

MINGYUE GUO

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EDUCATION

Texas A&M University, Texas, U.S.

January 2023 - present

Ph.D. candidate in Mechanical Engineering

GPA 4.0/4.0

- **Dissertation:** Developing practical learning-based controls for building energy systems
- **Advisor:** Dr. Zheng O'Neill, PhD, PE, FASHRAE, FIBPSA

Tongji University, Shanghai, China

September 2019 - March 2022

M.S. in HVAC & gas engineering

overall GPA 4.37/5

- **Thesis:** A hybrid energy consumption prediction model for office buildings based on heterogeneous data
- **Advisor:** Peng Xu, PhD, PE, MBA, FIBPSA

Chongqing University, Chongqing, China

September 2015 - June 2019

B.E. in Built Environment; minor in Business Administration

GPA 3.69/4; rank:2/113

- **Thesis:** Preliminary Study on the automatic design of HVAC system based on BIM
- **Supervisor:** Nan Li, Peng Xu

PROFESSIONAL EXPERIENCE

Research Assistant Texas A&M University

2023 - present

mentor(s): Zheng O'Neill

Specializing in occupancy-centric control, large-scale energy data analysis, and learning-based optimization for efficient energy management.

Machine Learning Research Intern Hewlett Packard Enterprise

May - Aug. 2025

mentor(s): Soumyendu Sarkar, Avishek Naug

Developed reinforcement learning control for data center liquid cooling systems.

Graduate Research Intern Oak Ridge National Laboratory

Jun. - Aug. 2024

mentor(s): Sen Huang, Jamie (Jianming) Lian

Developed control-oriented models and conducted field testing for model-predictive control strategies to optimize energy costs in a grid-interactive commercial building while maintaining thermal comfort.

Research Assistant Hong Kong University of Science and Technology

Sep. - Dec. 2022

Conducted research on implementing model predictive control to optimize the heating, ventilation, and air conditioning (HVAC) system of a commercial building.

Research Assistant Tongji University

Sep. 2019 - Mar. 2022

mentor(s): Peng Xu

Developed a hybrid energy prediction model.

Conducted research on automatic BIM to BEM and HVAC system sizing.

Assistant Designer CMCU Engineering Co. Ltd. Chongqing, China

Jul. - Aug. 2017

Assisted in the design of the HVAC system for a high-rise residential building in Guizhou, China.

SELECTED RESEARCH PROJECTS

Large-Scale Smart Meter Data Analysis

May 2024 - present

Funded by Texas A&M University

- Data cleaning for real-world smart meter data from over 2 million consumers in the Greater Houston Area, Texas.
- Analyzed the energy resilience in a changing climate till 2090 by developing data-driven models.
- Correlated electricity consumption with demographic factors and tree canopy.

An Integrated Approach to Modeling, Decision-Making and Control for Energy Efficient Manufacturing

Sep. 2023 - Aug. 2026

Funded by National Science Foundation (NSF), lead graduate researcher in TAMU

- Developed and validated control-oriented models for the HVAC systems of semiconductor cleanrooms.
- Design and implement a decision-making and adaptive control for AHUs

Quantification of HVAC Energy Savings for Occupancy Sensing in Buildings Through an Innovative Testing Methodology

Jan. 2023 - Aug. 2024

Funded by Advanced Research Projects Agency-Energy (ARPA-E), research assistant in TAMU

- Analyzed the sensor accuracy, energy savings, and thermal comfort in three field tests.
- Extracted typical occupancy schedule through field-measured data using the K-means clustering algorithm.
- Develop a data-driven model to qualify the HVAC energy savings under different weather conditions, occupancy schedules, and HVAC control strategies.

Development and Validation of Smart Building Technology Modules for Academic and Professional Education

Jan. 2023 - Dec. 2025

Funded by U.S. Department of Energy (DOE), research assistant in TAMU

- Polished and proofread the educational modules

Target-controlled Feedforward Management Technology for Green Buildings

2019 - 2021

Funded by the "13th Five-Year Plan" Key Research Program, China; research assistant in Tongji Univ.

- Developed an automatic tool to convert BIM (Building Information Modeling) in Revit to BEM (Building Energy Modeling) in EnergyPlus through an intermediate gbXML file.
- Enabled automatic gbXML check and IDF enrichment to ensure the success of the BIM to BEM conversion.

Automatic HVAC design

2020 - 2021

Funded by Tongji University Architectural Design Institute Co., Ltd.; research assistant in Tongji Univ.

- Developed an automatic configuration tool for the AHU, FCU, and chiller sizing in Python

JOURNAL PUBLICATIONS

Equal Contribution.

- (1) **M. Guo**, Z. O'Neill, Z. Yang, J. Wen, W. Sun, Cleanroom environmental control systems: review of research landscape and control strategies, *Energy and Buildings* 365 (2026) 117639. <https://doi.org/10.1016/j.enbuild.2026.117639>.
- (2) Z. Pang[#], **M. Guo**[#], Z. O'Neill, B. Smith-Cortez, Z. Yang, B. Dong, A longitudinal field study of sensor-driven occupancy-centric HVAC controls in an office building, *Energy and Buildings* 351 (2026) 116693. <https://doi.org/10.1016/j.enbuild.2025.116693>.
- (3) **M. Guo**, Y. Choi, S.-M. Cheong, Z. O'Neill, Current and Future Residential Electricity Demand Using Large-Scale Smart Meter Data in a Changing Climate, *Sustainable Cities and Society* (2025) 106623. <https://doi.org/10.1016/j.scs.2025.106623>.

- (4) **M. Guo**, B. Liu, S. Huang, J. Dong, J. Lian, Z. O'Neill, Deploying advanced supervisory control strategies to small- and medium-sized commercial buildings: Case study and lessons learned, *Energy and Buildings* (2025) 115710. <https://doi.org/10.1016/j.enbuild.2025.115710>.
- (5) Z. Pang, **M. Guo**, Z. O'Neill, B. Smith-Cortez, Z. Yang, M. Liu, B. Dong, Long-Term field testing of the accuracy and HVAC energy savings potential of occupancy presence sensors in A Single-Family home, *Energy and Buildings* 328 (2025) 115161. <https://doi.org/10.1016/j.enbuild.2024.115161>.
- (6) **M. Guo**, B. Smith-Cortez, Z. O'Neill, T. Firsich, Z. Yang, Exploring and field-demonstrating geofence-based occupancy-centric control in residential buildings, *Energy and Buildings* 320 (2024) 114595. <https://doi.org/10.1016/j.enbuild.2024.114595>.
- (7) M. Liu, **M. Guo**, Y. Fu, Z. O'Neill, Y. Gao, Expert-guided imitation learning for energy management: Evaluating GAIL's performance in building control applications, *Appl. Energy* 372 (2024) 123753. <https://doi.org/10.1016/j.apenergy.2024.123753>.
- (8) Z. Pang, **M. Guo**, B. Smith-Cortez, Z. O'Neill, Z. Yang, M. Liu, B. Dong, Quantification of HVAC energy savings through occupancy presence sensors in an apartment setting: Field testing and inverse modeling approach, *Energy and Buildings*. 302 (2024) 113752. <https://doi.org/10.1016/j.enbuild.2023.113752>.
- (9) D. Wang, M. Li, **M. Guo**, Q. Shi, C. Zheng, D. Li, S. Li, Z. Wang, Modelling variable refrigerant flow system for control purpose, *Energy and Buildings*. 292 (2023) 113163. <https://doi.org/10.1016/j.enbuild.2023.113163>.
- (10) H. Zhong, **M. Guo**, Y. Wang, Z. Wang, Quantify the magnitude and energy impact of overcooling in a sub-tropical campus building, *Build. Environ.* (2023) 110033. <https://doi.org/10.1016/j.buildenv.2023.110033>.
- (11) Y. Chen, **M. Guo**, Z. Chen, Z. Chen, Y. Ji, Physical energy and data-driven models in building energy prediction: A review, *Energy Rep.* 8 (2022) 2656–2671. <https://doi.org/10.1016/j.egyr.2022.01.162>. [Highly Cited Paper]
- (12) **M. Guo**, P. Xu, T. Xiao, R. He, M. Dai, S.L. Miller, Review and comparison of HVAC operation guidelines in different countries during the COVID-19 pandemic, *Build. Environ.* 187 (2021) 107368. <https://doi.org/10.1016/j.buildenv.2020.107368>. [Highly Cited Paper]

CONFERENCE PAPERS

- (1) H.H. Ghoneim, **M. Guo**, Z. Yang, Z. O'Neill, Assessing Room-Level Thermal Variation in a Single-Family Home Through a Long-Term Thermostat Reference and Temperature Distribution Analysis, 2026 ASHRAE Winter Conference, Las Vegas, United States, Jan. 31-Feb. 4, 2026. <https://doi.org/10.63044/w26gho24>.
- (2) L. Pinheiro, **M. Guo**, Z. Wang, Z. Pang, Z. O'Neill, X. Lu, Uncertainty Quantification of Occupancy Sensor Errors on Energy Savings and Thermal Comfort in Residential Homes, 2026 ASHRAE Winter Conference, Las Vegas, United States, Jan. 31-Feb. 4, 2026.
- (3) **M. Guo**, Z. Pang, Z. O'Neill, B. Smith-Cortez, Z. Yang, B. Dong, Long-Term Field Testing of Occupant Counting Sensors and Occupancy-Centric HVAC Controls in an Office Building, 2025 ASHRAE Winter Conference, Orlando, United States, February 8-12, 2025.
- (4) L. Pinheiro, **M. Guo**, Z. Pang, Z. O'Neill, Quantifying Energy Savings of Occupancy-Centric HVAC Controls Utilizing Longitudinal Occupancy Sensing Data and Calibrated Energy Simulations, 2025 ASHRAE Winter Conference, Orlando, United States, February 8-12, 2025.

- (5) **M. Guo**, Y. Fu, M. Liu, Z. O'Neill, Investigations on the Influence of Model Accuracy in Deep Reinforcement Learning Control for HVAC Application, 2024 ASHRAE Winter Conference, Chicago, United States, January 20-24, 2024.
- (6) **M. Guo**, P. Xu, H. Wang, J. Gu, Z. Chen, Building energy modelling based on building information modelling: the remaining problems and a more robust method, In Proceedings of the 18th International Building Simulation Conference of IBPSA, Shanghai, China, September 4-6, 2023: pp. 1022–1030. <https://doi.org/10.26868/25222708.2023.1412>

POSTERS AND INVITED PRESENTATION

- (1) **M. Guo**, S.-M. Cheong, Z. O'Neill, Engineering and Policy Insight into Residential Electricity Demand Resilience in a Changing Climate: Evidence from Large-Scale Smart Meter Data, oral presentation in Texas A&M Conference on Energy, College Station, United States, September 25, 2025.
- (2) **M. Guo**, Z. O'Neill, Z. Yang, C. Chang, An Integrated Approach to Modeling, Decision-making, and Control for Energy Efficient Manufacturing, poster presentation in 2025 Texas HSRUs and HSIs: STEAM Research showcase, College Station, United States, September 11, 2025.
- (3) **M. Guo**, Z. O'Neill, S. Cheong, Characterizing Residential Electricity Consumption in Harris County: Key Patterns and Demographic Influences, poster presentation in 2024 Texas Energy Summit, Austin, United States, November 19-21, 2024.
- (4) **M. Guo**, Z. Pang, Z. O'Neill, Prediction of Occupant Number and Identification of Occupant Behaviors via Learning Algorithms – A Case Study in a Small Office Building. Seminar in Proceedings of the 2023 ASHRAE Annual Conference, Tampa, U.S., June 24-28, 2023.

HONORS AND AWARDS

2025	J. Mike Walker '66 Impact Award in Mechanical Engineering, TAMU	
2025	Melbern G. Glasscock '59 Endowed Graduate Fellowship in Mechanical Engineering, TAMU	
2025	ASHRAE Graduate Grant-in-Aid Award	
2024	Brenda and Jerry Gray '62 Fellowship in Mechanical Engineering, TAMU	
2024-2025	Graduate Travel Award from Department of Mechanical Engineering	
2022	Outstanding Graduate of Shanghai Municipality	1%
2021	Outstanding Students, Tongji University	2%
2021	National Scholarship, Ministry of Education of the People's Republic of China	0.2%
2020	3 rd prize of Yada Scholarship, Tongji University	
2019	Outstanding Graduate of Chongqing Municipality	1%
2017-2019	National Encouragement Scholarship for 3 times, Chongqing University	5%
2018	Outstanding Students, Chongqing University	5%
2017	Excellent League Member, Chongqing University	5%

PATENT AND SOFTWARE COPYRIGHT

- (1) **M. Guo**, H. Yuan, Y. Zhang, X. Huang, The utility model relates to a flue gas heat recovery device for a gas cooker used in a hot pot restaurant, patent number: ZL 2018 2 0650326.2
- (2) P. Xu, **M. Guo**, R. He, Z. Chen, Z. Chen, Y. Chen, A pipeline well location optimization algorithm, patent number: ZL 2020 1 1074593.8
- (3) **M. Guo**, M. Guo, P. Xu, H. Wang, J. Gu, Software to transfer Building information modelling(BIM) to Building Energy Modelling(BEM), software registration number: 7329423

COMPETITION AWARDS

Global AI competition

March 2022

Organizer: the Electrical and Mechanical Services Department (EMSD) of the Government of Hong Kong Special Administrative Region (HKSAR) and the Guangdong Provincial Association for Science and Technology

- **AWARD: Best use of Tencent cloud award, Huawei most innovative use of data award and Gold award** (Team leader, top 1 in the leaderboard)
- Description: Predict hourly cooling load of the next three months with historical data in about previous a year and a half.

IFLYTEK A.I. Developer Competition: Demand Strategy Optimization Based on Flexible Load

June to October 2022

Organizer: Sun Power

- **AWARD: The First Place** (First author, First prize)
- Description: Rearrange the flexible load and battery schedule for 5 months in 5-minute intervals to reduce the electricity cost.

PROFESSIONAL SOCIETIES AND SERVICE

- Officer of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) TAMU Student Branch, Fall 2023 - Spring 2025.
- Student Member of ASHRAE and ASHRAE Texas A&M Student Chapter member, 2023 till now.
- Reviewer of *Science and Technology for the Built Environment* journal and ASHRAE conference paper, 2023 till now.

REFERENCES

Available upon request

Last Updated: Jul., 2026