RUI MA

Department of Architecture and Civil Engineering, City University of Hong Kong, Hong Kong SAR

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RESEARCH INTERESTS

- Urban Building Energy Modeling
- 3D Building Reconstruction
- Urban Microclimate Analysis
- Spatial Data Science

EDUCATION

City University of Hong Kong   09/2020 – Present
Ph.D. candidate in Architecture and Civil Engineering
Supervisor: Dr. Xin Li and Dr. Jiayu Chen (Tsinghua University)

National University of Singapore   01/2024 – Present
Visiting Scholar
Supervisor: Dr. Filip Biljecki

Tongji University   09/2017 - 06/2020
M.Eng. in Communication and Transportation Engineering

Inner Mongolia University   09/2013 - 06/2017
B.Eng. in Civil Engineering

PUBLICATIONS (ORCID: 0000-0003-4153-9101)

Journal Articles:

1. **Rui Ma**, Qi Li, Botao Zhang, Hao Huang, Chendi Yang (2024). An Ontology-driven Method for Urban Building Energy Modeling. *Sustainable Cities and Society*. (DOI: 10.1016/j.scs.2024.105394)

2. **Rui Ma**, Dongping Fang, Jiayu Chen, and Xin Li. (2023). A Tiled Multi-city Urban Objects Dataset for City-scale Building Energy Simulation. *Scientific Data*. (DOI:10.1038/s41597-023-02261-5)

3. **Rui Ma**, Jiayu Chen, Chendi Yang, and Xin Li. (2023). OSMsc: A Novel Framework for Semantic City Modeling Using OpenStreetMap. *International Journal of Geographical Information Science*. (DOI:10.1080/13658816.2023.2266824)

4. **Rui Ma**, Tao Wang, Yan Wang, Jiayu Chen. (2022). Tuning Urban Microclimate: A Morpho-patch Approach for Multi-scale Building Group Energy Simulation. *Sustainable Cities and Society*. (DOI: 10.1016/j.scs.2021.103516)

5. **Rui Ma**, Xin Li, Jiayu Chen. (2021). An Elastic Urban Morpho-blocks (EUM) Modeling Method for Urban Building Morphological Analysis and Feature Clustering. *Building and Environment*. (DOI: 10.1016/j.buildenv.2021.107646)

6. **Rui Ma**, Bin Ren, Dong Zhao, Jiayu Chen, and Yujie Lu. (2020). Modeling Urban Energy Dynamics under Clustered Urban Heat Island Effect with Local-weather Extended Distributed Adjacency Blocks. *Sustainable Cities and Society*. (DOI: 10.1016/j.scs.2020.102099)

7. **Rui Ma**, Chuanzhi Geng, Zhun Yu, Jiayu Chen, Xiaowei Luo. (2019). Modeling City-scale Building Energy Dynamics through Inter-connected Distributed Adjacency Blocks. *Energy and Buildings*. (DOI: 10.1016/j.enbuild.2019.109391)

8. Chendi Yang, **Rui Ma**, Hongqiang Fang, Siu Ming Lo, Jacqueline TY Lo. (2023). Street Characteristics and Human Activities in Commercial Districts: A Clustering-based Approach Application for Shenzhen. *Environment and Planning B: Urban Analytics and City Science*. (DOI: 10.1177/23998083231224013)

9. Chendi Yang, Siu Ming Lo, **Rui Ma**, Hongqiang Fang. (2023). The Effect of the Perceptible Built Environment on Pedestrians' Walking Behaviors in Commercial Districts: Evidence from Hong Kong. *Environment and Planning B: Urban Analytics and City Science*. (DOI: 10.1177/23998083231177699)

10. Yongjun Sun, **Rui Ma**, Tao Xu, Jiayu Chen. (2019). Heuristic Optimization for Grid-interactive Net-zero Energy Building Design Through the Glowworm Swarm Algorithm. *Energy and Buildings.* (DOI: 10.1016/j.enbuild.2019.109644)

In-process Articles:

1. **Rui Ma**, Chendi Yang, Jiayu Chen, Filip Biljecki, Xin Li. Reconstructing 3D Building Facade Openings: A Street View Imagery-based Enhancement Approach. (1st round Under Review, *International Journal of Applied Earth Observation and Geoinformation*)

2. Chendi Yang, Yunjie Zhang, Siu Ming Lo, Jacqueline T. Y. Lo, **Rui Ma***. Assessing and Predicting Commercial Attractiveness: A Machine Learning-based Block Typology Approach. (1st round Under Review, *Computers, Environment and Urban Systems*)

3. Qi Li, **Rui Ma**, Jiayu Chen, Xiaowei Luo, Knapsack Ranking Algorithm for High-rise Building Passive Radiative Cooling Retrofit with Trigonometric Shadow Calculation Model. (1st round Under Review, *Energy and Buildings*)

Conference papers:

1. **Rui Ma**, Chendi Yang, Xin Li. (2023). Enriching the Semantics of CityJSON Road Objects with OpenStreetMap, *GSCS & ICUI 2023*. Hong Kong SAR, China

2. **Rui Ma**, Jiayu Chen, Chendi Yang, Xin Li. (2023). A Method for Semantic City Modeling. *CEAC 2023*. Kyoto, Japan. **(Honorable Mention)**

3. **Rui Ma**, Jiayu Chen, Xiaowei Luo. (2021). Simulating Urban Building Energy Dynamic with Inter-Building-Effects (Ibes) Linked Building Networks. *ACMR 2020*. Chongqing, China. **(Best Paper Award)**

4. **Rui Ma**, Jiayu Chen, Xiaowei Luo. (2020). Distributed Adjacent Block Modeling (DAB): A Rapid Urban Building Energy Dynamics Simulation with Urban Building Digital Model. *ASCE CRC 2020*. Tempe, USA.

5. **Rui Ma**, Chuanzhi Geng. (2019). Analysis of the Vibration Reduction Effect of the Floating Slab Track with Different Base Forms in a Small Radius Curve of Subway Lines. *CADP 2018*. Hefei, China.

PRESENTATIONS

1. Reconstructing 3D Building Facade Openings with Street View Imagery. *ReLoD3 workshops (NUS&TUM)*. Online. March 19, 2024. (Oral presentation)

2. Urban Building Energy Modeling. *NUS Urban Analytics Lab seminar*, Singapore. February 05, 2024. (Oral presentation)

3. OSMsc: a framework for semantic 3D city modeling using OpenStreetMap. *City University of Hong Kong - Chongqing University Exchange Conference on New Urban Infrastructure Construction and Practice*. Chongqing, China. December 15, 2023. (Oral presentation)

4. A Method for Semantic City Modeling. *The Global Smart Cities Summit (GSCS 2023) cum The 3rd International Conference on Urban Informatics (ICUI 2023)*. Hong Kong SAR, China. August 21, 2023. (Full paper submission; Oral presentation)

5. Enriching the Semantics of CityJSON Road Objects with OpenStreetMap. *2023 3rd International Civil Engineering and Architecture Conference*. Kyoto, Japan. March 18, 2023 (Full paper submission; Oral presentation)

WORK EXPERIENCE

City University of Hong Kong		Hong Kong SAR, China
Teaching Assistant	Environmental Economics, Planning and Policy	Fall 2023
Teaching Assistant	Beauty of Ancient Chinese Architecture	Spring 2023
Teaching Assistant	Integrated Building Project Development	Fall 2022
Teaching Assistant	Integrated Building Project Development	Fall 2021
Teaching Assistant	Building Science	Spring 2021

Teaching Assistant Structural Systems	Spring 2021

Volvo Car (Asia Pacific) Investment Holdings Co., Ltd.   **Shanghai, China**

Data Statistics Intern	2018

SERVICES

Peer Reviewer for Academic Journals: Sustainable Cities and Society, Journal of Cleaner Production, Environment and Planning B: Urban Analytics and City Science.

Tongji University Service: Volunteer for First World Innovation & Entrepreneurship EXPO (2018), volunteer for World Artificial Intelligence Autonomous Driving Championship (2018), volunteer for the 2017 World Autonomous Vehicle Ecosystem Conference (2017)

SCHOLARSHIPS & AWARDS

1. City University of Hong Kong Research Tuition Scholarship   2023
2. City University of Hong Kong Research Tuition Scholarship   2021
3. Postgraduate Studentship Fully Funded by Hong Kong Government   2020
4. IBM Data Science Professional Certificate   2020
5. Best Paper Award in the 24th International Symposium on Advancement of Construction Management and Real Estate   2019
6. Tongji University Guanghua Scholarship   2019
7. Second Prize of the 15th China Graduate Mathematical Modelling Competition   2018
8. Outstanding graduate of Inner Mongolia Autonomous Region   2017
9. Outstanding graduate of Inner Mongolia Autonomous Region   2016

TRAVEL AWARDS

1. CityU Research Activities Fund for visit to NUS   2024
2. CityU Conference Grant for GSCS & ICUI 2023   2023
3. CityU Conference Grant for CEAC 2023   2023

TECHNICAL SKILLS

Python, JavaScript, Ruby, QGIS, Mapbox, Protégé, Rhino, OpenStudio, EnergyPlus, Grasshopper, ANSYS, ABAQUS.