

Gang Jiang

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RESEARCH INTERESTS

AI4Building, LLM in Building, Scientific-Machine Learning, Urban/Building Modeling

EDUCATION

- **The University of Utah** Salt Lake City, UT, USA
Ph.D. in Civil Engineering Aug. 2022 – Jul. 2026
- **Tianjin University** Tianjin, China
M.Sc. in Architecture & Building Sciences; With Honor Aug. 2019 – Jul. 2022
- **Yancheng Institute of Technology** Yancheng, Jiangsu, China
B.Sc. Heating, Ventilation, & Air Conditioning; With Honor Aug. 2015 – Jul. 2019

EXPERIENCE & PROJECTS

- **The University of Utah** Salt Lake City, UT
Research Assistant Aug. 2022 - Present
 - **US-NSF #2311685:** (Principal researcher) Developed a **natural language-driven auto-building modeling platform (EPlus-LLM)** by integrating a large language model with physics-based simulation.
 - **US-NSF #2318720:** (Main researcher) Conducted **co-simulations of thermo-responsive desiccants** for building dehumidification and decarbonization using EnergyPlus, Modelica, and Ansys.
 - **Global Change & Sustainability Center:** (Principal researcher) Developed a **high-fidelity** building modeling and calibration framework that integrates an **enhanced Bayesian inference method** with a **deep-learning-based high-resolution surrogate model**, facilitating the development of Digital Twins for real-time building and HVAC monitoring.
 - **US-Utah-DOT #24-8342:** (Principal researcher) Designed a **scalable Vision-AI tool** for automated road condition assessment.
 - **US-Utah-DOT #24-8332:** (Main researcher) Developed an **advanced volumetric measurement system** for salt piles using **photogrammetry, LiDAR, and depth cameras**.
- **Tianjin University** Tianjin, China
Research Assistant Aug. 2019 - Jul. 2022
 - **China-NSFs:** Developed **fault detection & diagnosis** methods for building systems with **incomplete data**, **integrating Modelica simulations with machine learning** to enhance accuracy and robustness.
 - **Industry Projects:** Conducted research on building energy efficiency and management, focusing on **optimizing energy consumption and sustainability strategies**.
- **Amazon Web Services (AWS)** Beijing, China
Intern Jun. 2021 and Dec. 2021
 - **Data Center Design:** Assisted in **planning and optimizing** data center infrastructure, including local generators, uninterruptible power supplies (UPS), power distribution, cooling systems, and network architecture to enhance **resilience and scalability**.
 - **Data Center Operation:** Contributed to improving **energy efficiency and fault detection** in data centers through **operational optimizations and system monitoring**.

PUBLICATIONS

- [1] Z. Ma, G. Jiang, Y. Hu, J. Chen. A Review of Physics-Informed Machine Learning for Building Energy Modeling. *Applied Energy*, 2025.
- [2] G. Jiang, Z. Ma, L. Zhang, J. Chen. Prompt Engineering to Inform Large Language Models in Automated Building Energy Modeling. *Energy*, 2025.
- [3] Z. Ma, G. Jiang, J. Chen. Physics-Informed Ensemble Learning with Residual Modeling for Enhanced Building Energy Prediction. *Energy and Buildings*, 2024.
- [4] G. Jiang, Y. Chen, Z. Wang, K. Powell, B. Billings, J. Chen. A Deep Learning-Based Bayesian Framework for High-Resolution Calibration of Building Energy Models. *Energy and Buildings*, 2024.
- [5] G. Jiang, Z. Ma, L. Zhang, J. Chen. EPlus-LLM: A Large Language Model-Based Computing Platform for Automated Building Energy Modeling. *Applied Energy*, 2024.
- [6] G. Jiang, L. Zhang, J. Chen. EPlus-LLM: A Novel Automated Building Simulation Platform Using Natural Language Processing. *ASHRAE Annual Conference*, 2024.

WORKSHOP & CONFERENCE PRESENTATIONS

- **ASHRAE Annual:** Jun. 2024 – Oral Presentation
- **GCSC Environment and Sustainability Research Symposium:** Feb. 2023 – Poster

PROGRAMMING SKILLS

- **Languages:** Python, Pytorch, Javascript
- **Technologies:** High-Performance Computing on Linux, Fine-Tuning & Prompt Engineering for LLMs, Retriever-Augmented Generation, Scientific-Machine Learning, Building Energy Modeling & Calibration, Fault Detection & Diagnosis
- **Software:** EnergyPlus, SketchUp, Matlab, Dymola (Modelica)