Ms. Yijie WU

Year-3 PhD candidate at The University of Hong Kong

yijiewu@connect.hku.hk ᴿᴳ gˢ

EDUCATION

CURRENT JULY 2021	Ph.D. candidate of Urban Informatics **The University of Hong Kong** | Supervisor: Prof. Fan (Frank) XUE, Prof. Anthony Gar On YEH (Co-supervisor) Thesis: A building skeleton theory for compact building reconstruction and 3D urban morphology abstraction from urban-scale reality capture data
JUNE 2019 SEPT. 2016	Master of Cartography and Geographic Information Engineering **China University of Geosciences (Wuhan)**, Wuhan, China Thesis: Indoor mapping and modeling by parsing floor plans GPA: **91.2/100** (**ranked 1/43** in the first academic years that 90% courses have been completed)
JUNE 2016 SEPT. 2012	Bachelor of GEOGRAPHIC INFORMATION SYSTEM **South China Normal University**, Guangzhou, China GPA: **86.1/100** (85.5/100 **ranked 1/46** in the first 3 academic years)

RESEARCH INTERESTS

- Building/City Information Modeling (BIM/CIM), digital twin buildings/cities
- Building and urban reconstruction and morphology
- Point cloud processing
- Optimization and deep learning

PUBLICATIONS

- **Yijie Wu**, Fan Xue*, Maosu Li, and Sou-Han Chen. 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* (2024). DOI: 10.1016/j.isprsjprs.2024.01.020

- **Yijie Wu**, Maosu Li and Fan Xue. 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* (2023). DOI: 10.35490/EC3.2023.257.

- **Yijie Wu**, Jianga Shang, and Fan Xue*. RegARD: Symmetry-Based Coarse Registration of Smartphone's Colorful Point Clouds with CAD Drawings for Low-Cost Digital Twin Buildings. *Remote Sensing* (2021). DOI: 10.3390/rs13101882.

- **Yijie Wu**, Jianga Shang*, Pan Chen, Sisi Zlatanova, Xuke Hu, Zhiyong Zhou. Indoor mapping and modeling by parsing floor plan images. *International Journal of Geographical Information Science* (2021). DOI: 10.1080/13658816.2020.1781130.

- **Yijie Wu**, Jianga Shang*, Xuke Hu, and Zhiyong Zhou. Extended maptree: A representation of fine-grained topology and spatial hierarchy of BIM. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences* (2017). DOI: 10.5194/isprs-archives-XLII-2-W7-409-2017.

- Fan Xue, Wenjin Zhang, Guangji Xu, Qianyun Zhou, and **Yijie Wu**. Surface or skeleton? Automatic hierarchical clustering of 3D point clouds of bronze frog drums for heritage digital twins. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences* (2023). DOI: 10.5194/isprs-annals-X-M-1-2023-293-2023.

- Maosu Li, Fan Xue*, **Yijie Wu**, Anthony GO Yeh. 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* (2022). DOI: 10.1016/j.landurbplan.2022.104505.

- Junjie Chen, Weisheng Lu*, Liang Yuan, **Yijie Wu**, Fan Xue. Estimating construction waste truck payload volume using monocular vision. *Resources, Conservation and Recycling* (2022). DOI: 10.1016/j.resconrec.2021.106013.

- Jici Xing, Qian Luo, **Yijie Wu**, Jianga Shang*. Self-Optimization for Parsing Floor Plans. *Journal of Computing in Civil Engineering* (2022). DOI: 10.1061/(ASCE)CP.1943-5487.0001048.

- Jing Zhang, Maosu Li, Wenjing Zhang, **Yijie Wu**, and Fan Xue*. Prospect of Architectonic Grammar Reconstruction from Dense 3D Point Clouds: Historical Building Information Modeling (HBIM) of Guangdong Cultural Heritage. *Proceedings of the 25th International Symposium on Advancement of Construction Management and Real Estate (CRIOCM 2020)*. Merit Paper Award. [PDF](PDF).

- Pengyuan Wang, Jianga Shang*, Zhiyong Zhou, **Yijie Wu**, and Weixin Sun. The automatic generation of an adaptive navigation model for indoor map matching. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences* (2019). DOI: 10.5194/isprs-archives-XLII-2-W13-895-2019.

PATENTS

- Fan Xue, Anthony G.O. Yeh, **Yijie Wu**, and Zhe Chen. Indoor 3D barrier-free mapping based on LiDAR point cloud and BIM clash simulation. *Chinese Patent*. No. 202210303655.0. Public stage. *PCT patent*. No. PCT/CN2022/084953.

- Fan Xue, Anthony G.O. Yeh, **Yijie Wu**, and Zhongze Yang. An analytics system for museum touring based on BIM and surveillance videos. *Chinese Patent*. No. 202210302636.6. Public stage. *PCT patent*. No. PCT/CN2022/084962

- Jianga Shang, **Yijie Wu**, and Pan Chen. A method of automatically indoor mapping and modeling based on floor plan images. *Chinese Patent*. No. 201910657554.1.

- Jianga Shang, **Yijie Wu**, and Pan Chen. A method of vectorizing the walls on floor plan images into rectangle instances. *Chinese Patent*. No. 201910656988.X.

- Jianga Shang and **Yijie Wu**. An optimization method of repairing the inconsistencies of indoor boundary elements. *Chinese Patent*. No. 2019106569733.3.

- Jianga Shang and **Yijie Wu**. A method of identifying the shared edges of the adjacent rectangles on indoor maps. *Chinese Patent*. No. 201910656982.2.

- Jianga Shang and **Yijie Wu**. A method of detecting the long and thin walls on floor plan images. *Chinese Patent*. No. 201910657553.7.

AWARDS

2023	**First Prize** in 3D (building reconstruction) track and **Second Prize** in 2D (floorplan reconstruction) track, 3rd Scan-to-BIM Challenge, 2023 CVPR Workshop of Computer Vision in the Built Environment
2023	**Talent Development Scholarship of Innovation, Science and Technology**, awarded by THE HKSAR GOVERNMENT SCHOLARSHIP FUND
2022	**Second Prize** in 3D track and **Third Prize** in 2D track, 2nd Scan-to-BIM Challenge, 2022 CVPR Workshop of Computer Vision in the Built Environment
2022	**Merit Award of Research**, awarded by THE HONG KONG OPENBIM / OPENGIS AWARDS 2022
2021	**Thrid Prize** in 2D track, 1st Scan-to-BIM Challenge, 2021 CVPR Workshop of Computer Vision in the Built Environment
2018	**Second Prize** of Scientific Paper Report 2018, awarded by CUG
2018	**Second-class academic scholarship**, awarded by CUG
2017	**First-class academic scholarship**, awarded by CUG
2016	**Silver Medal** of China College Students' Entrepreneurship Competition
2016	**First-class academic scholarship**, awarded by CUG
2015	**Second Prize** of Geographical science skill competition 2015, awarded by SCNU
2014	**First Prize** of Geographical science skill competition 2014, awarded by SCNU
2013	**Merit student**, awarded by SCNU

PROJECT EXPERIENCES

2023-2025	**Scans-to-BIM Automation System (SBASE) for Built Assets Digitalization in HK** (Innovation and Technology Fund, HKSAR) Co-I (Scan-to-BIM by deep learning and architectonic grammars)
2021-2023	**From point cloud to building and city information model (BIM/CIM): A study of architectonic grammar optimization** (Early Career Scheme of Research Grants Council, HKSAR) Core member (Automatic building reconstruction from point clouds using symmetry)
2022-2026	**Healthy and resilient city with pervasive LoCHs** (Theme-based Research Scheme, HKSAR) Team member (Simulation and optimization for urban design)
2023-2025	**From 3D Real Scene to 3D semantics: Reconstruction of semantic volumetric building models using 3D skeletons in urban point clouds** (GDNSF) Core member (Compact building reconstruction and morphology abstraction for Real Scene 3D)
2016-2020	**High-Availability and High-Precision Indoor Hybrid Localization and Indoor GIS Technology** (National Key Research and Development Program of China) Core member of Subproject (Automatic indoor mapping from floor plans)
Dec. 2025 Jan 2023	**Generative DfX in high-rise modular building: An expert-augmented cascade graph learning and optimisation approach** (CRF) Team member (Optimization and learning for generative design of buildings)

Work Experience

June 2021 Sept. 2020	Dept. of Real Estate and Construction, The University of Hong Kong Research assistant, supervised by Prof. Fan Xue Researching on automatic reconstruction of 3D digital twin buildings
July 2019 Jan 2020	Shenzhen Haylion Technology Junior product manager Designed and managed the delivery of "Mobility as a Service" products
Aug. 2015 July 2015	R & D Center, Augur Intelligence Technology Internship Programmed for a WebGIS-based smart municipal system

Media Coverage

- "HKU team wins a gold and a silver at the 2023 Conference on Computer Vision and Pattern Recognition", covered by

  EurekAlert! AlphaGalileo 晴報

Related Skills and English Level

Programming:	Python, C++, Linux, LATEX
GIS Software:	QGIS, ArcGIS
Point cloud and mesh Software:	CloudCompare, MeshLab
Toefl®June 2020:	108 (R:29; L:29; S: 23; W: 27)
GRE®May. 2018:	325 (Quantitative:166; Verbal:159) ; Analytical Writing: 3.5