WENJIE ZHANG

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Education

2015 08-2020 03 NATIONAL UNIVERSITY OF SINGAPORE (NUS), SINGAPORE
Doctor of Philosophy in Electrical and Computer Engineering, March 2020
Supervisor: Prof. Dipti Srinivasan, IEEE Fellow

2011 09-2015 06 HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY (HUST), WUHAN, CHINA
Bachelor of Engineering in School of Artificial Intelligence and Automation, June 2015

Research Interest

- Large language model (LLM) for smart energy system optimization
- Smart meter data analytics to facilitate the transition to low-carbon energy systems
- Business analytics for the transformation of renewable energy enterprises towards AI-driven operations

Past Academic Experience

2020 03-2023 01 Research Fellow, Adjunct Research Fellow (part-time), Industrial Mentor (part-time), National University of Singapore

- Supervised undergraduate and graduate students in RIPS project (Research in Industrial Projects for Students)
- Developed advanced multimodal solar forecasting techniques and AIoT

2018 12-2019 03 Visiting Scholar, Stanford University

- Developed deeper neural networks for electrical load and renewable energy forecasting

2015 12-2019 12 Teaching Assistant, National University of Singapore

- Tutored EE4511 Sustainable Energy System (class size: 100) and mentored its final projects
- Tutored EE2028 Microcontroller Programming and Interfacing
- Tutored EE4501 Power System Management And Protection

2014 09-2014 12 Research Assistant, University of Houston

Industrial Experience

2019 08-2022 09 Lead Data Scientist in Grab (leading digital payment, ride hailing, and food delivery in south east Asia)

- Built forecasting platforms on user demand and supply changes
- Developed FinTech projects based on graph neural network learning.

2018 08-2018 09 Research Intern in Robotic Inspection Center - China Southern Grid

- Developed deep learning based defect auto-detection in transmission lines (using images captured by drones)
- Explored deep learning inference acceleration at edge devices

Journal Publications

- As the first or corresponding author (marked with *), published 10 journal papers.

1. **Zhang, W.**, Archana, V., Gandhi, O., Rodríguez-Gallegos, C. D., Quan, H., Yang, D., ... & Srinivasan, D. (2023). SoilingEdge: PV Soiling Power Loss Estimation at the Edge Using Surveillance Cameras. *IEEE Transactions on Sustainable Energy* (JCR Q1, IF=8.310)
2. **Zhang, W.**, Liu, S., Rodríguez-Gallegos, C. D., Quan, H.*, & Srinivasan, D. (2021). Deep Learning Based Probabilistic Estimation of Solar PV Soiling Loss. *IEEE Transactions on Sustainable Energy* (JCR Q1, IF=8.310)
3. **Zhang, W.**, Gandhi, O., Quan, H.*, Rajagopal, R., Tan. C., & Srinivasan, D. (2020). Improving probabilistic load forecasting via skip connections. *IEEE Transactions on Smart Grid* (JCR Q1, IF=10.275)
4. **Zhang, W.***, Luo, Y., Zhang, Y., & Srinivasan, D. (2020). SolarGAN: Multivariate Solar Data Imputation Using Generative Adversarial Network. *IEEE Transactions on Sustainable Energy* (JCR Q1, IF=8.310)
5. **Zhang, W.***, Quan H., & Srinivasan, D. (2018). An improved quantile regression neural network for probabilistic load forecasting. *IEEE Transactions on Smart Grid* (JCR Q1, IF=10.275)
6. **Zhang, W.***, Gandhi, O., Rodríguez-Gallegos, C. D., Quan, H. & Srinivasan, D. (2018). A Multi-agent Based Integrated Volt-var Optimization Engine for Fast Vehicle-to-Grid Reactive Power Dispatch and Electric Vehicle Coordination. *Applied Energy* (JCR Q1, IF=11.446)
7. **Zhang, W.***, Quan, H., & Srinivasan, D. (2018). Parallel and reliable probabilistic load forecasting via quantile regression forest and quantile determination. *Energy* (JCR Q1, IF=8.857)
8. Gandhi, O., **Zhang, W.***, Kumar, D. S., Rodríguez-Gallegos, C. D., Yagli, G. M., Yang, D., ... & Srinivasan, D. (2024). The value of solar forecasts and the cost of their errors: A review. *Renewable and Sustainable Energy Reviews*, 189, 113915. (JCR Q1, IF=16.951, Corresponding author)
9. Wang, S., **Zhang, W.***, Sun, Y., Trivedi. A., & Srinivasan, D. (2024). Wind Power Forecasting in the Presence of Data Scarcity: A Very Short-Term Conditional Probabilistic Modeling Framework. *Energy* (JCR Q1, IF=8.857, Corresponding author, accepted)
10. Gandhi, O., Rodríguez-Gallegos, C. D., **Zhang, W.***, & Reindl, T., Srinivasan, D.(2022). Levelised Cost of PV Integration for Distribution Networks. *Renewable and Sustainable Energy Reviews* (JCR Q1, IF=16.951, Corresponding author)

11. Quan, H., Lv, L., Guo, J., **Zhang, W.*** (2021).Investigation of Spatial Correlation on Optimal Power Flow with High Penetration of Wind Power: A Comparative Study. *Applied Energy* (JCR Q1, IF=11.446, Corresponding author)

12. Gandhi, O., **Zhang, W.**,*, Rodríguez-Gallegos, C. D., Bieri, M., Reindl, T., & Srinivasan, D. (2022). Effects of 'Invisible' Energy Storage on Power System Operation. *Journal of Energy Storage* (JCR Q1, IF=8.907, Corresponding author)

13. Quan, H., Lv, L., **Zhang, W.***, & Wang. T. (2021). Spatial Correlation Modeling for Optimal Power Flow with Wind Power: Feasibility in Application of Superconductivity. *IEEE Transactions on Applied Superconductivity* (JCR Q3, IF=1.949, Corresponding author)

14. Li, Y., Chen, C., Yan, W., Cheng, Z., Tan, H. L., & **Zhang, W.** (2023). Cascade Graph Neural Networks for Few-Shot Learning on Point Clouds. *IEEE Transactions on Intelligent Transportation Systems*.

15. Gandhi, O., **Zhang, W.**, Rodríguez-Gallegos, C. D., Verbois, H., Sun H., Reindl, T., & Srinivasan, D. (2018). Local reactive power dispatch optimisation minimising global objectives. *Applied Energy*

16. Gandhi, O., **Zhang, W.**, Rodríguez-Gallegos, C. D., Bieri, M., Reindl, T., & Srinivasan, D. (2018). Analytical Approach to Reactive Power Dispatch and Energy Arbitrage in Distribution Systems with DERs. *IEEE Transactions on Power Systems*

17. Gandhi, O., Rodríguez-Gallegos, C. D., **Zhang, W.**, Srinivasan, D., & Reindl, T. (2018). Economic and technical analysis of reactive power provision from distributed energy resources in microgrids. *Applied Energy*

18. Utkarsh, K., Srinivasan, D., Trivedi, A., **Zhang, W.**, & Reindl, T. (2018). Distributed Model-predictive Real-time Optimal Operation of a Network of Smart Microgrids. *IEEE Transactions on Smart Grid*

19. Rodríguez-Gallegosa, C. D., Gandhia, O., Yangc, D., Alvarez-Alvaradod, M. S., **Zhang, W.**, Reindla, T., & Pandaa, S. K. (2018). A Siting and Sizing Optimization Approach for PV-Battery-Diesel Hybrid Systems. *IEEE Transactions on Industry Applications*

20. Quan, H., Zhang, W., **Zhang, W.**., Li, Z., & Zhou, T. (2023). An Interval Prediction Approach of Wind Power Based on Skip-GRU and Block-Bootstrap Techniques. *IEEE Transactions on Industry Applications*

Conference Publications

- Selected conference papers are shown.

1. **Zhang, W.**, Pritam, D., & Srinivasan, D. (2016). A vehicle-to-grid based reactive power dispatch approach using particle swarm optimization. Paper presented at the Evolutionary Computation (CEC), 2016 IEEE Congress on.

2. **Zhang, W.**, Quan, H., Gandhi, O., Rodríguez-Gallegos, C. D., Sharma, A., & Srinivasan, D. (2018). An ensemble machine learning based approach for constructing probabilistic PV generation forecasting. Paper presented at the Asia-Pacific Power and Energy Engineering Conference (APPEEC), 2017 IEEE PES.

3. **Zhang, W.**, Quan, H., Gandhi, O., Rodríguez-Gallegos, C. D., Srinivasan, D., & Weng, Y. (2018). Dynamic and fast electric vehicle charging coordinating scheme, considering V2G based var compensation. Paper presented at the 2017 IEEE Conference on Energy Internet and Energy System Integration (EI2).

4. **Zhang, W.**, Cheema, F., & Srinivasan, D. (2018, October). Forecasting of electricity prices using deep learning networks. In 2018 IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC) (pp. 451-456). IEEE.

5. **Zhang, W.**, Quan, H., & Srinivasan, D. (2018, May). Prediction Interval Construction for Electric Load and Wind Power via Machine Learning. In 2018 IEEE Innovative Smart Grid Technologies-Asia (ISGT Asia) (pp. 716-721). IEEE.

6. **Zhang, W.**, Quan, H., Gandhi, O., & Srinivasan, D. (2019, February). Reliable Photovoltaic Generation Forecasting via Quantile Determination. In 2019 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT) (pp. 1-5). IEEE.

7. Gandhi, O., **Zhang, W.**, Rodríguez-Gallegos, D., Carlos, Srinivasan, D., & Reindl, T. (2016). Continuous optimization of reactive power from PV and EV in distribution system. Paper presented at the Innovative Smart Grid Technologies-Asia (ISGT-Asia), 2016 IEEE.

8. Rodríguez-Gallegos, C. D., Alvarez-Alvarado, M. S., Gandhi, O., Yang, D., **Zhang, W.**, Reindl, T., & Panda, S. (2016). Placement and Sizing Optimization for PV-Battery-Diesel Hybrid Systems. Paper presented at the 4th IEEE International Conference on Sustainable Energy Technologies (ICSET 2016).

Academic Service

2017 08-2019 08	IEEE PES Singapore Student chapter, Chair
2018 05	The leader of student volunteer team in IEEE The International Conference on Innovative Smart Grid Technologies, Asia, 2018 (ISGT Asia 2018)

Honors and Awards

2015 08-2019 08	Singapore Government Scholarship
2014	National Outstanding Undergraduate and China Government Scholarship
2013	National Scholarship for Self-motivated Undergraduates
2012 12	Outstanding Prize in C Language Program Design Competition in the Science and Technology Festival (for 1/308 of competitors)
2012 11	China Ping'an Encouragement Scholarship