YUFAN ZHANG

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PROFESSIONAL EMPLOYMENT

University of California San Diego 2023 - present
Postdoctoral Researcher
Department of Electrical and Computer Engineering

EDUCATION

Shanghai Jiao Tong University 2017 - 2022
Ph.D. in Electrical Engineering

Chongqing University 2013 - 2017
Bachelor in Electrical Engineering

HONORS & AWARDS

Top Articles in Outstanding S&T Journals of China 2022
Frontrunner 5000 Paper, China Association for Science and Technology 2022
SJTU Outstanding PHD Graduate, Shanghai Jiao Tong University 2022
Outstanding Doctoral Graduate Development Scholarship, Shanghai Jiao Tong University 2022
Outstanding PHD Student Scholarship, Shanghai Jiao Tong University 2020
Best Conference Paper of IEEE Power & Energy Society General Meeting, PESGM 2020
Sieyuan Electrics Co. Scholarship, Shanghai Jiao Tong University 2019
Outstanding Undergraduate of Chongqing University, Chongqing University 2017
Undergraduate National Scholarship, Chinese Ministry of Education 2016
Freshmen Scholarship of Chongqing University, Chongqing University 2013

RESEARCH INTERESTS

Energy Forecasting
Interaction between Power and Traffic Networks
Machine Learning Applications in Power Systems
Decision Making under Uncertainty

PUBLICATIONS

Preprints

4. **Y. Zhang**, H. Wen, Y. Bian, and Y. Shi, "Deriving loss function for value-oriented renewable point forecasting," arXiv preprint arXiv:2310.00571, 2023.
3. **Y. Zhang**, M. Jia, H. Wen, and Y. Shi, "Value-oriented renewable energy forecasting for coordinated energy dispatch problems at two stages," arXiv preprint arXiv:2309.00803, 2023.
2. **Y. Zhang**, H. Wen, T. Feng, and Y. Chen, "Targeted demand response: Formulation, lmp implications, and fast algorithms," arXiv preprint arXiv:2211.14806, 2022.
1. X. He, H. Wen, **Y. Zhang**, and Y. Chen, "Enabling fast unit commitment constraint screening via learning cost model," arXiv preprint arXiv:2212.00483, 2022.

Journal Papers

13. **Y. Zhang**, S. Dey, and Y. Shi, "Optimal vehicle charging in bilevel power-traffic networks via charging demand function," IEEE Transactions on Smart Grid, 2023.
12. **Y. Zhang**, H. Wen, and Q. Wu, "A contextual bandit approach for value-oriented prediction interval forecasting," IEEE Transactions on Smart Grid, 2023.
11. **Y. Zhang**, Q. Wu, Q. Ai and J. P. S. Catalão, "Closed-Loop aggregated baseline load estimation using contextual

bandit with policy gradient," IEEE Transactions on Smart Grid, vol. 13, no. 1, pp. 243-254, 2022.
10. **Y. Zhang**, H. Wen, Q. Wu and Q. Ai, "Optimal adaptive prediction intervals for electricity load forecasting in distribution systems via reinforcement learning," IEEE Transactions on Smart Grid.
9. **Y. Zhang**, Q. Ai, F. Xiao, R. Hao, and T. Lu, "Typical wind power scenario generation for multiple wind farms using conditional improved wasserstein generative adversarial network," International Journal of Electrical Power & Energy Systems, vol. 114, p. 105388, 2020.
8. **Y. Zhang**, Q. Ai, H. Wang, Z. Li, and X. Zhou, "Energy theft detection in an edge data center using threshold-based abnormality detector," International Journal of Electrical Power & Energy Systems, vol. 121, p. 106162, 2020.
7. **Y. Zhang**, Q. Ai, H. Wang, Z. Li, and K. Huang, "Bi-level distributed day-ahead schedule for islanded multi-microgrids in a carbon trading market," Electric Power Systems Research, vol. 186, p. 106412, 2020.
6. **Y. Zhang**, Q. Ai, and Z. Li, Grouping of dynamic electricity consumption behaviour: An f-divergence based hierarchical clustering model," IET Generation, Transmission & Distribution, vol. 15, no. 22, pp. 3164–3175, 2021
5. **Y. Zhang**, Q. Ai, and Z. Li, "Admm-based distributed response quantity estimation: a probabilistic perspective," IET Generation, Transmission & Distribution, vol. 14, no. 26, pp. 6594–6602, 2020.
4. **Y. Zhang**, Q. Ai, and Z. Li, "Intelligent demand response resource trading using deep reinforcement learning," CSEE Journal of Power and Energy Systems, 2021
3. **Y. Zhang**, Q. Ai, Z. Li, S. Yin, K. Huang, M. Yousif, and T. Lu, "Data augmentation strategy for small sample short-term load forecasting of distribution transformer," International Transactions on Electrical Energy Systems, vol. 30, no. 7, p. e12209, 2020.
2. **Y. Zhang**, Q. Ai, and Z. Li, "Improving aggregated baseline load estimation by gaussian mixture model," Energy Reports, vol. 6, pp. 1221–1225, 2020.
1. S. Yin, Q. Ai, Z. Li, **Y. Zhang**, and T. Lu, "Energy management for aggregate prosumers in a virtual power plant: A robust stackelberg game approach," International Journal of Electrical Power & Energy Systems, vol. 117, p. 105605, 2020.

Conferences Papers
2. X. He, J. Tian, **Y. Zhang**, H. Wen, and Y. Chen, "Fast constraint screening for multi- interval unit commitment," in 2023 62nd IEEE Conference on Decision and Control (CDC). IEEE, 2023, pp. 577–583.
1. **Y. Zhang**, Yuquan Liu, Zhiwen Yu, Wen Xiong, Li Wang, Qian Ai, Zhaoyu Li, Kaiyi Huang, Ran Hao, and Ziqing Jiang, "Improving aggregated load forecasting using evidence accumulation k-Shape clustering," 2020 IEEE Power & Energy Society General Meeting (PESGM), Montreal, QC, Canada, 2020.

TEACHING

Courses:
MAE 243: Electric Power Systems Modeling — UC San Diego
Guest lecturer — Fall quarter 2023

Supervision experience:
3. Jiajun Han, Value-oriented forecasting for risk-manageable operation. *M.Sc. student* — Fall quarter 2023
2. Yuexin Bian, Optimal arrival scheduling of electric vehicles. *Ph.D. student with UCSD* — Summer quarter 2023
1. Zhaoyu Li, Power-gas network equilibrium: a potential game perspective. *Ph.D. student with SJTU* — 2022

Teaching Training:
2. Pathways to Scientific Teaching — Winter quarter 2024
1. Fundamental teaching workshop — Winter quarter 2024

PROFESSIONAL SERVICES

Journal Reviewers: IEEE Transactions on Industrial Informatics, IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, IET Renewable Power Generation, Applied Energy, Energy Reports, Sustainable Energy, Grids and Networks, Electric Power Systems Research

Co-organizer: Power & Energy Seminar Series at UC San Diego

INVITED TALKS

7. *Deriving Closed-form Loss Function for Value-oriented Renewable Energy Forecasting*, UCSD Power & Energy Seminar, California. January 2024

6. *Optimal vehicle charging in bilevel power-traffic networks via charging demand function,* INFORMS Annual Meeting. October, 2023

5. *Demand response model identification and forecasting with differentiable optimization neural network (OptNet): A gradient-based approach*, Power & Energy Society General Meeting. July, 2023

4. *Closed-loop aggregated load estimation*, Power & Energy Society General Meeting. July, 2023

3. *Optimal vehicle charging in bilevel power-traffic networks via charging demand function*, Columbia University. April 2023

2. *Value-oriented forecasting for power systems*, UCSD Power & Energy Seminar, California. February 2023

1. *Improving aggregated load forecasting using evidence accumulation k-Shape clustering*, Power & Energy Society General Meeting. August, 2020