic Operation of Commercial Electric Vehicles in Power-Transportation Coupled Networks to Enhance Power System Resilience," University of Macau, 2024.

S6. H. Li, "Blockchain-Assisted Distributed Coordination of Heterogeneous Demand-Side Flexible Resources," University of Macau, 2024.

S7. P. Yu (co-advise), "District Cooling System Control for Providing Power Grid Services Based on Safe Reinforcement Learning," University of Macau, 2024.

S8. G. Chen (co-advise), "Data-driven Operation of Active Distribution Networks with Incomplete Network Information," University of Macau, 2023.

S9. J. Hong (co-advise), "Distributed Control of Large-scale Thermostatically Controlled Loads for Improving the Flexibility of Urban Power Systems," University of Macau, 2023.

S10. **H. Zhang**, "Planning and Operation of Plug-in Electric Vehicle Charging Infrastructure Considering Transportation Network Constraints," Tsinghua University, 2018.

Book

B1. **H. Zhang**, Y. Song, G. Chen, and P. Yu, Reliable Non-Parametric Techniques for Energy System Operation and Control: Fundamentals and Applications of Constraint Learning and Safe Reinforcement Learning Methods, Elsevier, 2025.

Book Chapter

B1. Z. Hu, Y. Song, and **H. Zhang**, "Electric vehicle and vehicle-to-grid technology," Energy Internet, edited by H. Sun et. al., China Science Publishing, Beijing, 2020. (in Chinese)

B2. Z. Hu, J. He, and **H. Zhang**, "Energy Internet and Plug-in Electric Vehicles," Development of Energy Internet, edited by R. Zeng et. al., Tsinghua University Press, Beijing, 2017. (in Chinese)

Journal Paper (early access, published online)

J1. L. Pan, and **H. Zhang***, "Real-time Operation of Electric Autonomous Mobility-on-Demand System Considering Power System Regulation," **IEEE Transactions on Smart Grid**, 2026. (JCR Q1, IF 8.6)

J2. J. Su, P. Yu*, **H. Zhang**, and H. Liu, "Distributed Event-Triggered Control of District Cooling Systems for the Frequency Regulation Service of Islanded Microgrids With Quantization Communication," **IEEE Transactions on Sustainable Energy**, 2025. (JCR Q1, IF 8.6)

J3. Z. Hu, and **H. Zhang***, "A Transparent Neural Network Solver for Optimal Power Flow Problem," **IEEE Transactions on Power Systems**, 2025. (JCR Q1, IF 7.2)

J4. Z. Hu, **H. Zhang***, R. Yang, Y. Chen, and H. Wu, "Optimal Power Flow Based on Physical-Model-Integrated Neural Network with Worth-Learning Data Generation," to appear in **CSEE Journal of Power and Energy Systems**, 2024. (JCR Q1, IF 6.9)

J5. B. Zou, G. Chen, **H. Zhang***, and Y. Song, "Improved Divergence-based Distributionally Robust Chance-Constrained Scheduling for Geo-distributed Internet Data Centers," to appear in **CSEE Journal of Power and Energy Systems**, 2024. (JCR Q1, IF 6.9)

J6. D. Liu*, M. Zhou, Q. Wu, **H. Zhang**, and Y. Wang, "Inverse function-based DC Power Flow Model Considering Network Loss and Voltage Magnitudes," to appear in **CSEE Journal of Power and Energy Systems**, 2023. (JCR Q1, IF 6.9)

J7. P. Yu, **H. Zhang***, and Y. Song, "Equivalent System Model of District Cooling System in Frequency Domain to Provide Primary Frequency Regulation," to appear in **CSEE Journal of Power and Energy Systems**, 2023. (JCR Q1, IF 6.9)

J8. G. Chen, **H. Zhang***, H. Hui, and Y. Song, "Scheduling HVAC Loads to Promote Renewable Generation Integration with a Learning-based Joint Chance-constrained Approach," to appear in **CSEE Journal of Power and Energy Systems**, 2022. (JCR Q1, IF 6.9)

Journal Paper (published)

J9. Z. Zhu, **H. Zhang***, and Y. Song, "A Distributed Training and Scheduling Approach for Real-Time Coordination of Electric Vehicle Fast Charging Stations with Energy Storage," **IEEE Transactions on Transportation Electrification**, vol. 11, no. 5, pp. 12197-12209, 2025. (JCR Q1, IF 7.2)

J10. B. Zou, G. Chen, **H. Zhang***, and Y. Song, "Coordinating Multiple Geo-distributed Data Centers for Enhanced Participation in Frequency Regulation Services under Uncertainty," **Journal of Modern Power Systems and Clean Energy**, vol. 13, no. 5, pp. 1677-1688, 2025. (JCR Q1, IF 5.7)

J11. P. Yu, **H. Zhang***, Y. Song, et. al., "Safe Reinforcement Learning for Power System Control: A Review," **Renewable and Sustainable Energy Reviews**, vol. 223, p. 116022, 2025. (JCR Q1, IF 16.3)

J12. B. Luo, Y. Xu*, D. Xie, Z. Shi, and **H. Zhang**, "Optimal Bidding for Aggregated Electric Vehicles in Singapore Electricity Market: A Hierarchical Coordination Approach," **IEEE Transactions on Industry Applications**, vol. 61, no. 3, pp. 4913-4923, 2025. (JCR Q1, IF 4.2)

J13. Z. Wang, **H. Zhang***, G. Deconinck, and Y. Song, "A Unified Model for Smart Meter Data Applications," **IEEE Transactions on Smart Grid**, vol. 16, no. 3, pp. 2451-2463, 2025. (JCR Q1, IF 8.6)

J14. Z. Zhu, and **H. Zhang***, "Real-time Coordinated Operation of Electric Vehicle Fast Charging Stations with Energy Storage: An Efficient Spatiotemporal Decomposition Approach," **IEEE Transactions on Smart Grid**, vol. 16, no. 3, pp. 2464-2477, 2025. (JCR Q1, IF 8.6)

J15. Q. Hou, G. Chen, N. Dai*, and **H. Zhang**, "Distributionally Robust Chance-Constrained Optimization for Soft Open Points Operation in Active Distribution Networks," **CSEE Journal of Power and Energy Systems**, vol.11, no. 2, pp. 637-648, 2025. (JCR Q1, IF 6.9, **ESI Highly Cited**)

J16. Y. Guo, Y. Xiang*, Z. Tan, **H. Zhang**, J. Li, Z. Hu, F. Liu, and J. Liu, "Competitive evaluation and multi-stage planning of park integrated energy systems," **Scientific Reports**, vol. 15, p. 8660, 2025. (JCR Q1, IF 3.8)

J17. H. Li, **H. Zhang***, D. Liu, J. Zhang, and C. K. Wong, "Frequency-Constrained Dispatching for an Integrated Electricity-Heat Microgrid with Synergic Regulation Resources," **IEEE Transactions on Industry Applications**, vol. 61, no. 2, pp. 2203-2215, 2025. (JCR Q1, IF 4.2)

J18. G. Chen, **H. Zhang***, and Y. Song, "Adversarial Constraint Learning for Robust Dispatch of Distributed Energy Resources in Distribution Systems," **IEEE Transactions on Sustainable Energy**, vol. 16, no. 2, pp. 1139-1152, 2025. (JCR Q1, IF 8.6)

J19. G. Chen, J. Qin, and **H. Zhang**, "Model-Free Self-Supervised Learning for Dispatching Distributed Energy Resources," **IEEE Transactions on Smart Grid**, vol. 16, no. 2, pp. 1287-1300, 2025. (JCR Q1, IF 8.6)

J20. L. Kong, **H. Zhang**, D. Xie, and N. Dai*, "Leveraging Electric Vehicles to Enhance Resilience of Interconnected Power-Transportation System Under Natural Hazards," **IEEE Transactions on Transportation Electrification**, vol. 11, no. 1, pp. 1126-1140, 2025. DOI: 10.1109/TTE.2024.3400289 (JCR Q1, IF 7.2)

J21. Z. Yang, H. Li, and H. Zhang, "A power-to-methanol-based chemical industry system-aided decarbonization approach for power distribution networks," **Applied Energy**, vol. 384, No. April, p. 125395, 2025. (JCR Q1, IF 10.1)

J22. Z. Wang, **H. Zhang***, R. Yang, and Y. Chen, "Improving Model Generalization for Short-Term Customer Load Forecasting with Causal Inference," **IEEE Transactions on Smart Grid**, vol. 16, no. 1, pp. 424-436, 2025. (JCR Q1, IF 8.6)

J23. Z. Yang, H. Liu, and **H. Zhang***, "Dynamic Collaborative Pricing for Managing Refueling Demand of Hydrogen Fuel Cell Vehicles," **IEEE Transactions on Transportation Electrification**, vol. 10, no. 4, pp. 10349-10360, 2024. (JCR Q1, IF 7.2)

J24. Y. Liu, D. Xie, and **H. Zhang***, "Frequency-Constrained Unit Commitment Considering Typhoon-Induced Wind Farm Cutoff and Grid Islanding Events," **Journal of Modern Power Systems and Clean Energy**, vol. 12, no. 6, pp. 1760-1772, 2024. (JCR Q1, IF 5.7)

J25. P. Yu, **H. Zhang***, and Y. Song, "Adaptive Tie-line Power Smoothing with Renewable Generation Based on Risk-aware Reinforcement Learning," **IEEE Transactions on Power Systems**, vol. 39, no. 6, pp. 6819-6832, 2024. (JCR Q1, IF 6.5)

J26. G. Chen, **H. Zhang***, J. Qin, and Y. Song, "Replicating Power Flow Constraints Using Only Smart Meter Data for Coordinating Flexible Sources in Distribution Network," **IEEE Transactions on Sustainable Energy**, vol. 15, no. 4, pp. 2428-2443, 2024. (JCR Q1, IF 8.6)

J27. L. Yang, H. Li*, **H. Zhang**, Q. Wu, and X. Cao, "Stochastic-Distributionally Robust Frequency-Constrained Optimal Planning for an Isolated Microgrid," **IEEE Transactions on Sustainable Energy**, vol. 15, no. 4, pp. 2155-2169, 2024. (JCR Q1, IF 8.6, **ESI Highly Cited**)

J28. J. Su, **H. Zhang***, H. Liu, and D. Liu, "Lyapunov-based distributed secondary frequency and voltage control for distributed energy resources in islanded microgrids with expected dynamic performance improvement," **Applied Energy**, vol. 377, Part C, No. January, p. 124539, 2025. (JCR Q1, IF 10.1)

J29. H. Li, **H. Zhang***, J. Zhang, Q. Wu, and C. K. Wong, "A frequency-secured planning method for integrated electricity-heat microgrids with virtual inertia suppliers," **Applied Energy**, vol. 377, Part B, No. January, p. 124540, 2025. (JCR Q1, IF 10.1)

J30. P. Yu, **H. Zhang***, Z. Hu, and Y. Song, "Voltage control of distribution grid with district cooling systems based on scenario-classified reinforcement learning," **Applied Energy**, vol. 377, Part B, No. January, p. 124415, 2025. (JCR Q1, IF 10.1)

J31. S. Chen, H. Cheng, **H. Zhang**, S. Lv, Z. Wei, and Y. Jin, "Privacy-preserving coordination of power and transportation networks using spatiotemporal GAT for predicting EV charging demands," **Applied Energy**, vol. 377, Part A, No. January, p. 124391, 2025. (JCR Q1, IF 10.1)

J32. L. He, N. Ke, R. Mao, W. Qi*, and **H. Zhang***, "From Curtailed Renewable Energy to Green Hydrogen: Infrastructure Planning for Hydrogen Fuel-Cell Vehicles," **Manufacturing & Service Operations Management**, vol. 26, no. 5, pp. 1587-1979, 2024. (JCR Q1, IF 4.8)

J33. J. Su, **H. Zhang***, C. K. Wong, L. Yu, and Z. Tan, "Hierarchical Control of Inverter Air Conditioners for Frequency Regulation Service of Islanded Microgrids with Fair Power Participation," **IEEE Transactions on Smart Grid**, vol. 15, no. 5, pp. 4602-4617, 2024. (JCR Q1, IF 8.6)

J34. T. Qian, Z. Liang, C. Shao*, **H. Zhang**, Q. Hu, and Z. Wu, "Offline DRL for Price-Based Demand Response: Learning From Suboptimal Data and Beyond," **IEEE Transactions on Smart Grid**, vol. 15, no. 5, pp. 4618-4635, 2024. (JCR Q1, IF 8.6)

J35. Z. Wang, and **H. Zhang***, "Customized Load Profiles Synthesis for Electricity Customers Based on Conditional Diffusion Models," **IEEE Transactions on Smart Grid**, vol. 15, no. 2, pp. 803-818, 2024. (JCR Q1, IF 8.6)

J36. H. Li, Q. Wu*, L. Yang, **H. Zhang**, and S. Jiang, "Distributionally Robust Negative-Emission Optimal Energy Scheduling for Off-grid Integrated Electricity-Heat Microgrid," **IEEE Transactions on Sustainable Energy**, vol. 15, no. 2, pp. 803-818, 2024. (JCR Q1, IF 8.6)

J37. R. Han, Q. Hu*, **H. Zhang**, Y. Ge, X. Quan, and Z. Wu, "Robust allocation of distributed energy storage systems considering locational frequency security," **International Journal of Electrical Power & Energy Systems**, vol. 157, p. 109903, 2024. (JCR Q1, IF 5.0)

J38. Y. Liu, D. Liu, and **H. Zhang***, "Stochastic Unit Commitment with High-penetration Offshore Wind Power Generation in Typhoon Scenarios," **Journal of Modern Power Systems and Clean Energy**, vol. 12, no. 2, pp. 535-546, 2024. (JCR Q1, IF 5.7)

J39. T. Zeng, **H. Zhang***, S. J. Moura, and Z. M. Shen, "Economic and Environmental Benefits of Automated Electric Vehicle Ride-Hailing Services in New York City," **Scientific Reports**, vol. 14, p. 4180, 2024. (JCR Q1, IF 3.8)

J40. Y. Song, G. Chen*, and **H. Zhang**, "Constraint learning-based optimal power dispatch for active distribution networks with extremely imbalanced data," **CSEE Journal of Power and Energy Systems**, vol. 10, no. 1, pp. 51-65, 2024. (JCR Q1, IF 6.9)

J41. **H. Zhang**, X. Hu*, Z. Hu, and S. J. Moura, "Sustainable plug-in electric vehicle integration into power systems," **Nature Reviews Electrical Engineering**, vol. 1, pp. 35-52, 2024.

J42. Z. Wang, and **H. Zhang***, "Customer baseline load estimation for virtual power plants in demand response: An attention mechanism-based generative adversarial networks approach," **Applied Energy**, vol. 357, no. March, p. 122544, 2024. (JCR Q1, IF 10.1)

J43. G. Chen, **H. Zhang***, and Y. Song, "Efficient constraint learning for data-driven active distribution network operation," **IEEE Transactions on Power Systems**, vol. 39, no. 1, pp. 1472–1484, 2024. (JCR Q1, IF 6.5)

J44. P. Yu, **H. Zhang***, Y. Song, H. Hui, and G. Chen, "District Cooling System Control for Providing Operating Reserve based on Safe Deep Reinforcement Learning," **IEEE Transactions on Power Systems**, vol. 39, no. 1, pp. 40–52, 2024. (JCR Q1, IF 6.5)

J45. Y. Song, P. Yu*, and **H. Zhang**, "Optimal Reinforcement Learning Control of a District Cooling System based on Compound Secondary Sampling under Real-time Electricity Prices," **Sci Sin Tech**, vol. 53, pp. 1699–1712, 2023. (in Chinese)

J46. J. Su, **H. Zhang***, H. Liu, L. Yu, and Z. Tan, "Membership-function-based Secondary Frequency Regulation for Distributed Energy Resources in Islanded Microgrids with Communication Delay Compensation," **IEEE Transactions on Sustainable Energy**, vol. 14, no. 4, pp. 2274–2293, 2023. (JCR Q1, IF 8.6)

J47. H. Li, H. Hui, and **H. Zhang***, "Decentralized Energy Management of Microgrid Based on Blockchain-Empowered Consensus Algorithm with Collusion Prevention," **IEEE Transactions on Sustainable Energy**, vol. 14, no. 4, pp. 2260–2273, 2023. (JCR Q1, IF 8.6)

J48. H. Li, H. Hui, and **H. Zhang***, "Consensus-based Energy Management of Microgrid with Random Packet Drops," **IEEE Transactions on Smart Grid**, vol. 14, no. 5, pp. 3600–3613, 2023. (JCR Q1, IF 8.6)

J49. Z. Wang, P. Yu, and **H. Zhang***, "Privacy-Preserving Regulation Capacity Evaluation for HVAC Systems in Heterogeneous Buildings based on Federated Learning and Transfer Learning," **IEEE Transactions on Smart Grid**, vol. 14, no. 5, pp. 3535–3549, 2023. (JCR Q1, IF 8.6)

J50. J. Zhang*, J. Cai, **H. Zhang**, and T. Chen, "NSGA-III Integrating Eliminating Strategy and Dynamic Constraint Relaxation Mechanism to Solve Many-objective Optimal Power Flow Problem," **Applied Soft Computing**, vol. 146, no. October, p. 110612, 2023. (JCR Q1, IF 7.2)

J51. H. Li, H. Hui, and **H. Zhang***, "Blockchain-assisted Virtual Power Plant Framework for Providing Operating Reserve with Various Distributed Energy Resources," **iEnergy**, vol. 2, no. 2, pp. 133-142, 2023. (Invited, Highlight paper, JCR Q1, IF 5.0)

J52. P. Yu, **H. Zhang***, Y. Song, H. Hui, and C. Huang, "Frequency Regulation Capacity Offering of District Cooling System: An Intrinsic-motivated Reinforcement Learning Method," **IEEE Transactions on Smart Grid**, vol. 14, no. 4, pp. 2762-2773, 2023. (JCR Q1, IF 8.6)

J53. X. Shen*, Q. Wu, **H. Zhang**, and L. Wang, "Optimal Planning for Electrical Collector System of Offshore Wind Farm with Double-sided Ring Topology," **IEEE Transactions on Sustainable Energy**, vol. 14, no. 3, pp. 1624-1633, 2023. (JCR Q1, IF 8.6)

J54. L. Kong, **H. Zhang**, W. Li, H. Bai, and N. Dai*, "Spatial-temporal Scheduling of Electric Bus Fleet in Power-Transportation Coupled Network," **IEEE Transactions on Transportation Electrification**, vol. 9, no. 2, pp. 2969-2982, 2023. (JCR Q1, IF 7.2)

J55. P. Yu, **H. Zhang***, and Y. Song, "District Cooling System Control for Providing Regulation Services based on Safe Reinforcement Learning with Barrier Functions," **Applied Energy**, vol. 347, no. October, p. 121396, 2023. (JCR Q1, IF 10.1)

J56. K. Li, C. Shao*, **H. Zhang**, and X. Wang, "Strategic Pricing of Electric Vehicle Charging Service Providers in Coupled Power-Transportation Networks," **IEEE Transactions on Smart Grid**, vol. 14, no. 3, pp. 2189-2201, 2023. (JCR Q1, IF 8.6)

J57. X. Yan, **H. Zhang**, C. Gu, N. Liu*, F. Li, and Y. Song, "Truncated Strategy Based Dynamic Network Pricing for Energy Storage," **Journal of Modern Power Systems and Clean Energy**, vol. 11, no. 2, pp. 544-552, 2023. (JCR Q1, IF 5.7)

J58. X. Yan, C. Gu, **H. Zhang**, N. Liu*, F. Li, and Y. Song, "Network Pricing with Investment Waiting Cost based on Real Options under Uncertainties," **IEEE Transactions on Power Systems**, vol. 38, no. 1, pp. 427-435, 2023. (JCR Q1, IF 6.5)

J59. G. Chen, **H. Zhang***, H. Hui, and Y. Song, "Deep-quantile-regression-based Surrogate Model for Joint Chance-constrained Optimal Power Flow with Renewable Generation," **IEEE Transactions on Sustainable Energy**, vol. 14, no. 1, pp. 657-672, 2023. (JCR Q1, IF 8.6)

J60. Y. Song, **H. Zhang**, G. Chen*, "Typical Pathway to Carbon Neutrality for Urban Smart Energy Systems - Case Study of Macao," **Bulletin of Chinese Academy of Sciences**, vol. 37, no. 11, pp.1650-1663. 2022. (in Chinese)

J61. H. Hui, Y. Chen*, S. Yang, **H. Zhang**, and T. Jiang, "Coordination Control of Distributed Generators and Load Resources for Frequency Restoration in Isolated Urban Microgrids," **Applied Energy**, vol. 327, no. December, p. 120116, 2022. (JCR Q1, IF 10.1)

J62. J. Hong, H. Hui*, **H. Zhang**, N. Dai, and Y. Song, "Event-Triggered Consensus Control of Large-Scale Inverter Air Conditioners for Demand Response," **IEEE Transactions on Power Systems**, vol. 37, no. 6, pp. 4954-4957, 2022. (JCR Q1, IF 6.5)

J63. G. Chen, **H. Zhang***, H. Hui, and Y. Song, "Chance-constrained Regulation Capacity Offering for HVAC Systems Under Non-Gaussian Uncertainties with Mixture-model-based Convexification," **IEEE Transactions on Smart Grid**, vol. 13, no. 6, pp. 4379-4391, 2022. (JCR Q1, IF 8.6)

J64. Y. Dong, S. Ma, **H. Zhang***, and G. Yang, "Wind Power Prediction Based on Multi-Class Autoregressive Moving Average Model with Logistic Function," **Journal of Modern Power Systems and Clean Energy**, vol. 10, no. 5, pp. 1184-1193, 2022. (JCR Q1, IF 5.7)

J65. G. Chen, B. Yan, **H. Zhang***, D. Zhang, and Y. Song, "Time-efficient Strategic Power Dispatch for District Cooling Systems Considering Evolution of Cooling Load Uncertainties," **CSEE Journal of Power and Energy Systems**, vol. 8, no. 5, pp. 1457-1467, 2022. (JCR Q1, IF 6.9)

J66. J. Hong, H. Hui*, **H. Zhang**, N. Dai, and Y. Song, "Distributed Control of Large-scale Inverter Air Conditioners for Providing Operating Reserve Based on Consensus With Nonlinear Protocol," **IEEE Internet of Things Journal**, vol.9, no. 17, pp. 15847-15857, 2022. (JCR Q1, IF 8.2)

J67. H. Hui, P. Siano, Y. Ding*, P. Yu, **H. Zhang**, N. Dai, and Y. Song, "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**, vol. 18, no. 12, pp. 8409-8421, 2022. (JCR Q1, IF 11.7)

J68. S. Lv, S. Chen, Z. Wei*, and **H. Zhang**, "Power-Transportation Coordination: Toward a Hybrid Economic-Emission Dispatch Model," **IEEE Transactions on Power Systems**, vol. 37, no. 5, pp. 3969-3981, 2022. (JCR Q1, IF 6.5)

J69. H. Hui, P. Yu, **H. Zhang***, N. Dai, W. Jiang, and Y. Song, "Regulation Capacity Evaluation of Large-scale Residential Air Conditioners for Improving Flexibility of Urban Power Systems," **International Journal of Electrical Power and Energy Systems**, vol. 142, part A, p. 108269, 2022. (JCR Q1, IF 5.0)

J70. W. Cai, H. Gao*, H. Li, **H. Zhang**, J. Liu, and J. Zhang, "Net Zero Energy Driven Power Sharing for Aggregated Buildings: A Peer Aggregation Model," **Proceedings of the CSEE**, vol. 42, no. 24, pp. 8832-8843, 2022.

J71. C. Huang, **H. Zhang***, L. Wang, X. Luo, and Y. Song, "Mixed Deep Reinforcement Learning Considering Discrete-Continuous Hybrid Action Space for Smart Home Energy Management," **Journal of Modern Power Systems and Clean Energy**, vol. 10, no. 3, pp. 743-754, 2021. (JCR Q1, IF 5.7)

J72. Y. Liu, Z. Li*, W. Wei, J. Zheng, and **H. Zhang**, "Data-Driven Dispatchable Regions with Potentially Active Boundaries for Renewable Power Generation: Concept and Construction," **IEEE Transactions on Sustainable Energy**, vol. 13, no. 2, pp. 882-891, 2022. (JCR Q1, IF 8.6)

J73. D. Zhang, H. Zhu, **H. Zhang***, H. H. Goh, H. Liu, and T. Wu, "Multi-objective Optimization for Smart Integrated Energy System Considering Demand Responses and Dynamic Prices," **IEEE Transactions on Smart Grid**, vol. 13, no. 2, pp. 1100-1112, 2022. (JCR Q1, IF 9.6, **ESI Highly Cited**)

J74. D. Zhang, H. Zhu, **H. Zhang***, H. H. Goh, H. Liu, T. Wu, "An Optimized Design of Residential Integrated Energy System Considering the Power-to-Gas Technology with Multi-Functional Characteristics," **Energy**, vol. 238, pp. 121774, January 2022. (JCR Q1, IF 9.0)

J75. G. Chen, **H. Zhang***, H. Hui, N. Dai, and Y. Song, "Scheduling Thermostatically Controlled Loads to Provide Regulation Capacity Based on a Learning-based Optimal Power Flow Model," **IEEE Transactions on Sustainable Energy**, vol. 12, no. 4, pp. 2459-2470, 2021. (JCR Q1, IF 8.6)

J76. G. Chen, **H. Zhang***, H. Hui, and Y. 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, 2021. (JCR Q1, IF 8.6)

J77. D. Zhang, H. Li, H. Zhu, **H. Zhang***, H. H. Goh, M. C. Wong, and T. Wu, "Impact of COVID-19 on Urban Energy Consumption of Commercial Tourism City," **Sustainable Cities and Society**, vol. 73, pp. 103133, October 2021. (JCR Q1, IF 10.5)

J78. B. Yan, G. Chen, **H. Zhang***, and M. C. Wong, "Strategical District Cooling System Operation with Accurate Spatiotemporal Consumption Modeling," **Energy and Buildings**, vol. 247, pp. 111165, September 2021. (JCR Q1, IF 6.6)

J79. C. Huang, **H. Zhang***, Y. Song, L. Wang, T. Ahmad, and X. Luo, "Demand Response for Industrial Microgrid Considering Photovoltaic Power Uncertainty and Battery Operational Cost," **IEEE Transactions on Smart Grid**, vol. 12, no. 4, pp. 3043-3055, July 2021. (JCR Q1, IF 8.6)

J80. X. Yan, C. Gu*, **H. Zhang** , F. Li and Y. Song, "Waiting Cost based Long-Run Network Investment Decision-making under Uncertainty," **IEEE Transactions on Power Systems**, vol. 36, no. 4, pp. 3340-3348, July 2021. (JCR Q1, IF 6.5)

J81. S. Hu, Y. Xiang*, **H. Zhang**, S. Xie, J. Li, C. Gu, W. Sun, and J. Liu, "Hybrid Forecasting Method for Wind Power Integrating Spatial Correlation and Corrected Numerical Weather Prediction," **Applied Energy**, vol. 293, no. March, p. 116951, 2021. (JCR Q1, IF 10.1)

J82. Z. Zhou, S. J. Moura, **H. Zhang**, X. Zhang, Q. Guo*, and H. Sun, "Power-Traffic Network Equilibrium Incorporating Behavioral Theory: A Potential Game Perspective," **Applied Energy**, vol. 289, pp. 116703, 2021. (JCR Q1, IF 10.1)

J83. T. Ahmad*, D. Zhang, C. Huang, **H. Zhang**, N. Dai, Y. Song, and H. Chen, "Artificial intelligence in sustainable energy industry: Status Quo, challenges and opportunities," **Journal of Cleaner Production**, V. 289, pp. 125834, March 2021. (JCR Q1, IF 9.7, **ESI Highly Cited**)

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J91. T. Ahmad, **H. Zhang***, B. Yan, "A Review on Renewable Energy and Electricity Requirement Forecasting Models for Smart Grid and Buildings," **Sustainable Cities and Society**, vol. 55, no. April 2019, p. 102052, 2020. (JCR Q1, IF 10.5, **ESI Highly Cited**)

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J99. X. Chen*#, **H. Zhang#**, Z. Xu#, C. P. Nielsen#, M. B. McElroy*#, and J. Lv#, "Impacts of Fleet Types and Charging Modes for Electric Vehicles on Emissions under Different Penetrations of Wind Power," **Nature Energy**, vol. 3, pp. 413-421, 2018. (#equal contribution, JCR Q1, IF 49.7)

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J104. W. Qi, B. Shen, **H. Zhang***, and Z. M. Shen, "Coordinating and Sharing Demand-Side Energy Resources - A Conceptual Design," **Energy**, vol. 135, pp. 455-465, 2017. (JCR Q1, IF 9.0)

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J106. **H. Zhang**, Z. Hu*, Z. Xu, and Y. Song, "Evaluation of Achievable Vehicle-to-Grid Capacity Using Aggregate PEV Model," **IEEE Transactions on Power Systems**, vol. 32, no. 1, pp. 784-794, 2017. (JCR Q1, IF 6.5)

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J109. Z. Xu, W. Su, Z. Hu*, Y. Song, and **H. Zhang**, "A Hierarchical Framework for Coordinated Charging of Plug-in Electric Vehicles in China," **IEEE Transactions on Smart Grid**, vol. 7, no. 1, pp. 428-438, 2016. (JCR Q1, IF 8.6)

J110. K. Zhan, Z. Hu*, Y. Song, Z. Xu, L. Jia, and **H. Zhang**, "A Coordinated Charging Strategy for Electric Vehicle Three-phase Load Balance," **Automation of Electric Power Systems**, vol. 39, no. 17, pp. 201-207, 2015. (in Chinese)

J111. Y. Guo, Z. Hu*, **H. Zhang**, W. Su, K. Zhan, and Z. Xu, "A Statistical Method to Evaluate the Capability of Residential Distribution Network for Accommodating Electric Vehicle Charging Load," **Power System Technology**, vol. 39, no. 9, pp. 2458-246, 2015. (in Chinese)

J112. Y. Zhang*, W. Zhao, Y. Xiao, G. Lin, X. Chen, Z. Hu, **H. Zhang**, and Z. Xu, "A Hierarchical Architecture Based Simulation Platform for Coordinated Charging of Large-Scale Electric Vehicles," **Power System Technology**, vol. 39, no. 1, pp. 55-62, 2015. (in Chinese)

J113. Z. Xu, Z. Hu*, Y. Song, **H. Zhang**, and X. Chen, "Coordinated Charging Strategy for PEV Charging Stations Based on Dynamic Time-of-use Tariffs," **Proceedings of the CSEE**, vol. 33, no. 22, pp. 3638-3646, 2014. (in Chinese)

J114. **H. Zhang**, Z. Hu*, Y. Song, Z. Xu, and L. Jia, "A Prediction Method for Electric Vehicle Charging Load Considering Spatial and Temporal Distribution," **Automation and Electric Power Systems**, vol. 38, no. 1, pp. 13-20, 2014. (in Chinese)

Conference Paper

C1. Z. Hu and **H. Zhang**, "An Efficient Transparent Neural Network Method for Alternating Current Optimal Power Flow Problem," 2025 IEEE Industry Applications Society Annual Meeting (IAS), Taipei, Taiwan, 2025, pp. 1-6.

C2. L. Pan, and **H. Zhang**, "Competitive Pricing of Electric Vehicle Charging in Coupled Power and Transportation Network," 2024 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC Asia-Pacific), Xi'an, China, 2024, pp. 83-88. (**Best Paper Award**)

C3. X. Wei, **H. Zhang**, and C. K. Wong, "Optimal Operation and Economic Analysis of Ice Thermal Energy Storage in District Cooling System," 2024 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5, Seattle, WA, USA, July 2024.

C4. Z. Wang, **H. Zhang**, B. Zhao, W. Zhao, and T. Mao, "When Pre-Training Model Meets Smart Meter Data Applications: A Preliminary Trial of General Way," 2024 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5, Seattle, WA, USA, July 2024.

C5. L. Kong, **H. Zhang**, and N. Dai, "Resilience Evaluation of Power-transportation Coupled Network with Electric Vehicles' Restoration Service," 2024 IEEE Transportation Electrification Conference and Expo (ITEC), Chicago, IL, USA, June 2024.

C6. J. Zhang, L. Kong, and **H. Zhang**, "Coordinated Ride-hailing Order Scheduling and Charging for Autonomous Electric Vehicles based on Deep Reinforcement Learning," 2023 IEEE IAS Industrial and Commercial Power System Asia (IEEE I&CPS Asia 2023), Chongqing, China, July 2023.

C7. T. Wu, H. Hui and **H. Zhang**, "Hardware-in-the-loop Towards Frequency Regulation Service by HVACs with Real-time Digital Simulator," 2023 8th Asia Conference on Power and Electrical Engineering (ACPEE), Tianjin, China, 2023, pp. 1052-1057. (**Best Presentation Award**)

C8. Z. Wang, H. Li, H. Hui and **H. Zhang**, "A Local Energy Market for Industrial Parks Considering Carbon Emission Quota," 2023 8th Asia Conference on Power and Electrical Engineering (ACPEE), Tianjin, China, 2023, pp. 1118-1123.

C9. Z. Liu, D. Liu and **H. Zhang**, "Research on the Maximum Proportion of Renewable Energy Considering Frequency Security under Different Disturbance Events," 2023 Panda Forum on Power and Energy (PandaFPE), Chengdu, China, 2023, pp. 49-54.

C10. Z. Wang, and **H. Zhang**, "Consumer Baseline Load Estimation in Demand Response: A Generative Adversarial Networks Approach," the 6th IEEE Conference on Energy Internet and Energy System Integration (EI2), Chengdu, China, Oct 2022. (**Best Paper Award**)

C11. P. Yu, **H. Zhang**, and Y. Song, "Smoothing Tie-line Power for Microgrids by Controlling District Cooling System based on Soft Actor-Critic Reinforcement Learning," the 6th IEEE Conference on Energy Internet and Energy System Integration (EI2), Chengdu, China, Oct 2022.

C12. L. Kong, **H. Zhang**, and N. Dai, "Spatial-temporal Scheduling of Commercial EVs for System Restoration of a Damaged Power-transportation Coupled Network," the 6th IEEE Conference on Energy Internet and Energy System Integration (EI2), Chengdu, China, Oct 2022.

C13. G. Chen, **H. Zhang**, and Y. Song, "Chance-constrained DC Optimal Power Flow with Non-Gaussian Distributed Uncertainties," 2022 IEEE Power & Energy Society General Meeting (PESGM), 2022, pp. 1-5.

C14. Y. Liu, H. Hui, **H. Zhang**, and L. Gao, "Risk Assessment of Offshore Wind Farm Outages Under Typhoon Conditions," 2022 IEEE Power & Energy Society General Meeting (PESGM), 2022, pp. 1-5.

C15. P. Yu, H. Hui, **H. Zhang**, C. Huang, and Y. Song, "Frequency Regulation Capacity Offering of District Cooling System based on Reinforcement Learning," 2022 IEEE Power & Energy Society General Meeting (PESGM), 2022, pp. 1-5.

C16. H. Hui, P. Yu, **H. Zhang**, N. Dai, W. Jiang and Y. Song, "Regulation Capacity Evaluation of Large-scale Heterogeneous Residential Air Conditioning Loads," 2021 IEEE Sustainable Power and Energy Conference (iSPEC), 2021, pp. 2505-2510. (**Best Paper Award**)

C17. B. Zou, **H. Zhang**, and G. Chen, "Optimal Power Scheduling of Data Centers with Deferrable Computation Requests," 2021 IEEE 5th Conference on Energy Internet and Energy System Integration (EI2), 2021, pp. 721-726.

C18. G. Chen, **H. Zhang**, N. Dai, and Y. Song, "Topology-free Optimal Power Dispatch for Distribution Network Considering Security Constraints and Flexible Building Thermal Inertia," 2021 IEEE Power & Energy Society General Meeting (PESGM), 2021, pp. 1-5.

C19. G. Chen, B. Yan, **H. Zhang**, Y. Song, "Optimal Power Dispatch for District Cooling System Considering Cooling Water Transport Delay," to be presented on IEEE PES Asia-Pacific Power & Energy Engineering Conference (APPEEC), Nanjing, China, 2020, pp. 1-5.

C20. Z. Zhou, S. Moura, **H. Zhang**, X. Zhang, Q. Guo, H. Sun, "A Game-Theoretic Approach to Analyzing Equilibria in Coupled Power and Transportation Networks," IEEE PES General Meeting 2019, Atlanta, GA, 2019, pp. 1-5.

C21. **H. Zhang**, S. J. Moura, Z. Hu, W. Qi, and Y. Song, "Joint PEV Charging Station and Distributed PV Generation Planning," IEEE PES General Meeting 2017, Chicago, IL, 2017, pp. 1-5.

C22. **H. Zhang**, W. Qi, Z. Hu, and Y. Song, "Planning Hydrogen Refueling Stations with Coordinated On-Site Electrolytic Production," IEEE PES General Meeting 2017, Chicago, IL, 2017, pp. 1-5.

C23. S. Bae, **H. Zhang**, D. Wang, C. Sheppard, and S. Saxena, "Optimal Bidding Strategy for V2G Regulation Services under Uncertainty," IEEE PES General Meeting 2017, Chicago, IL, 2017, pp. 1-5.

C24. **H. Zhang**, Z. Hu, S. J. Moura, and Y. Song, "Coordination of V2G and Distributed Wind Power Using the Storage-like Aggregate PEV Model," IEEE PES ISGT 2016, Minneapolis, MN, 2016, pp. 1-5.

C25. **H. Zhang**, W. Tang, Z. Hu, Y. Song, Z. Xu, and L. Wang, "A Method for Forecasting the Spatial and Temporal Distribution of PEV Charging Load," IEEE PES General Meeting 2014, National Harbor, MD, 2014, pp. 1-5.

Patent

P1. Z. Hu, **H. Zhang**, and Y. Song, "An electric vehicle charger," Invention Patent of China, No. ZL201510409181.8.

P2. D. Liu, **H. Zhang**, Y. Song, H. Hui, and J. Su, "A method and device for static security assessment of power systems," Invention Patent of China, No. ZL202210296142.1.

P3. H. Hui, P. Yu, and **H. Zhang**, "A method and device for quantitative assessment of adjustable air-conditioning load capability," Invention Patent of China, No. ZL202210235417.0.

P4. **H. Zhang**, L. Pan, and Y. Song, "A method for large-scale traffic user equilibrium control considering charging behavior," Invention Patent of China, No. ZL202510325153.1.

ACADEMIC SERVICE

Journal Editor

- **Section Editor**, Current Sustainable/Renewable Energy Reports — 2024 to present
- **Associate Editor**, IEEE Transactions on Power Systems — 2024 to present
- **Associate Editor**, IEEE Power Engineering Letters — 2024 to present
- **Youth Editorial Committee Member**, Electric Power Automation Equipment — 2024 to present
- **Associate Editor**, Journal of Modern Power Systems and Clean Energy — 2023 to present
- **Associate Editor**, iEnergy — 2022 to present
- **Youth Editorial Committee Member**, Electric Power — 2022 to present
- **Associate Editor**, IET Electrical Systems in Transportation — 2019 to 2022
- **Guest editor**, Energy Reports — 2023
- **Guest editor-in-chief**, IET Smart Grid — 2025
- **Guest editor**, IET Smart Grid — 2019, 2022

Journal Referee

- **IEEE (14):** IEEE Transactions on Power Systems; IEEE Transactions on Smart Grid; IEEE Transactions on Sustainable Energy; IEEE Transactions on Control Systems Technology; IEEE Transactions on Energy Conversion; IEEE Transactions on Industrial Electronics; IEEE Transactions on Industrial Informatics; IEEE Access; IEEE Transactions on Transportation Electrification; IEEE Transactions on Intelligent Transportation Systems; IEEE Internet of Things Journal; IEEE Transactions on Cloud Computing; IEEE Power Engineering Letters; CSEE Journal of Power and Energy Systems; Journal of Modern Power Systems and Clean Energy.
- **IET (3):** IET Generation, Transmission & Distribution; IET Renewable Power Generation; IET Smart Grid.
- **Elsevier (7):** European Journal of Operational Research; Energy; Resources, Conservation and Recycling; Transport Policy; Transportation Research Part E: Logistics and Transportation Review; Applied Mathematical Modelling; Renewable & Sustainable Energy Reviews.

Conference Organization

- **Special Session Chair**, 2025 IEEE Transportation Electrification Conference and Expo, Asia-Pacific (ITEC-AP), Singapore, Nov. 25-28, 2025.

- **Chair**, Shenzhen-Macao 2025 Symposium on Microgrids, Shenzhen & Macao, Nov. 9-13, 2025.
- **Panel Session Chair**, "Learning-based modeling, operation and control of demand-side flexibility to decarbonize future power grid" in the 2025 IEEE Power & Energy Society General Meeting (PESGM), Austin, Texas, USA, Jul. 2025.
- **Program Co-chair**, 2025 IEEE 3rd International Conference on Power Science and Technology (ICPST), Kunming, China, May 16-18, 2025.
- **Publication Chair**, 2024 IEEE Transportation Electrification Conference and Expo, Asia-Pacific, Xi'an, China, Oct 10-13, 2024.
- **Program Co-chair**, 2024 IEEE 2nd International Conference on Power Science and Technology (ICPST), Dali, China, May 9-11, 2024.
- **Publication Chair**, the 2022 International Conference on Frontiers of Energy and Environment Engineering, Beihai, China, Dec. 16-19, 2022.
- **International Technical Committee**, the 7th Asia Conference on Power and Electrical Engineering (ACPEE 2022), Hangzhou, China, Apr. 16 - 17, 2022.
- **Technical Committee**, the 5th Conference on Smart Grid and Smart Cities, Tokyo, Japan, June 18-21, 2021.
- **Technical Session Chair**, "Power and Transportation Nexus with Electric Vehicles" in the 4th IEEE Conference on Energy Internet and Energy System Integration, Wuhan, China, Oct. 2020.
- **Track Chair (Renewable & Sustainable Energy)**, the 11th IEEE PES Asia-Pacific Power and Energy Engineering Conference 2019 (APPEEC), Macao, China, Dec. 2019.
- **Local Management Chair**, the 11th IEEE PES Asia-Pacific Power and Energy Engineering Conference 2019 (APPEEC), Macao, China, Dec. 2019.
- **Paper Session Chair**, IEEE PES Innovative Smart Grid Technologies Conference – North America, Minneapolis, USA, Sep. 2016.

Professional Membership

- Senior member of IEEE
- Member of China Electrotechnical Society Young Scholar Committee
- Member of Chinese Society for Electrical Engineering
- Secretary-General of IEEE PES China Energy and Transportation Nexus Subcommittee
- Standing Director of IEEE PES China Power Grid Operation & Control Subcommittee
- Member of IEEE PES Energy Internet Coordinating Committee
- Member of the Technical Committee of CIGRE China National Committee

INTERNAL SERVICE (UNIVERSITY OF MACAU)

Curriculum Planning & Student Admission

- Program revision committee member, Department of Electrical and Computer Engineering 2019-present
- Selection panel for Master in IoT, Department of Electrical and Computer Engineering 2022-present

Student Affairs

- Advisor for undergraduate students, Department of Electrical and Computer Engineering 2019-present
- Affiliated fellow, Lui Che Woo College 2019-present
- Summer camp coordinator, Department of Electrical and Computer Engineering 2020-2023
- Student affairs committee member, State Key Laboratory of Internet of Things for Smart City 2022-present
- Postgraduate house fellow, UM Postgraduate House Community 2023-present

Administration

- Supervisor of the Smart Energy Group at Zhuhai UM Science & Technology Research Institute 2020-present
- Deputy-director of the "China Southern Power Grid - University of Macau Joint Laboratory of Carbon Neutral Energy and Power Systems" 2022-present

RESEARCH PROJECT

Total funding from the government as PI, about 8 million MOP. Total funding from industrial collaborators as PI, about 12 million RMB.

Government Funded Project

- PI, "Data-driven accomodation capacity evaluation of distributed flexible energy resources in distribution power grids," Macau Science and Technology Development Fund (FDCT) and Department of Science and Technology of Guangdong Province Joint Funding Program, MOP 1,034,000, 2025-2027.
- PI, "Multi-energy system coordination and carbon management in low-carbon park," Macao Science and Technology Development Fund and Ministry of Science and Technology of China Joint Project (FDCT-MOST), MOP 1,864,000, 2022-2025.
- PI, "Key technologies and applications of network-load-storage interaction of virtual power station in smart city," Macao Science and Technology Development Fund and Department of Science and Technology of Guangdong Province Joint Project (FDCT-GDST), MOP 1,100,000, 2022-2024.
- PI, "Operation and control of district cooling system under double carbon target," Zhuhai science and technology innovation Bureau, RMB 400,000, 2022-2023. (Collaboration with State Power Investment Corporation – Zhuhai Hengqin Energy Development Corporation)
- PI, "Low carbon building smart energy management based on multi-source big data mining," Zhuhai science and technology innovation Bureau, RMB 240,000, 2022-2023. (Collaboration with YGSoft Co., Ltd.)
- Sub-task PI, "Intelligent coordinated operation, protection and application on integrated energy IoT," Macao Science and Technology Development Fund Key R&D Project, MOP 7,670,000, 2021-2024. (30% share of budget)
- PI, "Strategic operation of shared-use autonomous electric fleet considering synergy of power and transportation systems," Natural Science Foundation of China, RMB 240,000, 2021-2023.
- PI, "Strategic operation and optimization of integrated energy systems in smart city," Macao Science and Technology Development Fund, MOP 1,165,000, 2020-2022.
- PI, "Strategic operation and optimization of autonomous electric fleet," Guangdong Natural Science Foundation, RMB 100,000, 2020-2021.

Industrial Project

- PI, "Non-parametric modeling and safe artificial intelligence technology for urban energy system operation and control," Guangdong Power Grid - Zhuhai Power Supply Bureau, RMB 4,950,000, 2023-2026.
- PI, "Study on standardization of electric vehicle refueling infrastructure in Hainan Province," China Southern Power Grid Research Institute, RMB 618,000, 2023-2024.
- PI, "Research on forecasting and coordinated operation technology of multi-energy systems in low-carbon parks," China Southern Power Grid Research Institute, RMB 3,872,000, 2023-2024.
- PI, "Demand response of air-conditioning systems in heavy-load cities under high-temperature & high-humidity environment," Daikin (China) Investment Co., Ltd - Shenzhen R&D Branch, RMB 600,000, 2022.
- PI, "Operation strategy of district cooling system with ice storage systems," State Power Investment Corporation – Zhuhai Hengqin Energy Development Corporation, RMB 190,800, 2022.
- Co-PI, "Macao EV and charging infrastructure development plan," Companhia de Electricidade de Macau (CEM), MOP 1,700,000, 2021.

SELECTED AWARD & HONOR

Best Publication Award in Natural Resources, INFORMS Energy, Natural Resources, and the Environment Section 2025

Excellent Associate Editor Award, Journal of Modern Power Systems and Clean Energy 2025

World's Top 2% Scientist (Single-year Impact), Stanford University & Elsevier 2021, 2022, 2023, 2024, 2025

Best Paper Award, 2024 IEEE Transportation Electrification Conference and Expo, Asia-Pacific 2024

Excellent Associate Editor Award, Journal of Modern Power Systems and Clean Energy 2024

Best Paper Award, Journal of Modern Power Systems and Clean Energy 2024

University-level Outstanding Academic Staff, University of Macau 2023

Second Prize of the Macao Science and Technology Award - Natural Science Award, Macao Government 2022

Excellent Young Expert, Journal of Modern Power Systems and Clean Energy 2022

Excellent Reviewer, Journal of Modern Power Systems and Clean Energy 2018, 2022

Best Paper Award, the 6th IEEE Conference on Energy Internet and Energy System Integration (EI2 2022) 2022

Best Paper Award, the 3rd IEEE Conference on Sustainable Power and Energy (iSPEC 2021) 2021

Excellent Paper Award, the 34th International Electric Vehicle Symposium and Exhibition (EVS34) 2021

Zijing Scholar, Tsinghua University 2018

China National Scholarship, Chinese Government 2016

Outstanding Graduate, Tsinghua University 2013

SELECTED AWARD & HONOR (AS SUPERVISOR)

Lyuzhu Pan, Best Paper Award, 2024 IEEE Transportation Electrification Conference and Expo, Asia-Pacific 2024

Zhaoxi Liu, FST Dean's Honors List Award (master student), University of Macau 2024

Ge Chen (co-advise), FST PhD Student Research Award, University of Macau 2023

Cheong Wang and Yongyu Huang, FST Dean's Final Year Project List, University of Macau 2023

Tong Wu, Best Presentation Award, 8th Asia Conference on Power and Electrical Engineering 2023

Ge Chen (co-advise), Macao Scientific and Technological Research and Development Award for Postgraduates (PhD student), Macao Government 2022

Qilin Hou (co-advise), Macao Scientific and Technological Research and Development Award for Postgraduates (Master student), Macao Government 2022

Lingming Kong (co-advise), Zhen Zhu and Jinxi Zhang, Third Prize, Guangdong–Hong Kong–Macao Greater Bay Area New Energy Vehicle Big data Innovation Competition 2022

Zhenyi Wang, Best Paper Award, 6th IEEE Conference on Energy Internet and Energy System Integration 2022

Peipei Yu (co-advise), Best Paper Award, 3rd IEEE Conference on Sustainable Power and Energy 2021

Lingming Kong (co-advise) and Jinxi Zhang, Award of Excellence, 2021 X-Game Shanghai New Energy Vehicle Big Data Competition 2021

Peipei Yu (co-advise) and Zhenyi Wang, First Prize and Best Innovation Award, 2021 Contest of AI Application in Power Dispatching (China Southern Power Grid) 2021

Lingming Kong (co-advise), Excellent Paper Award, 34th International Electric Vehicle Symposium and Exhibition 2021

Peipei Yu (co-advise) and Bin Zou (co-advise), Second Prize and Best Innovation Award, 2020 Contest of AI Application in Power Dispatching (China Southern Power Grid) 2020

PHD STUDENT SUPERVISION

Graduated

Ge Chen (co-advise), 2019–2023, After graduation: Postdoc at Purdue University, USA

Jiatu Hong (co-advise), 2019–2023, After graduation: Lecturer at Wenzhou University

Hongyi Li, 2020–2024, After graduation: Postdoc at Iowa State University, USA

Peipei Yu (co-advise), 2020–2024, After graduation: Lecturer at Shanghai Electric Power University

Yanqi Liu, 2020–2024, After graduation: TBC

Lingming Kong (co-advise), 2020–2024, After graduation: Lecturer at Shenzhen Polytechnic University

Bin Zou (co-advise), 2020-2025, After graduation: Researcher at Electric Power Research Institute of China Southern Power Grid

Zuntao Hu, 2021-2025, After graduation: Postdoc at Zhuhai UM Science and Technology Research Institute

Zhenyi Wang, 2021-2025, After graduation: Postdoc at University of Waterloo

Current

Zhen Zhu, Distributed control of energy storage systems / electric vehicles, 2022–present

Zhixue Yang, Operation of hydrogen electrolysis system in power system, 2022–present

Xiangyu Wei, Operation and control of heat/cooling storage systems, 2023–present

Lyuzhu Pan, Power and transportation nexus, 2023–present

Qingjie Le (co-advise), Energy storage systems in microgrids, 2023–present

Jianfeng Zeng, Data-driven modeling and operation of distribution power grids, 2024–present

Shiyu Ouyang, Data-driven modeling and operation of distribution power grids, 2024–present

Hanqing Yu, Power and transportation nexus (Marine transportation), 2025–present

Baoyun Zhang, Power and transportation nexus, 2025–present

Ding Jin, Power and transportation nexus (air transportation), 2025–present

MASTER STUDENT SUPERVISION

Graduated

Qilin Hou (co-advise), 2018–2021, After graduation: Commercial Aircraft Corporation of China

Jinxi Zhang, 2021–2023, After graduation: Zhuhai UM Science & Technology Research Institute

Tong Wu, 2021–2023, After graduation: Zhuhai UM Science & Technology Research Institute

Zifei Wang, 2021–2024, After graduation: Digital Power Grid Group, China Southern Power Grid

Zhaoxi Liu,	2022–2024,	After graduation: Tong Nam School, Macao
Tangyao Ai,	2022–2024,	After graduation: Zhuhai UM Science & Technology Research Institute
Linrui Gong,	2023–2025,	After graduation: Zhuhai UM Science & Technology Research Institute
Yang Li,	2023–2025,	After graduation: Industrial and Comercial Bank of China

Current

Renjing Sun,	Off-shore wind generation integration,	2024–present
Xianxin Qiu,	Distribution power grid planning,	2024–present
Chi Zhang,	Distribution power system planning,	2025–present
Jing Bao,	Distribution power system planning,	2025–present
Haitao Cao,	Integration of EVs in power grid,	2025–present

TEACHING

ECEN3008 Power Systems Analysis (for undergraduate students)	2024-2025
ECEN7107 Data Analytics for Internet of Things (for master students)	2023–2025
ECEN4003 Special Topic in Electrical and Computer Engineering – Energy Data Analytics (for undergraduate students)	2020–2022
ECEN8001 Advanced Topics in Electrical and Computer Engineering – Convex Optimization and its Application in Power Systems (for PhD students)	2019–2024