Huayuan ZHOU

Date: June 26, 2026

Senior Calculation Engine Develop Engineer Carrier Shanghai R&D Center

Experience

Carrier Shanghai R&D Center | Senior Calculation Engine Develop Engineer | Jan 2024 – present

- Delivered production-grade Modelica-based system models for multiple commercial HVAC products, directly supporting data center customer orders through accurate performance prediction, validation, and timely engineering delivery.
- Improved engineering workflows by developing Python-based toolchains and eliminating bottlenecks in system model delivery.
- Leading a Physical AI initiative to accelerate HVAC product development and streamline lab testing processes.

Education

Ph. D.	9/2017 – 12/2023	Civil Engineering	Donghua University
B. Sc.	9/2013 – 6/2017	Building Environment and Energy Application Engineering	University of Shanghai for Science and Technology

Publications

7. Y. Lu, J. He, Y Gu, **H. Zhou**, L. Yuan. Optimizing wall structure for enhanced thermal performance: A layer-specific dimensionless parameter analysis in multi-layer walls, Journal of Building Engineering. 94 (2024) 108782. https://doi.org/10.1016/j.buildenv.2022.108782.
6. **H. Zhou**, K. Zhong, H. Jia, Y. Kang. Analysis of the effects of dynamic mesh update method on simulating indoor airflow induced by moving objects, Building and Environment. 212 (2022) 109889. https://doi.org/10.1016/j.jobe.2024.109889.
5. **H. Zhou**, Y. Sun, K. Zhong, Y. Wang, J. Cai, Y. Kang. Regional standardized particle size distributions for developing a Chinese filter testing standard used in building ventilation, Journal of Building Engineering. 44 (2021) 102972. https://doi.org/10.1016/j.jobe.2021.102972.
4. J. Xu, H. Jia, **H. Zhou**, Y. Kang, K. Zhong. Influences of offshore background wind on the formation of sea-land breeze and the characteristics of pollutant diffusion, Environmental Science and Pollution Research. 28 (2021) 68318–68329. https://doi.org/10.1007/s11356-021-15339-7.
3. **H. Zhou**, Y. Kang, F. Yang, G. Liu, K. Zhong. Studies on the most unfavorable distance between the upstream building and the windward building in street canyons in urban area, China Environmental Science. 39 (2019) 4125–4132. https://doi.org/10.19674/j.cnki.issn1000-6923.2019.0483.
2. P. Liu, **H. Zhou**, X. Wang, R. Lu, W. Liu, Q. Jiang, Y. Gong, Y. Zhou, C. Huang. Relationship between indoor temperature, relative humidity, ventilation and formaldehyde, benzene-series concentrations in children's bedrooms, Journal of Environment and Health. 35 (2018) 991–994. https://doi.org/10.16241/j.cnki.1001-5914.2018.11.014.
1. Q. Jiang, P. Liu, X. Wang, R. Lu, W. Liu, **H. Zhou**, Y. Gong, Y. Zhou, C. Huang. Indoor Formaldehyde and Benzene series in Shanghai residences and their associations with building characteristics and lifestyle behaviors, Environmental Science. 39 (2018) 585–591.

https://doi.org/10.13227/j.hjkx.201703144.

Principle Fields of Interests

Ambient aerosol, Street canyon flow, Urban environment, Indoor air quality,
Indoor environment modeling.

Awards and Funding

4. Qingning Scholarship, Donghua University, Nov. 2022.
3. Study Scholarship (Second Class), Donghua University, Nov. 2018.
2. Entrance Scholarship for Postgraduate, Donghua University, Sep. 2017.
1. Excellent Graduates of Shanghai Ordinary Colleges and Universities, Shanghai Municipal Education Commission, May. 2017.

Conference Presentation

H. Zhou 2019. "ISO 16890 and a Possible Strategy of China – Regional division of the particle size distributions for ePM calculation in China." *First China-Japan-Korea Tri-Nation Symposium on Contamination Control and the 3rd International Forum on Contamination Control and Cleanroom Technology*, Suzhou, China, Sep. 20.

Conference Papers

3. **H. Zhou**, K. Zhong, Y. Kang 2023. Calculation method of total purification efficiency of air filters under different characteristics of outdoor air. *6th International Forum on Contamination Control and Cleanroom Technology*. Mar. 17–19, Suzhou, China.
2. **H. Zhou**, Y. Kang, Y. Sun 2019. Regional division of the particle size distributions for ePM calculation in China. *First China-Japan-Korea Tri-Nation Symposium on Contamination Control and the 3rd International Forum on Contamination Control and Cleanroom Technology*. Sep. 18–20, Suzhou, China.
1. Y. Kang, **H. Zhou**, Y. Sun, K. Zhong 2018. ISO 16890 and Chinese Implementation Plan: A Method to Calculate ePMs. *The 2nd International Forum on Contamination Control and Cleanroom Technology*. Oct. 31–Nov. 2, Suzhou, China.

Conferences Attended

6. Healthy Buildings 2023 Asia and Pacific Rim, Tianjin, China (July 16–19, 2023).
5. 11th Indoor Environment and Health Branch Conference, Hohhot, China (June 16–18, 2023).
4. The 4th International Forum on Contamination Control and Cleanroom Technology, Suzhou, China (Nov. 26–28, 2020).
3. The American Modelica Conference 2020 (Online, Sep. 21–23, 2020).
2. First China-Japan-Korea Tri-Nation Symposium on Contamination Control and the 3rd International Forum on Contamination Control and Cleanroom Technology, Suzhou, China (Sep. 18–20, 2019).
1. The 2nd International Forum on Contamination Control and Cleanroom Technology, Suzhou, China, (Oct. 31–Nov. 2, 2018).

Institutional Services

Teaching Assistant	2019 Fall	"Introduction to Building"
Teaching Assistant	2019 Spring	Final Project of bachelor's degree (4 students)
Translator	2018 Fall	ISO 21501 "Determination of particle size distribution – Single particle light interaction methods" – Part 4: Light scattering airborne particle counter for clean spaces.
Teaching Assistant	2018 Spring	Final Project of bachelor's degree (7 students)

Research Experiences

4. **PI.** Chinese Universities Scientific Fund: Study on the influence of moving vehicle on the dispersion characteristics of vehicular pollutants in street canyon (CUSF-DH-D-2020075), Advisor: Huayuan Zhou, 2020 – 2023.

3. **Participant.** General project of National Natural Science Foundation of China: Study on the coupling transportations of aerosol in hazy environment within the canopy of urban micro-scale environment (42075179), Advisor: Prof. Yanming Kang.

2. **Participant.** General project of National Natural Science Foundation of China: Study on the time-delay effect of haze pollution in indoor environment (51578121), Advisor: Prof. Yanming Kang.

1. **Participant.** Sub-project for social development of Shanghai Science and Technology Innovation Action Plan: The dependency and flux of the ozone and fine particulate pollution over the ocean (19DZ1205005), Advisor: Prof. Ke Zhong.

Projects

5. **Leader.** Development of Air Curtain Device for particulate matter removal, Advisor: Prof. Ke Zhong, 9/2021 – 7/2022.

4. **Leader.** Development of Product Inspection System for Gas-Phase Air Cleaning Device, Advisor: Prof. Ke Zhong, 9/2020 – 3/2021.

3. **Leader.** Environmental Improvement of Waste Transfer Station in Yangpu District, Advisor: Prof. Ke Zhong, 9/2019 – 3/2020.

2. **Participant.** Structure Optimization of the Air Duct in Fresh Air Unit, Advisor: Prof. Ke Zhong, 4/2019 – 3/2020.

1. **Participant.** Structure Optimization of Fan Filter Unit (FFU), Advisor: Prof. Ke Zhong, 4/2018 – 3/2019.

Internship

Environmental Market Solutions, Inc. | Technical Center Intern | Oct 2016 – Feb 2017

- Assisted in LEED green building certification projects by preparing daylighting credit documentation.
- Developed 3D building models and conducted daylight simulation analyses using Ecotect based on project geographic location and solar conditions.
- Prepared daylight simulation reports and submitted technical documentation through the LEED certification system.
- Supported project teams in evaluating building environmental performance and compliance with LEED standards.

Relevant Skills

Language: English (IELTS 6.0, 10/2022).

CFD commercial software: Modelica (for modeling and simulation)
ANSYS Fluent (for modeling and simulation),
ANSYS ICEM (for geometry and mesh generation),
COMSOL.

3D modeling software: CAD,
ANSYS Spaceclaim.

Programming: Python (for data processing and simulation),
MATLAB (for curve fitting),
C (for User Defined Function in ANSYS Fluent).

Other softwares: Tecplot (for postprocessing),
OriginLab (for figure production),
Adobe Photoshop (for figure production).