Ziqi HU

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EDUCATION

2024.09-present	**Hong Kong University of Science and Technology**	***Ph.D. in Civil Engineering***
2020.09-2023.06	**Nankai University**	***M.Eng. in Control Science and Engineering***
2016.09-2020.06	**Nankai University**	***B.Eng. in Intelligence Science and Technology***

EMPLOYMENT

➢ **Meituan** *2023.08-2024.08*
Algorithm researcher Beijing, China

- Develop and implement advanced SLAM algorithms on Unmanned Ground Vehicles (UGVs).
- Develop and implement causal inference on back-end delivery algorithms.

➢ **National Institute of Informatics** *2018.08-2018.09*
Visiting researcher Tokyo, Japan

- Joint research with Prof. Inamura, developing the SIGVerse platform for human-robot interaction simulation
- Joint research with Prof. Hiroyuki Okada, developing visual grasping functions of Toyota HSR robot.

PUBLICATION

1. **Ziqi Hu**, Mingchen Li, Hao Tang, and Zhe Wang, 2025. AutoControl: an end-to-end fully automated workflow for control design of building energy systems. *Energy*, p.138329.

2. **Ziqi Hu**, Jing Yuan, Yuanxi Gao, Boran Wang, and Xuebo Zhang, 2024. NALO-VOM: Navigation-oriented LiDAR-guided monocular visual odometry and mapping for unmanned ground vehicles. *IEEE Transactions on Intelligent Vehicles*, 9(1), p.2612-2623.

3. **Ziqi Hu**, Zhi Fan, Cunhuan Liu, Yinan Wu, and Chao Wang, 2019. Geometrical patterns based cross-scale image registration for AFM and optical microscopy. *2019 IEEE International Conference on Manipulation, Manufacturing and Measurement on the Nanoscale (3M-NANO)*, p.276-280.

4. **Ziqi Hu**, Jing Yuan, Yansong Gong, Shizhuo Yu, and Xuebo Zhang, 2021. Reconstruction of lead wires of power lines for live-line working robots in distribution networks. *Control Engineering*, 28(11), p.2123-2130.

5. **Ziqi Hu**, Zhe Wang, 2026. Orthogonal basis driven model predictive control for zero-shot adaptation in HVAC system control. World Sustainable Built Environment Conference 2026 (WSBE 2026), Melbourne, Australia, 10-12 June. (Accepted for Oral Presentation)

6. Mingchen Li, **Ziqi Hu**, Parastoo Mohebi, Shuhao Li, Zhe Wang, 2025. Enhancing LLM-based building data query with chain-of-thought, retrieval-augmented generation, and fine-tuning. *Automation in Construction*, 182, p.106738.

7. Parastoo Mohebi, **Ziqi Hu**, Lunlong Li, Farzin Golzar, Zhe Wang, 2026. Optimal battery sizing using stochastic programming to consider building load variation and peak demand charge. *Energy Conversion and Management*, 348, p.120794.

8. Wanfu Zheng, **Ziqi Hu**, Dan Wang, and Zhe Wang, 2025. Optimizing building energy systems for grid-interactivity, comfort and resilience. *Energy Conversion and Management*, 340, p.119927.

9. Shuhao Li, Mingchen Li, **Ziqi Hu**, Zhe Wang, 2025. Applying semantic model for easy and fast deployment of chiller sequencing algorithm. *Energy and Buildings*, p.116830.

10. Yinan Wu, Yongchun Fang, Zhi Fan, Chao Wang, Cunhan Liu, and **Ziqi Hu**, 2020. Cross-scale image registration based on geometric feature similarity evaluation for atomic force microscope and optical microscope. *Control Theory & Applications*, 37(09), p.1913-1922.

11. **Ziqi Hu**, Lunlong Li, Mingchen Li, Gang Tan, Zhe Wang, 2026. FE-MPC: function encoder based model predictive control for few-shot transferable control in HVAC systems. *IEEE Smart Grid*, under review.

12. **Ziqi Hu**, Parastoo Mohebi, Elence Xinzhu Chen, Xiaoguang Wang, Zhe Wang, 2026. An off-the-shelf software tool for optimal capacity sizing of battery energy storage systems in industrial parks. *Building Simulation*, under review.

13. **Ziqi Hu**, Mingchen Li, Xu Han, Lunlong Li, Zhe Wang, 2026. AutoControl-MPC: an automated model predictive control development framework based on large language models for HVAC systems. *Energy and Buildings*, under review.

PATENT

1. **Ziqi Hu**, Jing Yuan, Yansong Gong, Shizhuo Yu and Xuebo Zhang, Power Line Fitting Method for Live-Line Working Robots Using LiDAR Point Clouds in Distribution Networks. Chinese Patent Application Number: ZL20211084-5733.5

2. Lunlong, Li, Zhe Wang, **Ziqi Hu**, Zhifu Wu, Baiqiang Shen, Chaoliang Wang, Wei Liu, Shiming Tian and Fanpeng Pu, Co-Simulation Method, System, and Program Product for Building and Electric Vehicle (EV) Charging. Chinese Patent Application Number: ZL202511656274.0

OPEN-SOURCE CODE

- *NALO-VOM* — C++ open-source SLAM framework for unmanned ground vehicle
  https://github.com/huziqi/NALO-VOM
- *AutoControl* — LLM-based framework for automated controller design of HVAC systems
  https://github.com/huziqi/AutoControl
- *PVBat-Optimizer* — A BESS optimization tool for optimal battery sizing
  https://github.com/huziqi/pvbatOptimizer

AWARD

1. Champion of RoboCup Asia-Pacific 2017 in RoboCup@Home Open Platform League and Education Challenge League

2. Recipient of HKUST RedBird Academic Excellence Award 2025-2026

3. Nomination for Best Application Paper Award of 2019 IEEE International Conference on 3M-NANO

4. Recipient, Department of Artificial Intelligence Award for Outstanding Thesis Project (2020)

5. Recipient of the Gongneng Scholarship (2017), Innovation Scholarship (2018)

TEACHING ASSISTANT SERVICE

1. CIVL4310 - Energy System Modeling for Buildings and Cities, HKUST

2. IBTM5150 - Advanced HVAC Systems, HKUST

3. CIVL1160 - Civil Engineering and Modern Society, HKUST

4. Robotics Software Engineering, Nankai University

PROJECT

1. Project Team Member, Key technologies for the efficient building-grid interaction and building load flexibility in hot and humid area (2M RMB, National Key R&D Program of China), 2024-2028

2. Project Team Member, Advanced building control for energy efficiency and load flexibility (2M RMB, the National Science Fund for Excellent Young Scholars by NSFC, 52322813), 2024-2026

3. Project Team Member, Fault detection and control optimization for air-conditioning system of commercial buildings (800k RMB, Shenzhen Sustainable Development Research Grant, KCXST20221021111403009), 2023-2026

4. Project Team Member, Robot Semantic Perception and Interactive Collaboration via Cross-Spectral Multi-Sensor Fusion in Visually-Degraded Environments (Key Program of the Joint Fund for Regional Innovation and Development of the National Natural Science Foundation of China (NSFC)), 2022.01-2025.12
5. Project Team Member, AI-Assisted Operations Platform: Recognition and Positioning System (State Grid Corporation of China)