

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

- 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

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| 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

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| 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 |