MINGYUE GUO

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EDUCATION

Texas A&M University, Texas, U.S. January 2023 -
Ph.D. student in Mechanical Engineering

· Supervisor: Zheng O'Neill

Tongji University, Shanghai,China September 2019 - March 2022
M.S. in HVAC & gas engineering *overall GPA 4.37/5*

· Thesis: Hybrid energy consumption prediction model for office buildings based on multi-source heterogeneous data
· Supervisor: Peng Xu

Chongqing University,Chongqing,China September 2015 - June 2019
B.E. in Built Environment; minor in Business Administration *overall 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

Assistant Designer CMCU Engineering Co. Ltd. Chongqing,China *July-August 2017*
Participated in the design of smoke prevention and exhaust system of a residential building in Guizhou, China.

HONORS AND AWARDS

2022	Best use of Tencent cloud, Huawei most innovative use of data and Gold award of Global AI Chanllenge Competition	
2022	Outstanding Graduate of Shanghai Municipality	1%
2021	Outstanding Students, Tongji Univesity	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%
2019	Outstanding Graduate of Chongqing University	5%
2019	National Encouragement Scholarship, Chongqing University	5%
2018	Outstanding Students, Chongqing University	5%
2018	National Encouragement Scholarship, Chongqing University	5%
2017	National Encouragement Scholarship, Chongqing University	5%
2017	Excellent League Member, Chongqing University	5%

AI 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, top 1 in the leaderboard of preliminary contest - 响你所响)

· Description: Rearrange the flexible load and battery schedule for 5 months in 5 minutes intervals to reduce the electricity cost.

PUBLICATIONS

(1) **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. **(SCI, Highly Cited Papers)**

(2) Y. Chen, **M. Guo**, Z. Chen, Z. Chen, and Y. Ji, Physical energy and data-driven models in building energy prediction: A review, Energy Reports. 8 (2022) 2656–2671.**(SCI)**

(3) H. Zhong, **M. Guo**, Y. Wang, Z. Wang, Quantify the magnitude and energy impact of overcooling in a sub-tropical campus building, Building and Environment. (2023) 110033.**(SCI)**

(4) **M. Guo**, P. Xu, H. Wang, Building energy modelling based on building information modelling: the remaining problems and a more robust method (In the manuscript. Accepted by the 17th International IBPSA conference but withdrew because of COVID-19)

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

RESEARCH EXPERIENCE

Hybrid energy consumption prediction model for office buildings based on multi-source heterogeneous data October 2020 - March 2022

Thesis for master's degree

· Extract key variables that affect the energy consumption of office buildings using sensitivity analysis methods.

· Integrate multi-source heterogeneous data of energy consumption including hourly data from metering systems, monthly data from electricity bills, and simulation data.

· Build a hybrid data-driven energy consumption prediction model using statistical and machine learning methods.

The national "13th Five-Year Plan" key research program – Target-controlled feedforward operation management technology for green buildings(2018YFC0705903) 2019-2021

Major participator, engaged in BIM to BEM part independently

· Check and modify the original BIM and the intermediate file (gbXML) to ensure the success of the BIM to BEM (Building Energy Modelling) transmission.

· Convert BIM to BEM automatically based on gbXML.
· Enrich the BEM converted from BIM by using an external database.

Research on Automation of HVAC Design 2019-2021
Participator

· In cooperation with Tongji Architectural Design(Group) Co., Ltd.
· Developed an automatic configuration tool for the selection of fan coil, outdoor air unit, and variable air volume(VAV) system by python

Undergraduate students' innovation and entrepreneurship training program of Chongqing – The waste heat recovery device for civil gas stove 2017-2018
Teamwork, as team leader

· Design a gas to water heat exchanger and a collector that can collect flue gas of stove without impairing combustion.
· The heat recovery efficiency of the device was measured and evaluated through experiments.

ENGINEERING EXPERIENCE

DiditalFutures workshop – optimization of environmentally adaptive BIPV modular building form June 2021
Teamwork, as team leader

· Simulate the PV power generation, building energy consumption, and the outdoor environmental indexes (wind speed and UTCI) of the parametrically generated BIPV building.
· Train data-driving model (datasets: simulation data) with machine learning methods (light GBM, SVR and ANN) to quickly obtain building performance indexes.
· Carry out the multi-objective optimization of building form by using the genetic algorithm.

A VAV control system for virtual terminals with Johnson control 2019
Teamwork

· Simulate VAV system (including VAV boxes, coils, fans, mixing boxes, duct system) of two rooms by MATLAB.
· Formulate control logic of VAV system using NCE controller offered by Jonson Control.
· Connect NCE controller (hardware) and VAV system (virtual terminal) by Raspberry Pi and python.

COMPUTER SKILLS

Programming	Python, C#, C
Protocols & APIs	gbXML, Revit SDK
Simulation	EnergyPlus. Fluent. Dymola
Modeling	AutoCAD, Revit, Sketchup, Grasshopper, Navisworks

Last Updated: Jan. 20, 2023