

PUBLICATIONS

(*work substantially done as a graduate student, °co-authors who are undergraduate and graduate student advisees)

Journal Articles

- J24. **Zhang, L.**, Ford, V., Chen, Z., & Chen, J. (2024). Automatic building energy model development and debugging using large language models agentic workflow. *Energy and Buildings*, 115116. [Link]
- J23. **Zhang, L.**, Chen, Z., & Ford, V. (2024). Advancing building energy modeling with large language models: Exploration and case studies. *Energy and Buildings*, 323, 114788. [Link]
- J22. **Zhang, L.**, Kaufman, Z., & Leach, M. (2024). Physics-informed hybrid modeling methodology for building infiltration. *Energy and Buildings*, 320, 114580. [Link]
- J21. **Zhang, L.**, & Chen, Z. (2024). Large language model-based interpretable machine learning control in building energy systems. *Energy and Buildings*, 313, 114278. [Link]
- J20. Jiang, G., Ma, Z., **Zhang, L.**, & Chen, J. (2024). EPlus-LLM: A large language model-based computing platform for automated building energy modeling. *Applied Energy*, 367, 123431. [Link]
- J19. **Zhang, L.**, Leach, M., Chen, J., & Hu, Y. (2023). Sensor cost-effectiveness analysis for data-driven fault detection and diagnostics in commercial buildings. *Energy*, 263, 125577. [Link]
- J18. **Zhang, L.**, Chen, Z., Zhang, X., Pertzborn, A., & Jin, X. (2023, June). Challenges and opportunities of machine learning control in building operations. In *Building Simulation* (Vol. 16, No. 6, pp. 831-852). Beijing: Tsinghua University Press. [Link]
- J17. **Zhang, L.**, & Leach, M. (2022, May). Evaluate the impact of sensor accuracy on model performance in data-driven building fault detection and diagnostics using Monte Carlo simulation. In *Building Simulation* (Vol. 15, No. 5, pp. 769-778). Beijing: Tsinghua University Press. [Link]
- J16. Chen, J., **Zhang, L.**, Li, Y., Shi, Y., Gao, X., & Hu, Y. (2022). A review of computing-based automated fault detection and diagnosis of heating, ventilation and air conditioning systems. *Renewable and Sustainable Energy Reviews*, 161, 112395. [Link]
- J15. **Zhang, L.**, Wen, J., Li, Y., Chen, J., Ye, Y., Fu, Y., & Livingood, W. (2021). A review of machine learning in building load prediction. *Applied Energy*, 285, 116452. [Link]
- J14. **Zhang, L.**, Plathottam, S., Reyna, J., Merket, N., Sayers, K., Yang, X., . . . & Muehleisen, R. (2021). High-resolution hourly surrogate modeling framework for physics-based large-scale building stock modeling. *Sustainable Cities and Society*, 75, 103292. [Link]
- J13. **Zhang, L.**, & Wen, J. (2021). Active learning strategy for high fidelity short-term data-driven building energy forecasting. *Energy and Buildings*, 244, 111026. [Link]
- J12. **Zhang, L.** (2021). Data-driven building energy modeling with feature selection and active learning for data predictive control. *Energy and Buildings*, 252, 111436. [Link]
- J11. **Zhang, L.**, Leach, M., Bae, Y., Cui, B., Bhattacharya, S., Lee, S., . . . & Kuruganti, T. (2021). Sensor impact evaluation and verification for fault detection and diagnostics in building energy systems: A review. *Advances in Applied Energy*, 3, 100055. [Link]
- J10. Li, Y., O'Neill, Z., **Zhang, L.**, Chen, J., Im, P., & DeGraw, J. (2021). Grey-box modeling and application for building energy simulations-A critical review. *Renewable and Sustainable Energy Reviews*, 146, 111174. [Link]
- J09. Bae, Y., Bhattacharya, S., Cui, B., Lee, S., Li, Y., **Zhang, L.**, . . . & Kuruganti, T. (2021). Sensor impacts on building and HVAC controls: A critical review for building energy performance. *Advances in Applied Energy*, 4, 100068. [Link]
- J08. **Zhang, L.**, Frank, S., Kim, J., Jin, X., & Leach, M. (2020). A systematic feature extraction and selection framework for data-driven whole-building automated fault detection and diagnostics in commercial buildings. *Building and Environment*, 186, 107338. [Link]

- J07. **Zhang, L.** (2020). A Pattern-Recognition-Based Ensemble Data Imputation Framework for Sensors from Building Energy Systems. *Sensors*, 20(20), 5947. [Link]
- J06. **Zhang, L.**, Alahmad, M., & Wen, J. (2021). Comparison of time-frequency-analysis techniques applied in building energy data noise cancellation for building load forecasting: A real-building case study. *Energy and Buildings*, 231, 110592. [Link]
- J05. Bianchi, C., **Zhang, L.**, Goldwasser, D., Parker, A., & Horsey, H. (2020). Modeling occupancy-driven building loads for large and diversified building stocks through the use of parametric schedules. *Applied Energy*, 276, 115470. [Link]
- J04. **Zhang, L.**, & Wen, J. (2019). *A systematic feature selection procedure for short-term data-driven building energy forecasting model development. *Energy and Buildings*, 183, 428-442. [Link]
- J03. **Zhang, L.**, Xu, P., Mao, J., Tang, X., Li, Z., & Shi, J. (2015). *A low-cost seasonal solar soil heat storage system for greenhouse heating: Design and pilot study. *Applied Energy*, 156, 213-222. [Link]
- J02. **Zhang, L.**, & Xu, P. (2014). *Evaluation Index of Thermal Environment in Data Center: a Review. *Building Energy Efficiency*, 6, 92-100. [Link]
- J01. **Zhang, L.**, & Xu, P. (2014). *CFD Model Establishment of Under-floor Air Distribution and IT Equipment Heat Dissipation of Data Center. *Building Energy Efficiency*, 8, 16-17. [Link]

Conference Papers

- C13. **Zhang, L.** An Open-Source Large Language Model-Based Agent Library for Building Energy Analysis and Modeling, in *2025 ASHRAE Winter Conference*: February 8-12, 2025, Orlando, Florida, U.S.
- C12. °Khadka, S., & **Zhang, L.** Scaling Data-Driven Building Energy Modelling using Large Language Models, in *2024 ASHRAE Annual Conference*: June 22-26, 2024, Indianapolis, Indiana, U.S.
- C11. **Zhang, L.**, Chen, Z., Ford, V., & Xu, P. Advancing Building Energy Modeling with Large Language Models: Exploration and Case Studies, in *IBPSA-USA SimBuild 2024 Conference*: May 21-23, 2024, Denver, Colorado, U.S.
- C10. **Zhang, L.**, °Khadka, S., & Chen, Z. Interpretable Machine Learning Control in Building Energy Systems, in *2024 ASHRAE Winter Conference*: January 20-24, 2024, Chicago, Illinois, U.S.
- C09. Sharma, A., Li, X., Guan, H., Sun, G., **Zhang, L.**, Wang, L., . . . & Zou, J. (2023, December). Automatic Data Transformation Using Large Language Model-An Experimental Study on Building Energy Data. In *2023 IEEE International Conference on Big Data (BigData)* (pp. 1824-1834). IEEE.
- C08. **Zhang, L.**, & Leach, M. Sensor Cost-Effectiveness Analysis for Data-Driven Fault Detection and Diagnostics in Commercial Buildings, in *2022 ASHRAE Annual Conference*: June 25-29, 2022, Toronto, Ontario, Canada.
- C07. **Zhang, L.**, & Wen, J. *Application of Active Learning in Short-term Data-driven Building Energy Modeling, in *2018 International High Performance Buildings Conference*; July 9-12, 2018, West Lafayette, Indiana, U.S.
- C06. **Zhang, L.**, Wen, J., & Chen, Y. *Systematic Feature Selection Process Applied in Short-Term Data-Driven Building Energy Forecasting Models: A Case Study of a Campus Building, in *2017 ASME Dynamic Systems and Control Conference*; Oct. 11-13, 2017, Tysons, Virginia, U.S.
- C05. **Zhang, L.**, & Wen, J. *A Systematic Feature Selection Procedure for Data-driven Building Energy Forecasting Model Development, in *2017 ASHRAE Annual Conference*; June 24-28, 2017, Long Beach, California, U.S.
- C04. **Zhang, L.**, Wen, J., Cui, C., Li, X., & Wu, T. *Experiment Design and Training Data Quality of Inverse Model for Short-term Building Energy Forecasting, in *2016 International High Performance Buildings Conference*; July 11-14, 2016, West Lafayette, Indiana, U.S.

- C03. **Zhang, L.**, Xu, P., Mao, J., & Tang, X. *Design and Application of a Seasonal Solar Soil Heat Storage System Applied in Greenhouse Heating, in *2014 International Conference on Renewable Energy and Environmental Technology*; Aug. 19-20, 2014, Dalian, China.
- C02. **Zhang, L.**, Xu, P., & Li, Z. *Relationship between Energy Consumption and Service Level: A Survey of Grade-A Office Buildings in Shanghai, in *3rd International Conference on Energy and Environmental Protection*; April 26-28, 2014, Xi'an, China.
- C01. **Zhang, L.**, Xu, X., & Xu, P. *EnergyPlus Reference Building Modeling in China and Adaptability of Energy-saving Technologies in Buildings, in *1st IBPSA Asian Conference*; Nov. 25-27, 2012, Shanghai, China.

Open-Access Archive

- O04. **Zhang, L.**, Ford, V., Chen, Z., & Chen, J. Automatic Building Energy Model Development and Debugging Using Large Language Models Agentic Workflow. *Available at SSRN* 4864703.
- O03. **Zhang, L.**, & Chen, Z. (2023). Opportunities and Challenges of Applying Large Language Models in Building Energy Efficiency and Decarbonization Studies: An Exploratory Overview. *arXiv preprint arXiv:2312.11701*.
- O02. **Zhang, L.**, Chen, J., & Zou, J. (2023). Taxonomy, Semantic Data Schema, and Schema Alignment for Open Data in Urban Building Energy Modeling. *arXiv preprint arXiv:2311.08535*.
- O01. **Zhang, L.**, Haroon, S. M., & Ryan, A. Py-Cosim: Python-Based Building Energy Co-Simulation Infrastructure. *Available at SSRN* 4572925.

National Laboratory Technical Reports

- T08. Wilson, E., . . . **Zhang, L.**, . . . & Li, Q. (2022). End-Use Load Profiles for the US Building Stock: Methodology and Results of Model Calibration, Validation, and Uncertainty Quantification (No. NREL/TP-5500-80889). *National Renewable Energy Lab. (NREL)*, Golden, CO (United States). [Link]
- T07. Li, Y., Bhattacharya, S., **Zhang, L.**, Yoon, Y., Bae, Y., Im, P., . . . & Leach, M. (2022). Sensor Impact Evaluation and Verification Technical Advisory Group Meeting Minutes (No. ORNL/TM-2022/2435). *Oak Ridge National Lab. (ORNL)*, Oak Ridge, TN (United States). [Link]
- T06. Wilson, E., . . . **Zhang, L.**, . . . & Li, Q. (2021). End-use load profiles for the US building stock (No. 4520). *DOE Open Energy Data Initiative (OEDI)*; *National Renewable Energy Laboratory (NREL)*. [Link]
- T05. Frank, S., Petersen, A., Mishra, S., Kim, J., **Zhang, L.**, Eslinger, H., & Buechler, R. (2020). Wattile: Probabilistic Deep Learning-based Forecasting of Building Energy Consumption [SWR-20-94] (No. Wattile). *National Renewable Energy Laboratory (NREL)*, Golden, CO (United States). [Link]
- T04. Bae, Y., . . . **Zhang, L.**, . . . & Kuruganti, T. (2020). Sensor Impact on Building Controls and Automatic Fault Detection and Diagnosis (AFDD) (No. ORNL/LTR-2020/1). *Oak Ridge National Lab. (ORNL)*, Oak Ridge, TN (U.S.). [Link]
- T03. Im, P., . . . **Zhang, L.**, & Leach, M. (2020). Sensor Impacts Evaluation and Verification: Expert Interview Responses. (No. ORNL/TM-2020/1636). *Oak Ridge National Lab. (ORNL)*, Oak Ridge, TN (U.S.). [Link]
- T02. Im, P., . . . **Zhang, L.**, & Leach, M. (2020). Literature Review for Sensor Impact Evaluation and Verification Use Cases-Building Controls and Fault Detection and Diagnosis (FDD) (No. ORNL/LTR-2020/23). *Oak Ridge National Lab. (ORNL)*, Oak Ridge, TN (U.S.). [Link]
- T01. Frank, S. M., . . . **Zhang, L.**, & Granderson, J. (2019). Metrics and Methods to Assess Building Fault Detection and Diagnosis Tools (No. NREL/TP-5500-72801). *National Renewable Energy Lab. (NREL)*, Golden, CO (U.S.). [Link]

Patent and Software

- S03. Horsey, H., ... **Zhang, L.**, ... & USDOE Laboratory Directed Research and Development. (2024, April 4). ComStock™ 2024 Release 1 [SWR-19-33 and SWR-20-32] (Version 2024 Release 1) [Computer software]. <https://www.osti.gov//servlets/purl/2341743>. <https://doi.org/10.11578/dc.20240426.1>
- S02. **Zhang, L.** & Wen, J. (2021). Active Learning for Building Load Prediction. EPRI licensed code.
- S01. Horsey, H., ... **Zhang, L.**, ... & USDOE Office of Energy Efficiency and Renewable Energy. (2020, October 18). ComStock™ [SWR-19-33 and SWR-20-32] [Computer software]. <https://www.osti.gov//servlets/purl/1817851>. <https://doi.org/10.11578/dc.20210830.5>
- P01. Xu, P., **Zhang, L.**, Shi, J., Sha, H., & Chen, L. (2016). Seasonal Solar Soil Heat Storage System Applied in Greenhouse Heating. Patent No. CN103782846 B.

Manuscripts Under Review

- U03. **Zhang, L.**, Ford, V., Chen, Z., & Chen, J. Automatic Building Energy Model Development and Debugging Using Large Language Models Agentic Workflow, revision under review, *Energy and Buildings*
- U02. **Zhang, L.**. Large Language Model-Based Agent Schema and Library for Building Energy Analysis and Modeling, submission under review, *Journal of Building Engineering*
- U01. °Khadka, S., **Zhang, L.**, Sharif, S., & °Fu, X. Scaling Data-Driven Building Energy Modeling Using Large Language Models: Prompt Engineering and Agentic Workflow, submission under review, *Energy and Buildings*