

## EDUCATION

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**Southeast University, China** **MEng, Landscape Architecture** 09/2022-Present

□ Average score: 90.68/100 (Rank: 2/28)

□ Thesis: “An ecosystem services-based framework for land use assessment in urban scenic area buffer zones”

**Southeast University, China** **BEng, Landscape Architecture** 09/2017-06/2022

□ Average score: 89.29/100 (Rank: 4/28)

□ Thesis (Score: 93/100): “An examination of factors influencing urban residents’ transport-related carbon emissions in the dual-carbon context: A case study of Suzhou, China”

## PUBLICATIONS

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(Accepted; \* indicates corresponding author)

### Journal Articles

[1] **Xu, Y.**, & Tang, J. (2024). Examining the rationality of Giant Panda National Park's zoning designations and management measures for habitat conservation: Insights from interpretable machine learning methods. *Science of The Total Environment* (JCR Q1, IF=9.8), 170955. doi: <https://doi.org/10.1016/j.scitotenv.2024.170955>

[2] Ma, X. (Advisor), **Xu, Y.\***, Pan, M., & Jiang, K. (2024). Rethinking public service facility distribution and management strategies with the consideration of carbon peak - Insights from Suzhou, China. *Journal of Cleaner Production* (JCR Q1, IF=9.7), 143070. doi: <https://doi.org/10.1016/j.jclepro.2024.143070>

[3] Rui, J., **Xu, Y.**, & Li, X. (2024). Destigmatizing urban villages by examining their attractiveness: Quantification evidence from Shenzhen. *Habitat International* (JCR Q1, IF=6.8), 150, 103120. doi: <https://doi.org/10.1016/j.habitatint.2024.103120>

[4] Rui, J., & **Xu, Y.** (2024). Beyond built environment: Unveiling the interplay of streetscape perceptions and cycling behavior. *Sustainable Cities and Society* (JCR Q1, IF=11.7), 109, 105525. doi: <https://doi.org/10.1016/j.scs.2024.105525>

[5] Yuan, Y., Gan, Y., **Xu, Y.**, Xie, Q., Shen, Y., & Yin, Y. (2022). SWMM-based assessment of urban mountain stormwater management effects under different LID scenarios. *Water* (JCR Q2, IF=3.4), 14(1), 78. doi: <https://doi.org/10.3390/w14010078>

### Conference Articles

[6] **Xu, Y.**, & Ma, X. (2024). Assessing Urban Street Vitality Through Visual and Auditory Perception: A Case Study of Historic urban area in Guangzhou, China. *The International Review for Spatial Planning and Sustainable Development* (SCOPUS, ESCI and EI retrieval), Accepted.

[7] **Xu, Y.**, Ma, X., Pan, M., & Jiang, K. (2022). A two-stage simulation approach of urban transport emission evaluation towards carbon peak: A case study in Suzhou, China. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences* (EI retrieval), 10, 285-292. doi: <https://doi.org/10.5194/isprs-annals-X-4-W3-2022-285-2022>

## (Works in progress)

[8] **Xu, Y.**, Chen, C., Deng, W., Dai, L., & Yang, T. Spatial eco-socio-economic trade-offs inform differentiated management strategies in mega-urban agglomerations. *Nature Cities*, Submitted.

[9] **Xu, Y.**, Tang, J., & Zhuang, X. Urban edges, conservation frontiers: Buffer zone planning and management around urban protected areas - Insights from Chinese national-level scenic areas. *Journal of Environmental Management*, Submitted.

[10] Rui, J., **Xu, Y.**, Cai, C., & Li, X. Citywalks as part of urban tourism: Synthesizing online review data to illustrate urban features. *Tourism Management*, Revision.

## RESEARCH EXPERIENCES

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### Research Assistant, The University of Hong Kong

04/2024-Present

Advisor: Prof. Tianren Yang, Department of Urban Planning and Design

- Spatial eco-socio-economic trade-offs inform differentiated management strategies in urban agglomerations<sup>[8]</sup>
  - Proposed a framework based on production possibility frontiers to assess eco-socio-economic efficiency and ecosystem service value improvement potential of mega-urban agglomerations
  - Utilized the InVEST model and high-resolution location-based service data to calculate ecosystem service supply and demand
  - Conducted zonal clustering based on k-means and fitted the production possibility frontiers to explore trade-offs between ecosystem service value and socio-economic well-being of different zones
  - Provided strategic recommendations for regional development, eco-economic coordination, ecological protection and restoration, and payment for ecosystem services policies

### Graduate Researcher, Southeast University

09/2022-Present

Advisor: Prof. Jun Tang, Department of Landscape Architecture

- Interpretable machine learning illuminates national park zoning and management<sup>[1]</sup>
  - Constructed a species distribution model using the Random Forest algorithm and multi-source big data
  - Applied interpretable machine learning methods, including one-way partial dependence plots (PDPs), two-way PDPs, and the Shapley Additive exPlanations (SHAP), to reveal the impact mechanisms of environmental and anthropogenic factors on giant panda habitat (GPH) distribution
  - Utilized overlay analysis to assess the rationality of current national park boundaries in protecting GPH and identify areas of conflict between human settlements and GPH exists through overlay analysis
- Comprehensive review of buffer zone planning documents helps identify knowledge gaps and opportunities<sup>[9]</sup>
  - Systematically reviewed the buffer zone planning documents for Chinese urban scenic areas
  - Employed natural language processing methods to categorize management strategies in extensive buffer zone planning texts
  - Identified key knowledge gaps in buffer zone planning and proposed opportunities to address them using the ecosystem service framework and advanced artificial techniques

### Workshop Participant, DigitalFUTURES2024, Tongji University

06/2024-Present

Advisor: Prof. Jiawei Yao, Department of Architecture

- GAN modeling and multimodal data enable prediction of the carbon-pollution-heat synergy index (Ongoing)
  - Developed a multimodal training dataset integrating satellite imagery and tabular data for carbon emissions, environmental pollution, and land surface temperature in Greater London
  - Applied a generative adversarial network (CGAN) model to predict carbon-pollution-heat synergy index

- Conducted multi-objective optimization incorporating the distribution of vulnerable populations to identify priority areas for environmental policy implementation

## Independent Projects

03/2023-07/2024

*Collaborators: Jin Rui, Technical University Dortmund; Xiang Li, The University of Hong Kong*

- Quantifying the attractiveness of urban villages helps destigmatize them<sup>[3]</sup>
  - Conceptualized a framework based on the behavior-space interaction theory to provide quantitative evidence for the destigmatization of urban villages
  - Offered recommendations for urban village destigmatization, focusing on village environmental design, job-housing structure and layout, and government policies
- Interplay between cycling behavior, streetscape perception, and built environment guides street innovations<sup>[4]</sup>
  - Collected millions of shared-cycling data points and used the NetworkX library in Python to fit the shortest road network paths based on origin-destination pairs
  - Utilized K-means clustering and random sampling to better represent the characteristics of over 110,000 street view images, followed by predictions with XGBoost
  - Integrated different regression models to unveil the nonlinear spatial interdependencies between streetscape perception, built environment characteristics, and bicycle-sharing volume
  - Identified priorities for street renovations to create cycling-friendly streets
- Text analysis of hotel reviews using the 5D framework illuminates urban tourism development<sup>[10]</sup>
  - Employed Chinese-LLaMA-13B for high-precision text analysis of hotel reviews using the 5D framework
  - Explored the mismatch between hotel experiences and physical spatial quality, proposing planning recommendations for urban tourism

## Research Assistant, Southeast University

11/2021-12/2023

*Advisor: Prof. Xiaosu Ma, Department of Urban Planning*

*Funded by "The 14th Five-Year Plan" National Key Research and Development Program of China "Urban Regeneration Design Theory and Methodology" (2022YFC3800302)*

- Exploring factors influencing transport-related carbon emissions informs planning and policy decisions<sup>[2][7]</sup>
  - Identified the uncertainties in achieving transport-related carbon peak through a two-stage simulation, including multi-scenario sensitivity analysis and link-based carbon emission estimation
  - Built a regression model between built environment characteristics and carbon emission intensity using XGBoost and PDPs
  - Investigated the travel characteristics of typical public service facilities and their impact on carbon emissions using individual travel survey data from two origin-destination surveys
  - Discussed the trade-offs and synergies between current and low-carbon oriented planning and policy decisions
- Assessing urban street vitality and quality through visual and auditory perceptions helps optimize street design<sup>[6]</sup>
  - Developed a framework to assess street vitality from the perspective of pedestrians' visual and auditory perception, integrating site data collection, semantic segmentation, stated preference questionnaires

## Undergraduate Researcher, Southeast University

01/2020-12/2021

*Advisor: Prof. Yangyang Yuan, Department of Landscape Architecture*

*Funded by the National Key Research and Development Program of China (No. 2019YFD1100405), and the National Natural Science Foundation of China (No. 51838003)*

- Comparing runoff control effects of Low Impact Development schemes aids in selecting optimal scenarios<sup>[5]</sup>
  - Participated in designing and conducting experiments, and contributed to writing and editing the paper
  - Compared the runoff control effects of two Low Impact Development systems and visualized the results

## SELECTED PROFESSIONAL EXPERIENCES

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**Student Team Leader, Southeast University Urban Planning & Design Institute Co., Ltd.** 12/2022-06/2024

□ General Plan for Mount Tianmu Scenic Area<sup>[9]</sup>

- Developed and complied planning schemes, particularly conservation and land use plans, using ArcGIS analysis
- Explored conflicts between environmental conservation and economic development in scenic area boundaries and authored a paper on buffer zone planning challenges

**Team Member, Urban Architecture Lab, Southeast University Architecture Design Institute Co., Ltd.** 06/2022-07/2023

□ Development Planning and Urban Design for the Surrounding Area of the Mount Tanshi Cultural Park

- Performed site elevation and sightline analysis using ArcGIS analysis to guide the design of viewing system

**Analytical Assistant, Southeast University Urban Planning & Design Institute Co., Ltd.** 10/2022-11/2022

□ Urban Design for the Historical Districts of Guangzhou Based on Heritage Conservation

- Analyzed population distribution, dynamic temporal patterns, and work-residence relationships
- Visualized dynamic temporal population distribution characteristics utilizing ArcGIS Pro and Kepler
- Examined socio-economic attributes and the correlation between population distribution and built environment factors, including land use types and building footprints

## CONFERENCE PRESENTATIONS

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**60th World Congress of the International Federation of Landscape Architecture (Istanbul, Türkiye, 2024)**

□ “Deciphering Anthropogenic Influences on Habitats: Implications from Interpretable Machine Learning”

**Beijing-Hong Kong Conference on Agricultural Microbial Resources and Evolutionary Biology (Beijing, China, 2024)**

□ “Spatial eco-socio-economic trade-offs inform differentiated management strategies in urban agglomerations”

**International Conference on Spatial Planning and Sustainable Development (Kanazawa, Japan, 2023)**

□ “Assessing urban street vitality through visual and auditory perception”

## SCHOLARSHIPS AND AWARDS

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Kang Qi Scholarship and Grant (CNY 5,000) 2023-2024

Second Prize | Chinese University Data-driven Innovation Competition (CNY 10,000) 2022

Southeast University President Scholarship (CNY 5,000) 2018-2019

## SKILLS

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Design skills Rhinoceros (basic Grasshopper), AutoCAD, Adobe Suite (Photoshop, Illustrator, Indesign), Lumion, Enscape

Analytical skills Spatial analysis (ArcGIS Pro, Arcpy, FME), Python (Libraries: Pandas, Numpy, Matplotlib, Geopandas, Scikit-learn, NetworkX)

Languages Native Mandarin Chinese, Fluent English (TOEFL iBT - Score: 101/120, GRE General Test - Score: 326+4.5)