Peijin Sun | Ph.D.

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Experience

Postdoc, Department of City and Regional Planning — Sep 2024 - present
University of North Carolina at Chapel Hill — *Chapel Hill, NC*

Assistant Professor, Urban Planning — Jul 2020 – Sep 2024
Dalian University of Technology — *Dalian, P.R.China*

Education

Ph.D. / **Joint-Ph.D.**, Urban Planning — 2016-2020
Dalian University of Technology / University of North Carolina at Chapel Hill — *Chapel Hill, NC*

Master of Engineering, Urban Planning — 2014-2016
Dalian University of Technology — *Dalian, P.R.China*

Bachelor of Engineering, Urban Planning — 2009-2014
Dalian University of Technology — *Dalian, P.R.China*

Professional Skills

Research Innovation & Data- driven Insight

- **Quantitative Research Expertise**: Led end-to-end quantitative research; published 20+ peer-reviewed articles and 1 monograph, and built scalable, reproducible workflows.
- **Data Wrangling & Processing**: Built robust pipelines to clean, transform, and integrate complex, messy, multi-source datasets (e.g., text, imagery, location-based mobility data, remote sensing), using advanced spatial-statistical techniques to support actionable, data-driven decisions.
- **Data Visualization & Communication**: Translated complex analytical findings into clear, compelling visual narratives; presented at 7+ conferences, taught 8+ courses, mentored junior researchers, and produced stakeholder-focused insights for academic and applied audiences.
- **Geospatial Analysis Proficiency**: Proficient in spatial modeling, predictive mapping, temporal analysis, and multimodal data integration in real-world applications.

Project Leadership & Real-World Applications

- **Research Leadership (PI)**: Led 6 funded research projects as Principal Investigator, managing full-cycle workflows, timelines, and interdisciplinary research teams to deliver policy-relevant insights.
- **Real Estate Project Leadership**: Directed 2 urban development projects (residential community & cruise terminal) between 2016 and 2019, coordinating with 4+ stakeholder groups and guiding spatial layout execution. Successfully supported completion of projects covering 100,000+ m^2.
- **Strategic Consulting Engagement**: Advised on the Medical Mall Project (2024), leveraging geospatial analytics and predictive modeling to optimize spatial layout. Helped improve projected operational efficiency and supported investment decision-making.

Technical Skills

- Python (numpy, pandas, matplotlib, seaborn, scikit-learn, statsmodels, geopandas, OpenCV, TensorFlow) | ESRI ArcGIS | QGIS | SPSS | AutoCAD | SketchUp | Photoshop
- Quantitative Research | Geospatial Data Science | Spatial Analytic | Statistical Modeling | Predictive Modeling | Survey Analysis | Machine Learning | Causal Inference | Time Series Analysis

Books

Sun Peijin, Lu Wei. ***Building Healthy Communities: Environmental Survey and Analysis Method***. 2023.

Published in Chinese by China Architecture & Building Press.

Interdisciplinary Research Methods

- Integrates social survey methods with technologies such as big data and AI.
- Combines qualitative and quantitative approaches from geography, sociology, statistics, and computer science.

Data Processing and Analysis

- Details the processes of data collection, cleaning, and integration, with a focus on commonly used statistical models such as factor analysis, mediation effects, structural equation modeling, and causal inference.

Research Projects (as Principal Investigator)

[1] Driving Mechanisms of Coastal Attractiveness via Multimodal Learning | 2024–2025

[2] Decision Support for Coastal Destination Planning Using Multimodal Data | 2024–2025

[3] Rural Tourism Innovation through Behavioral-Spatial Data Integration | 2023–2025

[4] Rural Revitalization Technologies and Implementation Strategies | 2024

[5] Smart City Curriculum Innovation Based on Frontier Technologies | 2023–2024

[6] Environmental Quality and Physical Activity via Multi-Source Data Fusion | 2020–2023

Publications

[1] **Sun, P.,** Zhao, H., Zhong, J.,et al. (2025). ***Popularity influence mechanism of coastal spaces in urban areas: Insights from multi-modal large language models.*** Cities, 161, 105909.（SCI, JCR Q1）

[2] **Sun, P.,** Sun, J., Jin, L., & Zhu, Y. (2024). ***COVID-19 pandemic changes the outdoor physical activity preference in Chinese city: A 7-year GPS trajectory data analysis***. Cities, 152, 105253.(SCI, JCR Q1）

[3] **Sun, P.,** Zhao, H., & Lu, W. (2024). ***How urban environments affect public sentiment and physical activity using a cognitive computing framework***. Frontiers of Architectural Research, Frontiers of architectural research, 2024-01. (A&HCI）

[4] **Sun, P.,** Liu, P., & Song, Y. (2024). ***Seasonal variations in urban park characteristics and visitation patterns in Atlanta: A big data study using smartphone user mobility***. Urban Forestry & Urban Greening, 91, 128166.（SCI, JCR Q1）

[5] **Sun, P.,** Lu, W., & Jin, L. (2023). ***How the natural environment in downtown neighborhood affects physical activity and sentiment: Using social media data and machine learning***. Health & Place, 79, 102968.（SCI, JCR Q1）

[6] **Sun, P.,** Song. Y., & Lu, W. (2022***). Effect of Urban Green Space in the Hilly Environment on Physical Activity and Health Outcomes: Mediation Analysis on Multiple Greenery Measures***. Land, 11(5).（SSCI，JCR Q1）

[7] **Sun, P.,** & Lu, W. (2022). ***Environmental inequity in hilly neighborhood using multi-source data from a health promotion view***. Environmental Research, 204(Pt A), 111983.（SCI, JCR Q1）

[8] Wan, T., Lu, W., & **Sun, P**. (2023). *Equity impacts of the built environment in urban rail transit station areas from a transit-oriented development perspective: a systematic review*. Environmental Research Communications, 5(9), 92001. (SCI, JCR Q2)

[9] Jin, L., Lu, W., & **Sun, P**. (2022). *Preference for Street Environment Based on Route Choice Behavior While Walking*. Frontiers in Public Health,10, 880251. （SCI, JCR Q1）

[10] Jin, L., Lu, W., & **Sun, P**. (2022). *Effect of the Street Environment on Walking Behavior: A Case Study Using the Route Choice Model in the Chunliu Community of Dalian*. Frontiers in Public Health 10(May):874788. （SCI，JCR Q1）

[11] Wan, T.,Lu, W., & **Sun, P**. (2022). *Constructing the Quality Measurement Model of Street Space and Its Application in the Old Town in Wuhan*. Frontiers in Public Health 10(February):1–18. （SCI，JCR Q1）

[12] Sun, Y.,Lu, W., & **Sun, P**. (2021). *Optimization of Walk Score Based on Street Greening—a Case Study of Zhongshan Road in Qingdao*. International Journal of Environmental Research and Public Health 18(3):1–13. （SCI，JCR Q1）

[13] **Sun, P.**, Song, Y.,Lu, W., & Gu,Z. (2019). *Influences of Built Environment with Hilly Terrain on Physical Activity in Dalian, China: An Analysis of Mediation by Perceptions and Moderation by Social Environment.* International Journal of Environmental Research and Public Health 16(24):1–17. （SCI，JCR Q1）

Publications in Chinese Journal

[1] **Sun Peijin**, Lu Wei, Wu Liang. *Differences of Health-Oriented Built Environment Assessment Methods and Scales*, Modern Urban Research,2020,35(4):36-43.

[2] **Sun Peijin**, Lu Wei. *Institutional-Oriented Design for Health and Its Enlightenment to China*: "Active Living by Design" International Progress and Implications, Journal of Human Settlements in West China,2020,2:60-66.

[3] **Sun Peijin**, Lu Wei, Liu Lianlian. *Design Guidelines for Active Living*: Western Experience, Urban Planning International, 2019,6:170-178.

[4] **Sun Peijin,** Lu Wei. *The Correlation between Urban Green Space and Residents' Physical Activity and Health Outcome*, South Architecture. 2019,3:34-39.

[5] **Sun Peijin**, Song Yan, Lu Wei. *Healthy Planning Implementation System and Policy*: Learning from International Experience of the United States, Shanghai Urban Planning Review,2019,5:117-122.

[6] **Sun Peijin**, Lu Wei, Wu Liang, *The Association between Urban Design Quality and Walking Behavior* in Dalian, New Architecture,2019,(05):97-101.

[7] Wan Tianyue, Lu Wei, Sun Peijin. *Progress and Prospect of Spatial Equity in Public Service Facilities Based on Bibliometric*, Urban & Rural Planning,2023,(05),93-105

[8] Jin Lan, Lu Wei, Sun Peijin. *Walkability Measurement of the Built Environment and Its Validity in Dalian*, New Architecture, 2022,(04):100-105.

[9] Xin Yuzheng, Lu Wei, Sun Peijin. *Research and Prospect of Green Space from the Perspective of Public Mental Health*, Landscape Architecture,2022,29(03):79-85.

Honors and Awards

- **Distinguished Science and Technology Talent** of Dalian (Awarded RMB 300,000) 2021
- **Outstanding Doctoral Dissertation Award**, Dalian University of Technology 2021
- **Excellent Graduate Student**, Dalian University of Technology 2020
- **CSC Scholarship Program**, China Scholarship Council 2017
- **Excellent Undergraduate**, Dalian University of Technology 2014

Conference Oral Presentations

[1] Peijin Sun. Mechanisms influencing the popularity of multimodal data-driven coastal Spaces: application of large language models, China Tourism Geography Academic Conference, South China University of Technology, Guangzhou, 2024, 7.6-7.

[2] Peijin Sun, Daiyun Liu. Exploration and Teaching Practices in Coastal Space Planning and Design in Dalian, Special Committee on Master Planning, Urban Planning Society of China, Dalian University of Technology, Dalian, 2024, 6.21-23.

[3] Peijin Sun. How the natural environment in downtown neighborhoods affects physical activity and sentiment: Using social media data and machine learning, Health Geography Youth Forum, Beijing Normal University, Zhuhai, 2024, 5.23-24.

[4] Peijin Sun. How urban environments affect public sentiment and physical activity using a cognitive computing framework, Chinese Healthy City Science Annual Conference, Tongji University, Shanghai, 2023, 10.26-27.

[5] Peijin Sun. The Application of Language Models in the Study of Urban Environments and Residents' Physical Activity, The 17th International Association for Chinese Planning, Tianjin University, Tianjin, 2023, 6.28-7.02.

[6] Peijin Sun. Relationship between urban environment and physical activity based on social media data, The 1st Environment and Behavior International Symposium, Online, 2022, 11.19-20.

[7] Peijin Sun. Environmental inequity in hilly neighborhood using multi-source data from a health promotion view, Sino-UK Joint Symposium on Post Novel Covid-19 Pandemic, Online, 2021, 8.27-29.

Teaching Innovation

Undergraduate courses:

Urban Digital Technology; Spatial Quantitative Analysis; Urban Cognition Survey; Urban Park Planning and Design; Coastal Landscape; Design Basis

Graduate courses:

Urban Problem Survey; Urban Planning and Design; Academic Writing.

Innovative Courses Developed on Smart Cities

- **Urban Digital Technology**
  Key Topics: Smart Cities, Digital Twins, Geographic Information Systems, Artificial Intelligence, Machine Learning, Computer Vision, Natural Language Processing, Internet of Things, Sensors, And Data Visualization.
- **Spatial Quantitative Analysis/ Urban Problem Survey**
  Focus: A practical course designed to apply advanced technologies—including machine learning and spatial analysis—to tackle complex urban challenges.

  Application: Guided students through hands-on projects applying data-driven and design-thinking approaches to solve real-world challenges.

Co-Founder | AIMorph Lab

An interdisciplinary design studio that applies advanced mathematical modeling—including nonlinear dynamical systems and chaos theory—to develop tangible products through parameterized design and 3D printing. Successfully launched a consumer-ready product line now available on e-commerce platforms.

- Led end-to-end project execution for a startup venture, coordinating cross-functional tasks from concept design and prototyping to supply chain alignment and vendor management.
- Conducted data-driven market research and user analysis to inform product strategy and positioning; translated insights into branding decisions and product-market fit optimization.

$$x_{n+1} = x_n^2 - y_n^2 + ax_n + by_n$$
$$y_{n+1} = 2x_n y_n + cx_n + dy_n$$

Inspired by the Tinkerbell Map - a discrete-time dynamical system - this ring design captures its spiraling curves.

Life stretches wide like the universe, quietly holding infinite wonder and delight. Even the simplest choice may lead us to unexpected beauty. May we shine like the stars - curious, courageous, and ever-dreaming.