Chengcheng Song

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EDUCATION

Hunan University, College of Civil Engineering, *Ph.D. Candidate* 2022.09 - 2026.06

- **Supervisor**: Professor Yixing Chen
- **Research Interests**: Building Artificial Intelligence, Remote Sensing Big Data, GIS, Deep Learning, Urban Building Energy Consumption Simulation, Web-App Development

Nanjing University of Aeronautics and Astronautics, College of Civil Aviation, *Master* 2019.09 - 2022.06

- **Supervisor**: Professor Quan Shao
- **Research Interests**: Civil Aviation Evacuation, Civil Aviation Safety, Terminal Fine Simulation

Hunan University, College of Civil Engineering, *Bachelor* 2014.09 - 2018.06

- **Supervisor**: Associate Professor Jie Li
- **Research Interests**: Road Design, Traffic Safety, Road Traffic

PUBLICATIONS

1. **C. Song**, J. Yang, Z. Wang, R. Li, X. Pang, Y. Chen*
   CityEL: A web-based platform to support city-scale building energy efficiency based on AutoBPS
   Sustainable Cities and Society, 2025. [PDF] **IF: 12.0 (JCR Q1)**
2. **C. Song**, Z. Deng, W. Zhao, Y. Yuan, M. Liu, S. Xu, Y. Chen*
   Developing urban building energy models for Shanghai city with multi-source open data
   Sustainable Cities and Society, 2024. [PDF] **IF: 12.0 (JCR Q1)**
3. **C. Song**†, Q. Shao†,*, P. Zhu, M. Dong, W. Yu
   An emergency aircraft evacuation simulation considering passenger overtaking and luggage retrieval
   Reliability Engineering & System Safety, 2023. [PDF] **IF: 11.0 (JCR Q1)**
4. **C. Song**, Y. Chen*
   Energy-saving potential of cool roofs at the urban scale: A case study of Xiamen city
   Energy and Buildings, 2025. [PDF] **IF: 7.1 (JCR Q1)**
5. Q. Shao*, R. Li, M. Dong, **C. Song**
   An Adaptive Airspace Model for Quadcopters in Urban Air Mobility
   IEEE Transactions on Intelligent Transportation Systems, 2022. [PDF] **IF: 7.9 (JCR Q1)**
6. Y. Yuan, **C. Song**, K. Zeng, L. Gao, Y. Huang, Y. Chen*
   An occupant-centric control case study based on IoT and data mining for an office space
   Journal of Building Engineering, 2025. [PDF] **IF: 7.4 (JCR Q1)**
7. H. Guo, Z. Chen, X. Chen, J. Yang, **C. Song**, Y. Chen*
   UAV-BIM-BEM: An automatic UAV-based building energy model generation platform
   Energy and Buildings, 2025. [PDF] **IF: 7.1 (JCR Q1)**
8. Y. Yuan, **C. Song**, L. Gao, K. Zeng, Y. Chen*
   A review of current research on occupant-centric control
   Building Simulation, 2024. [PDF] **IF: 6.1 (JCR Q1)**
9. Z. Ren, Y. Chen*, **C. Song**, M. Liu, A. Xu, Q. Zhang
   Economic analysis of rooftop PV systems under shadowing conditions in China
   Building Simulation, 2024. [PDF] **IF: 6.1 (JCR Q1)**
10. F. Su, Z. Wang, Y. Yuan, **C. Song**, K. Zeng, Y. Chen*, R. Zhang
    Enhanced Operation of Ice Storage System for Peak Load Management
    Sustainability, 2023. [PDF] **IF: 3.3 (JCR Q3)**
11. Y. Chen*, W. Wei, **C. Song**, Z. Ren, Z. Deng
    Rapid Building Energy Modeling Using Prototype Model and Automatic Calibration
    Buildings, 2023. [PDF] **IF: 3.1 (JCR Q3)**
12. **C. Song**, Y. Chen*, Z. Deng, Y. Yuan
    Assessing the Potential of Open Data for Urban Building Dataset Expansion

Building Simulation Conference, 2023. [PDF] **Class A Conference**

13. Y. Yuan, Y. Chen*, **C. Song**, Y. He
    Investigation on AC Energy Usage via Sensing and Clustering
    Building Simulation Conference, 2023. [PDF] **Class A Conference**

PATENTS COPYRIGHTS

1. Yixing Chen; Kejun Zeng; Yue Yuan; **Chengcheng Song**; Liying Gao
   Method and system for inferring commercial activity based on energy consumption data of main equipment, 2024. [PDF] **Invention Patent**
2. AutoBPS-Param Software V1.0, 2024. [PDF] **Software Copyright**
3. OBIoT Human Behavior Internet of Things Software V1.0, 2024. [PDF] **Software Copyright**

MAJOR PARTICIPATED PROJECTS

Vertical Projects

- National Natural Science Foundation of China, NSFC-CAAC Joint Fund, U2233208, Key Technologies for Human-Machine Collaborative Apron Personnel Assisted Decision-Making, In Progress, Participated in Application
- Nanjing University of Aeronautics and Astronautics, Graduate Innovation Base Open Fund Project of Nanjing University of Aeronautics and Astronautics: Research on Cabin Emergency Evacuation Simulation Model Based on Cellular Automata, kfjj20200715, Completed, Principal Investigator
- Hunan Province Key Research and Development Program: Research and Application of Key Technologies for Intelligent Optimization Design of "Urban Renewal" under the Goal of Carbon Neutrality, 2024AQ2011, In Progress, Participated
- National Natural Science Foundation of China: Research on the Construction Method and Generality of Building Energy Consumption Model Based on GIS Building Big Data, 5247080142, In Progress, Participated

Horizontal Projects

- Building Energy Consumption Calculation of Shanghai Xinjiangwan City - **ByteDance** - Responsible for establishing the EnergyPlus building energy consumption model
- IoT Deployment of Guangdong Huadiwan Life Hall - **Vanke** - Responsible for IoT device deployment and operation and maintenance, development of related web 3D sections
- Research on Energy Efficiency White Paper for Shaoguan Data Center Computing Power Cluster - **Shaoguan Municipal Government Cluster Office** - Responsible for research and writing of the white paper
- "14th Five-Year Plan" Safety Special Development Plan of Shanghai Airport Group - **Shanghai Airport Group** - Participated in research and writing of the plan

COMPREHENSIVE SKILLS

Software Development

- **Programming Languages**: Python, Ruby, JavaScript, TypeScript, LaTeX
- **Familiar Frameworks**: Cesium, Ruby on Rails, ReactJS
- **Development Capabilities**: Interactive 3D website Web-app development, front-end and back-end, cloud deployment, complex book typesetting

Research Skills

- **GIS Software**: Proficient in QGIS, ArcGIS, Cesium, able to perform secondary development related to GIS locally, led the development of the web platform CityEL and published academic papers.
- **Simulation Software**: Proficient in AnyLogic, EnergyPlus, OpenStudio, AutoBPS, and other simulation software, involving the use and secondary development of a series of simulation software such as building, energy, pedestrian behavior, and evacuation simulation. Developed an Agent evacuation model based on cellular automata and published academic papers.
- **Internet of Things**: Proficient in using IoT developer platforms including Home Assistant, Aqara, Xiaomi, etc., deploying various sensors and conducting secondary development, led the development of the web platform OBIoT, and published related review papers.

- **3D Reconstruction**: Proficient in using ContextCapture for 3D reconstruction and 3D simplification, converting to EnergyPlus building energy consumption models, participated in publishing academic papers.
- **Machine Learning**: Familiar with various machine learning algorithms, able to complete tasks including data mining, facial recognition, pose recognition, large model Agent development, large model RAG application, large model fine-tuning. Utilized multiple machine learning methods including natural language processing, object recognition, and clustering for multi-source data fusion and published academic papers.
- **Academic Skills**: Participated in the application and completion of multiple National Natural Science Foundation projects, proficient in making various application and completion PPTs. Proficient in various scientific drawing tools, including Origin, Visio, LaTeX, etc. Various scientific software, including Office, CAD, SPSS, etc.

ACADEMIC SERVICE HONORS AND AWARDS

- **Reviewer**: Building Simulation, Sustainable Cities and Society
- **Assistant Editor**: [Building Simulation]
- **Scholarship**: First-Class Doctoral Scholarship