

EDUCATION

Southeast University, China **MEng, Landscape Architecture** 09/2022-06/2025 (Expected)

□ Average score: 90.88/100 (Rank: 2/28)

□ Thesis: Assessing ecosystem services for informing land use decisions in buffer zones of urban scenic areas

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

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

□ Thesis : Examining the factors influencing urban residents' transport-related carbon emissions in the context of dual-carbon goals (Score: 93/100, Outstanding Thesis/Design Award – School of Architecture)

PUBLICATIONS

(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. [[link](#)]

[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. [[link](#)]

[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. [[link](#)]

[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. [[link](#)]

[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. [[link](#)]

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. [[link](#)]

(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. 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. 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

Research Assistant, The University of Hong Kong

04/2024-Present

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

- Integrating causal machine learning and surrogate models to optimize spatial performance (Ongoing)
 - Identified key spatial performance indicators, including vitality, outdoor thermal comfort, air pollution and economic density, for various functional zones
 - Applied causal machine learning and interpretable methods to analyze the non-linear relationship between urban form and spatial performance
 - Classified blocks based on urban scale, form, and functional zones for benchmarking, using optimal blocks to guide optimization targets
 - Employed a trained machine learning model as a surrogate to develop optimization solutions under real-world constraints
- Exploring spatial eco-socio-economic trade-offs to inform differentiated management strategies^[8]
 - Developed a framework based on production possibility frontiers to assess eco-socio-economic efficiency and ecosystem service value improvement potential in mega-urban agglomerations
 - Utilized the InVEST model and high-resolution location-based service data to calculate ecosystem service supply and demand
 - Conducted zonal clustering using k-means and fitted production possibility frontiers to explore trade-offs between ecosystem service value and socio-economic well-being across different zones
 - Provided strategic recommendations for regional development, eco-economic coordination, ecological protection, restoration, and payment for ecosystem services policies

Graduate Researcher, Southeast University

09/2022-Present

Advisor: Prof. Jun Tang, Department of Landscape Architecture

- Illuminating national park zoning and management with interpretable machine learning methods^[1]
 - Built a species distribution model using the Random Forest algorithm and multi-source geospatial data
 - Applied interpretable machine learning methods, including one-way and two-way partial dependence plots (PDPs) and Shapley Additive exPlanations (SHAP), to reveal the impact of environmental and anthropogenic factors on giant panda habitat (GPH) distribution
 - Assessed the rationality of current national park boundaries in protecting GPH and identified conflict areas between human settlements and GPH using overlay analysis
- Comprehensive review of buffer zone planning documents to identify key knowledge gaps and opportunities^[9]
 - Conducted a systematic review of buffer zone planning documents for urban scenic areas in China
 - Employed natural language processing methods to categorize management strategies from 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 intelligence techniques

Workshop Participant, DigitalFUTURES2024, Tongji University

06/2024-07/2024

Advisor: Prof. Jiawei Yao, Department of Architecture

- Using GAN modeling and multimodal data to predict the carbon-pollution-heat synergy index (Ongoing)
 - Developed a multimodal 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 to identify priority areas for environmental policy implementation, incorporating the distribution of vulnerable populations

Independent Projects

03/2023-06/2024

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

- Quantifying urban village attractiveness to support destigmatization^[3]
 - Conceptualized a framework based on the behavior-space interaction theory to provide quantitative evidence for destigmatizing urban villages
 - Proposed recommendations focused on village environmental design, job-housing layout, and government policies to address stigmatization
- Analyzing the interplay between cycling behavior and streetscape perception to guide street innovation^[4]
 - Collected millions of shared-cycling origin-destination (OD) pairs and used the NetworkX library in Python to fit the shortest road network paths
 - Employed k-means clustering and random sampling to effectively represent the characteristics of over 110,000 street view images, improving the prediction of subjective perceptions using 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 more cycling-friendly streets

Research Assistant, Southeast University

11/2021-12/2023

Advisor: Dr. Xiaosu Ma, Department of Urban Planning

Funded by the National Key Research and Development Program of China “Urban Regeneration Design Theory and Methodology” (No. 2022YFC3800302)

- Investigating transport-related carbon emissions (CEs) for planning and policy decisions^{[2][7]}
 - Conducted a two-stage simulation, including multi-scenario sensitivity analysis and link-based CE estimation, to identify uncertainties in achieving transport-related carbon peak
 - Built a regression model using XGBoost and PDPs to explore the relationship between built environment characteristics and CE intensity
 - Analyzed travel patterns from two OD surveys to assess the impact of public service facilities on CEs
 - Discussed 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 to optimize street design^[6]
 - Developed a framework to assess street vitality from pedestrians' visual and auditory perceptions using site data collection, semantic segmentation, and 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 (LID) systems for optimal scenario selection^[5]
 - Participated in designing and conducting experiments, and contributed to writing and editing the paper
 - Compared runoff control effects of two LID systems and visualized the results to inform optimal scenario selection

SELECTED PROFESSIONAL EXPERIENCES

Team Member, Southeast University Urban Planning & Design Institute Co., Ltd. 12/2022-Present

□ General plan for Mount Tianmu Scenic Area^[9]

- Developed a GIS database and drafted planning schemes, with a focus on conservation and land use plans
- Investigated conflicts between environmental conservation and economic development within scenic area boundaries and authored a paper addressing buffer zone planning challenges

Team Member, 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

- Proposed ecological strategies for wetland conservation
- Conducted site elevation and sightline analysis using ArcGIS to guide the design of a viewing system

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

□ Urban design for the historical urban area of Guangzhou based on heritage conservation^[6]

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

CONFERENCE PRESENTATIONS

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

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

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: 101/120, GRE: 326 + 4.5)