

## Gang Jiang

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### RESEARCH INTERESTS

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AI4Building, LLM in Building, Scientific-Machine Learning, Building Energy Modeling & Calibration

### EDUCATION

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- **The University of Utah** Salt Lake City, UT, USA  
*Ph.D. in Construction; GPA: 3.8* Aug. 2022 – Jul. 2026
- **Tianjin University** Tianjin, China  
*M.Sc. in Smart Building; GPA: 3.6* Aug. 2019 – Jul. 2022
- **Yancheng Institute of Technology** Yancheng, Jiangsu, China  
*B.Sc. Heating, Ventilation, and Air Conditioning; GPA: 3.0* Aug. 2015 – Jul. 2019

### EXPERIENCE & PROJECTS

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- **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

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- [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

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

#### PROGRAMMING SKILLS

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- **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)