

# Maosu Li

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## VISION

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

Particularly focus on **disparity of 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 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, *25<sup>th</sup> 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.**, 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 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

- 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 38<sup>th</sup> International Symposium on Automation and Robotics in Construction*, 65-72. Duby, UAE: 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 25<sup>th</sup> International Symposium on Advancement of Construction Management and Real Estate*, 1339-1350. Wuhan: Springer, Singapore.
- 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 25<sup>th</sup> International Symposium on Advancement of Construction Management and Real Estate*, 1421-1431. Wuhan: Springer, Singapore.

#### 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

- 2022 Winner’s talk, “Floor layer-based kernels and pillars of points (FLKPP): 3D building model reconstruction.” *2<sup>nd</sup> 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.” *38<sup>th</sup> 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 Scan-to-BIM Prizes, *26<sup>th</sup> Recognition Ceremony*. CEDARS, The University of Hong Kong. [\[Web\]](#)

2022 Esri Young Scholars Award, *25<sup>th</sup> 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*. [\[Web\]](#)