

Jingming Li

Work Address

Building Technology Division
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EDUCATION

Ph.D., Heating Ventilation and Air Conditioning

Hunan University, Changsha, Hunan

July 2023

- THESIS - Research and application of digital twin optimization strategy for architectural design and building operation
- Hunan Graduate Innovation project
- BIM and Digital Twin for Supporting the Sustainable Built Environment

Master of Science, Architectural Engineering Design

Sheffield University, Sheffield, South Yorkshire

January 2017

- THESIS - Door Motion Simulation and its Influence on Personalised Ventilation System
- CIBSE student member

Bachelor of Engineering, Building Energy Conversation Technology

College of Architectural Engineering at Nanchang University, Nanchang, Jiangxi

July 2015

- THESIS - A Study on Energy Analysis and Energy Saving Program for Nanchang University Architectural Engineering Building
- Jiangxi College Students Innovation project

Bachelor of Economics, Finance

College of Economics and Management at Nanchang University, Nanchang, Jiangxi

July 2015

- THESIS - A Study on Financing Methods of Contract Energy Management

Visiting Student, Finance

Federation University Australia, Ballarat, Victoria

July 2012

- Evaluated as Qualified in Study and Practice Program

PROFESSIONAL EXPERIENCES

Midea

March 2021 – Present

Media Building Technology, Shunde, Guangdong

Engineer

- Conducted research on Semantic Web. Extended Brick for Variable Refrigerant Flow machines. Deployed demo-server for Brick VRF implementation.
- Participated in the development of the prototype of Midea next-generation air conditioner controller.
- Developed and deployed a digital twin for the indoor environment of Midea headquarter.

Purdue University, West Lafayette, Indiana

Visiting Scholar, Purdue Polytechnic Institute

September 2018 – September 2019

- BIM education research, instructing undergraduate students to master the basic knowledge of BIM and robots.
- BIM and robotics research and development. Conducted research on using BIM to plan routes for robots.

PROJECT EXPERIENCES

Building automation system scan with BACnet IP/Ethernet

November 2022 – July 2023

Midea

Researcher & Programmer

- EdgeX BACnet applications performance validations
- BACnet Protocol, DataLink, Communication using Golang
- Network interface configuration
- BACnet WhoIs/ReadProperty/WriteProperty commands

Visualization Programming for Semantic Based Data Query

May 2022 – July 2022

Midea

Designer & Programmer

- Programming in Python
- Create a tool to implement visualization and modular data query tools, which can combine graph databases to perform data queries on relational databases and render visualization effects

Equipment Control and Testing of Digital Twin in Midea HQ

November 2021 – May 2022

Midea

Designer & Programmer & Engineer

- Design the framework and implementation plan of a real-time digital twin system for the 26th floor of Midea headquarters building
- Deploy and implement real-time digital twins

Development of Next Generation Central Controller Prototype

July 2021 – May 2022

Midea

Engineer & Programmer

- Temporal Data and Graph Database Framework
- Design a centralized controller database framework and implementation plan

Brick VRF Extension

March 2021 – October 2022

Midea

Researcher & Programmer

- Explanation of Standardized Definition of Multiple Online Components Based on Brick Standard
- Generate a multi line semantic model that meets the standard ontology definition

3D Building Environment Assessment Based on BIM

October 2019 – October 2020

Hunan University

Researcher & Programmer

- Implemente SIFT feature extraction of images using Python programming and applying it to object detection and classification
- 3D model generation of images through Meshroom

Distribution of BIM education and the combination of BIM and robotics

October 2019 – October 2020

Purdue University

Researcher & Programmer

- A comprehensive review of the application of BIM and the distribution of vocational education in China, and analysis of the current status of BIM research using natural language processing
- Machine Patrol Path Planning Based on Building BIM Model

Building Environment Assessment Based on BIM

October 2017 – August 2018

Hunan University

Researcher & Programmer

- Summarize common BIM software
- Develop site sustainability analysis tools

Door motion Simulation and its impacts on personal ventilation

December 2015 – September 2016

Sheffield University

Researcher

- Research on the Application Prospects of Personal Ventilation

- Simulate the airflow caused by door rotation using pressure difference and User Defined Function, and verify with experimental data. Use ANSYS Fluent to study the impact of door rotation induced airflow on personal ventilation airflow in the 2D range

Analysis of energy-saving renovation plan for the construction building of Nanchang University February 2015 – June 2015

Nanchang University

Researcher

- Analyze the main energy consumption items based on the energy consumption records of the energy-saving regulatory platform over the past three years
- Propose optimized design plans for equipment selection, use, and maintenance for various purposes of the comprehensive teaching building

Evaluation of Wet Damage to Building Envelope Structures

June 2013 – June 2015

Nanchang University

Researcher & Programmer

- Compile the moisture loss evaluation equation into the MatLab environment, predict the distribution of wall moisture after a certain period of time, and develop software based on MatLab for the program

PUBLICATIONS

- **Li Jingming**, Nianping Li, Kereshmeh Afsari, Jinqing Peng, Zhibin Wu, and Haijiao Cui. 2019. "Integration of Building Information Modeling and Web Service Application Programming Interface for Assessing Building Surroundings in Early Design Stages." *Building and Environment* 153: 91–100. <https://doi.org/10.1016/j.buildenv.2019.02.024>.
- Cui, Haijiao, Nianping Li, Jinqing Peng, Rongxin Yin, **Jingming Li**, and Zhibin Wu. 2018. "Investigation on the Thermal Performance of a Novel Spray Tower with Upward Spraying and Downward Gas Flow." *Applied Energy* 231: 12–21. <https://doi.org/10.1016/j.apenergy.2018.09.123>.
- **Li Jingming**, Nianping Li, Jinqing Peng, Haijiao Cui, and Zhibin Wu. 2018. "A Review of Currently Applied Building Information Modeling Tools of Constructions in China." *Journal of Cleaner Production* 201: 358–68. <https://doi.org/10.1016/j.jclepro.2018.08.037>
- **Li Jingming**, Nianping Li, and Meng Wang. 2021. "An Experiment on Full-Day Power Generation Building Fabric Component for Zero-Energy Buildings." *Engrxiv*. <https://engrxiv.org/preprint/view/2071/>
- **Li Jingming**. 2023. "Using Text Understanding to Create Formatted Semantic Web from BIM." In Yuan, P.F., Chai, H., Yan, C., Li, K., Sun, T. (eds) *Hybrid Intelligence. CDRF 2022. Computational Design and Robotic Fabrication*. Springer, Singapore. https://doi.org/10.1007/978-981-19-8637-6_17.
- **Li Jingming**, Kereshmeh Afsari, Nianping Li, Jinqing Peng, Zhibin Wu, and Haijiao Cui. 2020. "A Review for Presenting Building Information Modeling Education and Research in China." *Journal of Cleaner Production* 259: 120885. <https://doi.org/10.1016/j.jclepro.2020.120885>.
- **Li Jingming**, Nianping Li, Jinqing Peng, Haijiao Cui, and Zhibin Wu. 2019. "Energy Consumption of Cryptocurrency Mining: A Study of Electricity Consumption in Mining Cryptocurrencies." *Energy* 168 (February): 160–68. <https://doi.org/10.1016/j.energy.2018.11.046>.
- **Li Jingming**, Nianping Li, Jinqing Peng, Zhibin Wu, and Haijiao Cui. 2019. "Privacy Protection of Occupant Behavior Data and Using Blockchain for Securely Transferring Temperature Records in HVAC Systems." *ArXiv*. <http://arxiv.org/abs/1904.04715>.
- **Li Jingming**, Nianping Li, Bao Yue, Rui Yan, Kushnazarov Farruh, Anbang Li, and Kehua Li. 2022. "Research on the Semantic Web Representation for Building Operation with Variable Refrigerant Flow

Systems.” Journal of Building Engineering 56 (August).

<https://doi.org/10.1016/j.jobbe.2022.104792>.

- Wu, Zhibin, Nianping Li, Jinqing Peng, and **Jingming Li**. 2019. “Effect of Long-Term Indoor Thermal History on Human Physiological and Psychological Responses: A Pilot Study in University Dormitory Buildings.” Building and Environment 166.
<https://doi.org/10.1016/j.buildenv.2019.106425>.
- Wu, Zhibin, Nianping Li, Pawel Wargocki, Jinqing Peng, **Jingming Li**, and Haijiao Cui. 2019a. “Adaptive Thermal Comfort in Naturally Ventilated Dormitory Buildings in Changsha, China.” Energy and Buildings 186: 56–70.
<https://doi.org/10.1016/j.enbuild.2019.01.029>.
- Wu, Zhibin, Nianping Li, Pawel Wargocki, Jinqing Peng, **Jingming Li**, and Haijiao Cui. 2019b. “Field Study on Thermal Comfort and Energy Saving Potential in 11 Split Air-Conditioned Office Buildings in Changsha, China.” Energy 182: 471–82.
<https://doi.org/10.1016/j.energy.2019.05.204>.

SKILLS

Green Building Expert
Experiences in using Linux, namely Ubuntu
Programming with Python, Matlab, Golang, L^AT_EX
Experienced in BIM
Familiar with digital twin
Running the personal website and official account

MEMBERSHIPS

USGBC, LEED AP BD+C, 2017
CIBSE, Student Member, 2015

HONORS & CERTIFICATES

Patent of Invention in Control methods, devices, controllers, systems, and storage media, 2023
Software Authorship in converting BIM to Semantic Web, 2023
Software Authorship in Visualization Programming for Semantic Based Data Query, 2023
Software Authorship in Building Surrounding Environment Assessments, 2022
National Scholarship for Graduate Students, 2020
Outstanding Doctoral School Scholarship at Hunan University, 2019
CSC State Scholarship Fund, 2018
BIM constructor Level I, 2017
Nanchang University 88th civil alumni award scholarship undergraduate group, 2015
Third-prize in Mathematical modeling contest of Nanchang University, 2015
Utility model patent certificate, 2014
Second-class Scholarship at Nanchang University, 2014
Third-prize university student business plan at Nanchang University, 2014
First-class Scholarship at Nanchang University, 2012 and 2013
Special scholarship at Nanchang University, 2012

INTERESTS

Research interests include building information, digital twin and energy conservation.
His interests also include pop music, food, computer science, new materials, SCI-FI, space.