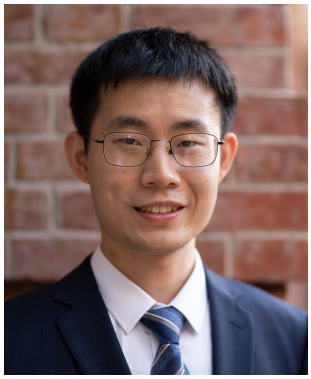
Maosu Li



Ph.D. Candidate
Department of Urban Planning and Design
Faculty of Architecture
The University of Hong Kong

Email: maosulee@connect.hku.hk
Phone: +852 5376 7068
Web: https://luzaijiaoxial.github.io/

VISION

Apply state-of-art **3D City Information Modeling (CIM)**, **AI**, and **Big Data** to smarter **landscape management and urban planning**;

Particularly focus on **disparity of window-level visual exposure to nature and openness** to create **automatic tools and quantified evidence** for decision-making in **healthy high-rise, high-density urban development**.

RESEARCH INTERESTS

Urban Informatics, Analytics, and Computing through i) 3D City Information Modeling, ii) Machine Learning, and iii) Data Management and Analysis.

EDUCATION

Ph.D. Geographic Information Science, The University of Hong Kong, 2020-Now

B.Eng. Geodesy and Geomatics Engineering, Southwest Jiaotong University, 2014-2018

AWARDS

2023 Best Conference Paper Award (First Place), Organizing Committee of Global Smart Cities Summit cum The 3rd International Conference on Urban Informatics.

2023 First Prize of Smart City Research and Innovation Scheme, International Society for Urban Informatics.

2023 HKU Foundation Publication Award for Research Postgraduate Students 2023, Graduate School, The University of Hong Kong.

2023 Research Postgraduate Student Innovation Award 2022/23, Graduate School, The University of Hong Kong.

2022 Second Prize (3D modeling) and Third Prize (2D CAD), Second "Scan-to-BIM" challenge, CVPR. [Web]

2022 Talent Development Scholarship, Education Bureau of Hong Kong SAR.

2021 Esri Young Scholars Award (Hong Kong), Environmental Systems Research Institute (Esri). [Web]

2020 Outstanding Paper Award and Merit Paper Award, *25th International Symposium on Advancement of Construction Management and Real Estate*. (Li et al., 2021; Zhang et al. 2021)

2019 National Scholarship, Ministry of Education of the People's Republic of China. [Web]

2019 Excellent Students Award, Southwest Jiaotong University.

2019 Third Prize, 2019 National English Competition for College Students.

2018 Outstanding Paper Award, 2018 National Symposium on Surveying and Mapping Science and Technology.

2018 Mao Yisheng Gold Medal, Mao Yisheng Honor's College, Southwest Jiaotong University.

2018 Outstanding Graduates Award, Southwest Jiaotong University.

2017 Excellent Students Award, Southwest Jiaotong University.

2017 SWJTU Press and Mao Yisheng Scholarship (Honorary Student Award), Southwest Jiaotong University.

2017 Best Paper Award, 9th National College Students' Paper Competition on Surveying and Mapping.

2017 'Hi-Target' Scholarship, Southwest Jiaotong University.

2017 University Scholarship (Special Prize), Southwest Jiaotong University.

2017 Second Prize (Digitalization of topographic map) and Third Prize (Point cloud-assisted 3D building modeling), 3rd University Student Surveying and Mapping Competition of Sichuan Province.

2017 First Prize, 14th May Day Mathematical Modeling Competition.

2017 University Scholarship (Second Prize), Southwest Jiaotong University.

2016 Outstanding Student Leader Award, Southwest Jiaotong University.

2016 University Scholarship (First Prize), Southwest Jiaotong University.

2015 'Qixin' Scholarship, Southwest Jiaotong University.

2015 Outstanding Student Leader Award, Southwest Jiaotong University.

2015 University Scholarship (Third Prize), Southwest Jiaotong University.

PUBLICATIONS

Articles in Peer-Reviewed Journals

2023 **Li, M.**, Yeh, A. G., & Xue, F. "CIM-WV: A 2D semantic segmentation dataset of rich window view contents in high-rise, high-density areas based on photorealistic City Information Models." *Urban Informatics* (Under review).

2023 **Li, M.**, Xue, F., & Yeh, A. G. "Bi-objective analytics of 3D visual-physical nature exposures in high-rise high-density cities for landscape and urban planning." *Landscape and Urban Planning*, 233, 104714.

2023 Wu, Y., Xue, F., **Li, M.**, & Chen, S. "A novel building section skeleton for compact 3D reconstruction from point clouds: A study of high-density urban scenes." *ISPRS Journal of Photogrammetry and Remote Sensing* (Under review).

2023 Yuan, L., Lu, W., Xue, F., & **Li, M.** "Building feature-based machine learning regression to quantify urban material stocks: A Hong Kong study." *Journal of Industrial Ecology*, 27, 336-349.

2022 **Li, M.**, Xue, F., Wu, Y., & Yeh, A. G. "A room with a view: Automatic assessment of window views for high-rise high-density areas using City Information Models and deep transfer learning." *Landscape and Urban Planning*, 226, 104505.

2022 **Li, M.**, Peng, Y., Wu, Y., Xu, J., Tan, T., Guo, H., ... & Xue, F. "Role of the built environment in the recovery from COVID-19: Evidence from a GIS-based natural experiment on the city blocks in Wuhan, China." *Frontiers in Built Environment*, 7, 813399.

2020 Zhu, Q., Chen, M., Feng, B., Zhou, Y., **Li, M.**, Xu, Z., ... & Xie, X."Optimized spatiotemporal data scheduling based on maximum flow for multilevel visualization tasks." *ISPRS International Journal of Geo-Information*, 9 (9), 518.

2020 Zhu, Q., Feng, B., **Li, M.**, Chen, M., Xu, Z., Xie, X., ... & Feng, Y."An efficient sparse graph index method for dynamic and associated data." *Acta Geodaetica et Cartographica Sinica*, 49 (6), 681-691 (*in Chinese*).

2020 Zhu, Q., **Li, M.**, Ding, Y., Feng, B., Zhang, J., Cao, Z., Qiu, L., & Yin, H."Multi-level semantic retrieval method for landslide disaster data." *Journal of Southwest Jiaotong University*, 55 (3), 467-475 (*in Chinese*).

Conference Proceedings

2023 **Li, M.***, Yeh, A. G., & Xue, F. "HRHD-HK: A benchmark dataset of high-rise and high-density urban scenes for 3D semantic segmentation of photogrammetric point clouds." *2023 Proceedings of the 29th IEEE International Conference on Image Processing* (Accepted). IEEE.

2023 **Li, M.***, Xue, F., & Yeh, A. G. " Efficient assessment of window views in high-rise, high-density urban areas using 3D color city information models." *2023 Proceedings of the 18th International Conference on Computational Urban Planning and Urban Management*, 1-11. OSF.

2023 Wu, Y. **Li, M.**, & Xue, F. " Towards fully automatic Scan-to-BIM: A prototype method integrating deep neural networks and architectonic grammar." *Proceedings of the 2023 European Conference on Computing in Construction and the 40th International CIB W78 Conference*, 1-8. European Council on Computing in Construction.

2021 Laovisutthichai, V., **Li, M.***, Xue, F., Lu, W., Tam, K. L., & Yeh, A. G. "CIM-enabled quantitative view assessment in architectural design and space planning." *2021 Proceedings of the 38th International Symposium on Automation and Robotics in Construction*, 65-72. International Association for Automation and Robotics in Construction.

2021 **Li, M.***, Xue, F., Yeh, A. G., & Lu, W. "Classification of photo-realistic 3D window views in a high-density city: The case of Hong Kong." *Proceedings of the 25th International Symposium on Advancement of Construction Management and Real Estate*, 1339-1350. Springer.

2021 Zhang, J., **Li, M.**, Zhang, W., Wu, Y., & Xue, F. "Prospect of architectonic grammar reconstruction from dense 3D point clouds: Historical building information modeling (HBIM) of Guangdong cultural heritages." *Proceedings of the 25th International Symposium on Advancement of Construction Management and Real Estate*, 1421-1431. Springer.

Patents

2021 Yeh, A. G., **Li, M.**, & Xue, F. *System and methods for quantifying and calculating window view openness indexes*. United States patent (Filing No.) US 63/269,891.

2019 Zhu, Q., Feng, B., Chen, M., **Li, M.**, Ding, Y., & Zhu, J. *A scheduling method, device, and storage medium for scene data of natural resources*. Chinese patent CN110516119A.

RESEARCH PROJECTS

2023 Assessing Human-perceived Window View Openness in High-rise High-density Cities: An Automatic Machine Learning-based City Information Modeling Approach, HKU Leung Kau Kui and Run Run Shaw Research and Teaching Endowment Funds, HKD 50,000, Primary Investigator.

2023-25 From 3D Real Scene to 3D Semantics: Reconstruction of Semantic Volumetric Building Models using 3D Skeletons in Urban Point Clouds, Natural Science Fund of Guangdong Province, RMB 100,000, Co-Investigator.

2023-25 Scan-to-BIM Automation System for Built Assets Digitization in Hong Kong, Hong Kong Innovation and Technology Fund, HKD 7,510,000, Co-Investigator.

TEACHING EXPERIENCE

2022 Course tutor, URBP7003 Research Methods in Spatial Planning, the University of Hong Kong.

2021 Course tutor, URBP7003 Research Methods in Spatial Planning, the University of Hong Kong.

ACADEMIC TALKS

2023 Invited talk,"HRHD-HK: A benchmark dataset of high-rise and high-density urban scenes for 3D semantic segmentation of photogrammetric point clouds." *2023 IEEE International Conference on Image Processing*. Kuala Lumpur, Malaysia. October 8.

2023 Invited talk,"CIM-WV: A 2D semantic segmentation dataset of rich window view contents in high-rise, high-density areas based on photorealistic City Information Models." *3rd Global Smart Cities Summit cum The 3rd International Conference on Urban Informatics*. Hong Kong, China. August 23.

2023 Invited talk,"Efficient assessment of window views in high-rise, high-density urban areas using 3D color city information models." *18th International Conference on Computational Urban Planning and Urban Management*. Montreal, Canada. June 21.

2023 Winner's talk,"Automatic Assessment of Window View Distance for High-rise, High-density Areas using 3D Color CIMs." *Smart Cities Innovation Competition, International Society for Urban Informatics*. Hong Kong, China. January 13. [Web]

2022 Winner's talk,"Floor layer-based kernels and pillars of points (FLKPP): 3D building model reconstruction." *2nd Workshop and Challenge on Computer Vision in the Built Environment for the Design, Construction, and Operation of Buildings, CVPR 2022*. New Orleans, USA. June 19. [Web]

2021 Invited talk,"Exposure to nature in high-rise high-density cities: bi-objective analytics of 3D visual-physical nature accessibility for landscape and urban planning." *HKU/PKU-SZ Joint Doctoral Colloquium on Smart Cities Analytics*. Shenzhen, China. November 27. [Web]

2021 Plenary talk,"CIM-enabled quantitative view assessment in architectural design and space planning." *38th International Symposium on Automation and Robotics in Construction*. Dubai, UAE. November 3. [Web]

2021 Winner's talk, "Save people from the concrete barriers: Integrated assessment of visual and physical accessibility to nature in 3D cities." *Webinar on "GIS Applications"*. City Gallery and Planning Department. Hong Kong SAR, China. August 26. [Web]

2021 Winner's talk, "Save people from the concrete barriers: Integrated assessment of visual and physical accessibility to nature in 3D cities." *Esri Young Scholars Award Ceremony*. Hong Kong SAR, China. July 20. [Web]

2021 Winner's talk, "Save people from the concrete barriers: Integrated assessment of visual and physical accessibility to nature in 3D cities." *Seminar on Spatial Analytics*. Urban Renewal Authority. Hong Kong SAR, China. June 29.

SOCIAL WORK

2020-23 Research Advisor, Residential Academic Advising System (RAAS), Lap-Chee College, the University of Hong Kong.

2020-21 Committee Member, New Urban Researchers' Seminar Series (NURSS) Organizing Committee, Department of Urban Planning and Design, the University of Hong Kong.

2020-21 Vice President, Mao Yisheng Honor's College Student Union, Southwest Jiaotong University.

MEDIA COVERAGE

2023 First Prize in ICUI Smart Cities Innovation Competition, *The Graduate School Newsletter*. The University of Hong Kong. [Web]

2023 Scan-to-BIM Prizes, *26th Recognition Ceremony*. CEDARS, The University of Hong Kong. [Web]

2022 Esri Young Scholars Award, *25th Recognition Ceremony*. CEDARS, The University of Hong Kong. [Web]

2021 PhD student wins young scholars award in geospatial sciences, *The Graduate School Newsletter* (Cover). The University of Hong Kong. [Web]

2021 A new angle on views, *The University of Hong Kong Bulletin*. [Web]

2021 How 3D spatial information brings people closer to nature, *Hong Kong Economic Journal*. [Web]

Updated November 2023