

XIUCHENG LIANG

Residence: Singapore

PhD Researcher

College of Design and Engineering, National University of Singapore

 Personal Website

 xiucheng@u.nus.edu

 Google Scholar Profile

 LinkedIn Profile

RESEARCH INTERESTS

Urban Planning, Urban Data Science, Deep Learning, Computer Vision, Multi-modal Geospatial Data Integration, Urban Sustainability

EDUCATION

•Doctor of Philosophy (PhD) - Third year

08/2023-Now

National University of Singapore (NUS), School of Design and Environment, Singapore

CGPA: 4.93 of 5

•Master of Urban Planning (Two-year Program)

08/2020-06/2022

National University of Singapore (NUS), School of Design and Environment, Singapore

CGPA: 4.78 of 5

•Bachelor of Engineering in Urban and Rural Planning

09/2014-07/2019

Shenzhen University (SZU), School of Architecture and Urban Planning, Shenzhen, China

CGPA: 3.45 of 4

PUBLICATIONS - CITATION: 360+

Peer-Reviewed Journal Papers

[1] **Liang, X.**, Zhao, T. and Biljecki, F., 2023. Revealing spatio-temporal evolution of urban visual environments with street view imagery. *Landscape and Urban Planning*, 237, p.104802. [\[DOI\]](#)

[2] **Liang, X.**, Chang, J.H., Gao, S., Zhao, T. and Biljecki, F., 2024. Evaluating human perception of building exteriors using street view imagery. *Building and Environment*, 263, p.111875. [\[DOI\]](#)

[3] **Liang, X.**, Xie, J., Zhao, T., Stouffs, R. & Biljecki, F., 2025. OpenFacades: An Open Framework for Architectural Caption and Attribute Data Enrichment via Street View Imagery. Accepted in the *ISPRS Journal of Photogrammetry and Remote Sensing*.

[4] Zhao, T., **Liang, X.**, Tu, W., Huang, Z. and Biljecki, F., 2023. Sensing urban soundscapes from street view imagery. *Computers, Environment and Urban Systems*, 99, p.101915. [\[DOI\]](#)

[5] Zhao, T., **Liang, X.**, Biljecki, F., Tu, W., Cao, J., Li, X. and Yi, S., 2025. Quantifying seasonal bias in street view imagery for urban form assessment: A global analysis of 40 cities. *Computers, Environment and Urban Systems*, 120, p.102302. [\[DOI\]](#)

[6] Biljecki, F., Zhao, T., **Liang, X.** and Hou, Y., 2023. Sensitivity of measuring the urban form and greenery using street-level imagery: A comparative study of approaches and visual perspectives. *International Journal of Applied Earth Observation and Geoinformation*, 122, p.103385. [\[DOI\]](#)

[7] Gu, Y., Quintana, M., **Liang, X.**, Ito, K., Yap, W. and Biljecki, F., 2025. Designing effective image-based surveys for urban visual perception. *Landscape and Urban Planning*, 260, p.105368. [\[DOI\]](#)

[8] Lei, B., Liu, P., **Liang, X.**, Yan, Y. and Biljecki, F., 2025. Developing the urban comfort index: Advancing liveability analytics with a multidimensional approach and explainable artificial intelligence. *Sustainable Cities and Society*, 120, p.106121. [\[DOI\]](#)

[9] Ito, K., Zhu, Y., Abdelrahman, M., **Liang, X.**, Fan, Z., Hou, Y., Zhao, T., Ma, R., Fujiwara, K., Ouyang, J. and Quintana, M., and Biljecki, F., 2025. Zensvi: An open-source software for the integrated acquisition, processing and analysis of street view imagery towards scalable urban science. *Computers, Environment and Urban Systems*, 119, p.102283. [\[DOI\]](#)

[10] Fujiwara, K., Tsurumi, R., Kiyono, T., Fan, Z., Liang, X., Lei, B., Yap, W., Ito, K. and Biljecki, F., 2025. VoxCity: A Seamless Framework for Open Geospatial Data Integration, Grid-Based Semantic 3D City Model Generation, and Urban Environment Simulation. Accepted in the *Computers, Environment and Urban Systems*.

Conference and Workshop Papers

[1] **Liang, X.**, Cheng S., Biljecki, F., 2025, Decoding characteristics of building facades using street view imagery and vision-language model. *Proceedings of the 19th International Conference on Computational Urban Planning and Urban Management*. [\[DOI\]](#)

[2] Ignatius, M., Xu, R., Hou, Y., **Liang, X.**, Zhao, T., Chen, S., Wong, N.H. and Biljecki, F., 2022. Local Climate Zones: Lessons from Singapore and potential improvement with street view imagery. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 10, pp.121-128. [\[DOI\]](#)

[3] Lei, B., **Liang, X.** and Biljecki, F., 2024. Integrating human perception in 3D city models and urban digital twins. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 10, pp.211-218. [\[DOI\]](#)

[4] Tang, W., Li, W., **Liang, X.**, Wysocki, O., Biljecki, F., Holst, C. and Jutzi, B., 2025. Texture2LoD3: Enabling LoD3 Building Reconstruction With Panoramic Images. In *Proceedings of the Computer Vision and Pattern Recognition Conference* (pp. 2016-2026).

Books and Book Chapters

[1] Liu, P., Hou, Y., Lei, B., **Liang, X.** and Biljecki, F., 2025. GeoAI and Urban Geography. In *GeoAI and Human Geography: The Dawn of a New Spatial Intelligence Era* (pp. 251-266). Cham: Springer Nature Switzerland.

Open-access Software and Datasets

[1] **Liang, X.**, Xie, J., Zhao, T., Stouffs, R. & Biljecki, F. OpenFACADES: An Open Framework for Architectural Caption and Attribute Data Enrichment via Street View Imagery. *GitHub* 2025. [\[ACCESS\]](#)

[2] **Liang, X.**, Xie, J., Zhao, T., Stouffs, R. & Biljecki, F. OpenFACADES: Global Street-Level Buildings Caption and Attribute Dataset. *Hugging Face* 2025. [\[ACCESS\]](#)

[3] Fujiwara, K., Tsurumi, R., Kiyono, T., Fan, Z., **Liang, X.**, Lei, B., Yap, W., Ito, K. and Biljecki, F., 2025. VoxCity: A Seamless Framework for Open Geospatial Data Integration, Grid-Based Semantic 3D City Model Generation, and Urban Environment Simulation. *GitHub* 2025. [\[ACCESS\]](#)

[4] Ito, K., Zhu, Y., Abdelrahman, M., **Liang, X.**, ... Quintana, M., and Biljecki, F. Zensvi: An open-source software for the integrated acquisition, processing and analysis of street view imagery towards scalable urban science. *GitHub* 2024. [\[ACCESS\]](#)

RESEARCH & PROJECT EXPERIENCE

- **Urban Analytics Lab, National University of Singapore, Singapore** 11/2021–02/2022
Research Intern
 - Developed a deep learning model to map urban soundscapes from street view imagery.
 - Designed and conducted a soundscape perception survey with curated attributes.
 - Handled data processing, model training, and drafting of methodology and results.
- **Urban Analytics Lab, National University of Singapore, Singapore** 05/2022–08/2022
Student Researcher
 - Assisted in cross-city analysis on SVI-derived metric sensitivity to FOV and MAUP.
 - Performed literature review and Python-based data analysis.
- **College of Design and Engineering, National University of Singapore, Singapore** 08/2021–04/2022
Dissertation Module
 - Studied spatio-temporal visual patterns using CNN-based street view feature extraction.
 - Built a framework to extract visual features, construct spatial graphs, and cluster scenes.
 - Applied the method in Singapore to map and analyze evolving visual domains.

HONORS & AWARDS

2023 NUS Research Scholarship

2020 Comics work selected for the first Guangdong Provincial Comics Exhibition

2020 Merit Award of the First Guangdong Youth Lacquer Painting Exhibition

2019 Hundred Excellent Graduation Thesis / Design Award, Shenzhen University

2018-2019 Star of Shenzhen University

2018 3rd Prize of “Challenge Cup” Undergraduate Extracurricular Academic Science and Technology Works Award, Shenzhen University

2015-2016 3rd Prize of SUIADR Academic Scholarship

2014-2015 Excellent Student of Academic Performance (Second Prize), Shenzhen University

2014-2015 1st Prize of SUIADR Academic Scholarship

RESEARCH TALKS

09/2024 At Urban Governance and Design Thrust, Society Hub, Hong Kong University of Science and Technology (Guangzhou)

09/2024 At School of Civil Engineering & Transportation, South China University of Technology, Guangzhou, China

09/2024 11th GISChat in Chinese social media

10/2024 Climate Change AI (CCAI) discussion seminar

11/2024 At College of Architecture and Urban Planning, Shenzhen University

06/2025 Present at Presented at the 19th International Conference on Computational Urban Planning and Urban Management (CUPUM), London, 2025

08/2025 Present at London-Singapore Urban Analytics Seminar for Liveable Cities

MEDIA & COMMUNICATION

Architectural Perception and Emotional Well-being (2024), YouTube ► [\[Video Link\]](#)

Tutorial: Generating voxel 3D city model for cities worldwide (2025), YouTube ► [\[Video Link\]](#)

Presentation: Climate Change AI Discussion Seminar: Multimodal AI Approaches for Urban Microclimate Prediction and Building Analysis (2024), YouTube ► [\[Video Link\]](#)

Presentation: 11th GISChat, the Application of Human Perception in Urban Studies (*in Chinese*) (2024), Bilibili ► [\[Video Link\]](#)

STUDENTS MENTORED

• **Youlong Gu, National University of Singapore (NUS), Singapore** 08/2023–06/2025

Master of Urban Planning

- Supervised a research internship project titled *Designing effective image-based surveys for urban visual perception*.
- Advised master's thesis titled *Street view video for urban sensing: a new approach for measuring urban vitality*.

• **Jing Tang, National University of Singapore (NUS), Singapore** 08/2024–06/2025

Master of Urban Planning

- Advised master's thesis titled *Towards finer and location-specific microclimate studies: recasting local climate zone mapping using spatial signatures*

SERVICE AND TEACHING

Teaching assistance:

AY2023/2024-Semester 2 DEP5111 Planning Technologies

AY2024/2025-Semester 1 UD5625 Methods and Tools for Urban Design

AY2024/2025-Semester 2 DEP5107 Dissertation

AY2025/2026-Semester 1 CDE2212 AI for Design

Academic journal peer review:

1. *Landscape and Urban Planning*, Elsevier
2. *Computers, Environment and Urban Systems*, Elsevier
3. *Humanities and Social Sciences Communications*, Nature Portfolio
4. *Scientific Reports*, Nature Portfolio
5. *Building and Environment*, Elsevier
6. *Cities*, Elsevier
7. *International Journal of Health Geographics*, Springer Nature
8. *Environment and Planning B: Urban Analytics and City Science*, Sage Journals
9. *Transactions in Urban Data, Science, and Technology*, Sage Journals

TECHNICAL SKILLS

Programming Languages: Python (proficient), R (familiar)

Tools: R-studio, VScode, Git, Github

Machine & Deep Learning: PyTorch, Tensorflow, Scikitlearn, CUDA, Geopandas

Others: ArcGIS, QGIS, SketchUp, Rhino, Photoshop, LaTeX