Xinlan Luo

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EDUCATION

Tongji University | College of Architecture and Urban Planning — **Shanghai, China**
M.Sc. in Urban and Rural Planning — **Sept. 2023 – Apr. 2026**
Average score: 87/100, GPA: 4.21/5.0
Relevant Courses: Geo-spatial information analysis methods (96/100); Spatio-Temporal Behaviour and Planning (92/100); Quantitative Analytics for Planning (87/100)

Tongji University | College of Architecture and Urban Planning — **Shanghai, China**
B.Sc. in Urban and Rural Planning — **Sept. 2018 – Jul. 2023**
Average score: 92/100, GPA: 4.7/5.0 (Rank 6/81)
Relevant Courses: Introduction to Python Programming; Urban Analytical Methods; Urban Roads and Transportation

PUBLICATIONS & MANUSCRIPTS

- **Luo, X.**, Hu, Y., Zhu, W., & Wang, D. (2025). Behavioural Demand Management for Sustainable Campus Dining: An Integrated Spatiotemporal Optimization Approach. *Socio-Economic Planning Sciences*. (Under Review).
- Hu, Y., **Luo, X.**, Liu, Y., Wei, D., & Wang, D. (2025). From Differentiation to Integration: The Spatiotemporal Turn and Strategic Exploration of Planning Paradigms. *Urban Development Studies*. (Accepted). [in Chinese]
- Chen, Z., **Luo, X.**, Wang, D., You, Z., & Zhou, X. (2024). Study on Spatio-Temporal Behaviour Planning Strategies for Alleviating Morning Peak Congestion in Shanghai's Urban Rail Transit: A Case Study of Metro Line 9. *Shanghai Urban Planning Review*, 4, 132–139. [in Chinese]

CONFERENCE PRESENTATIONS

- **Luo, X.** Agent-Based Decision Support Platform for University Campus Dining Space Management: A Case Study from Tongji University. *AESOP Annual Congress*, Istanbul, Türkiye, Jul. 2025. [Virtual]
- **Luo, X.**, & Wang, D. Spatio-temporal Behavioural Planning Strategies for Campus Dining Space Utilization: A Case Study of Tongji University Siping Road Campus. *International Association for China Planning (IACP) Annual Conference*, Xiamen, China, Jul. 2025.
- **Luo, X.**, & Hu, Y. Optimizing Campus–City Service Fairness: Smart Card Data and Time Insights. *ACSP Annual Conference*, Seattle, USA, Nov. 2024.
- **Luo, X.**, & Wang, D. A Spatiotemporal Behavioural Planning Strategy for Campus Dining Congestion Mitigation: A Case Study of Tongji University. *Annual Conference of Chinese Behavioural Geography*, Xi'an, China, Oct. 2024. [in Chinese]

RESEARCH EXPERIENCES

Project 1- Behavioural Modelling and Agentic Simulation of High-Density Campus Activity–Travel and Dining Dynamics — **Shanghai, China** — **Jan. 2024 –Present**
Project Leader | Prof. De Wang's Lab, Tongji University

Phase I: Behavioural Demand Management and Spatiotemporal Optimization of Campus Dining Facilities (Master thesis) — Jan. 2024 – May 2025

- Analysed persistent peak-hour congestion in a high-density Chinese campus despite sufficient overall capacity. Reconstructed ≈27,800 students' in-hall dining activity sequences from >6M smart-card records integrated with class, access, weather, and distance data.
- Quantified flow patterns, queueing durations, and capacity utilization, and developed an entropy-based

spatiotemporal concentration index to measure temporal concentration in dining activities. Identified behavioral convergence, rather than physical capacity limits, as the primary driver of spatiotemporal imbalance. Built MNL and RL-based models to capture dining time and venue choice under schedule and distance constraints.

- Applied a genetic algorithm to evaluate demand-management strategies (e.g., staggered class times, dormitory reassignment), reducing peak waiting incidents by up to ~57% and spatial imbalance by ~18.5%, and revealing heterogeneous impacts across student groups with different schedule and distance constraints.

Phase II: LLM-based Cognitive Agent Modelling for High-Density Campus Dining and Travel Dynamics [Project page (overview & demo)] Jul. 2024 – Present

- Integrated Mesa ABM with a large language model (DeepSeek) as the cognitive decision engine to simulate full dining-related mobility chains (departure time, venue choice, mode, and route).
- Designed a lightweight memory mechanism that preserves preference continuity and produces interpretable natural-language rationales for each decision.
- Implemented dynamic on-network state perception (dining congestion and walkway/bikeway crowding), supporting policy scenario experiments such as new crowding-information provision schemes that are not observed in historical data.
- Benchmarked against MNL and IRL for dining time and venue choice prediction: LLM Agent achieved ~32% Top-1 joint accuracy in dining time–venue choice, outperforming MNL and approaching RL performance.

Project 2- Urban Commuting Congestion Behavioural Analysis and Simulation Platform **Shanghai, China**
Team Member | Prof. De Wang's Lab, Tongji University **Sept. 2023 –Mar. 2024**

Team core work: Analysed morning-peak congestion on Shanghai's cross-river commuting corridors, tracing where bottleneck flows come from and go to and how peak-period demand across corridors interacts in time and space. Built a simulation–visualisation platform to test coordinated staggered work-hour schemes and alternative employment-centre layouts and to estimate their effects on corridor travel times and load balance.

Contributions:

- Assisted in processing large-scale mobile signalling data, including extracting home–work stay points, abstracting commuting-route sequences and estimating time-of-day demand profiles for cross-river corridors.
- Helped configure optimisation and simulation experiments to evaluate staggered-start strategies under different corridor and employment-centre settings, and participated in interpreting model outputs.
- Contributed to the design and implementation of parts of the interactive analysis and visualisation dashboard, including data interfaces and grid-based congestion and pattern views.

Outcomes: Co-developed the simulation and visualization platform, which was granted software copyright registration.

TEACHING EXPERIENCES

Class "Urban Analytical Methods" **Fall 2023**
Teaching assistant, at College of Architecture and Urban Planning of Tongji University
Assisted in grading and providing in-class feedback on statistical analysis (SPSS, NLOGIT, DCM) for senior undergraduates.

HONORS & AWARDS

- Outstanding Graduate of Shanghai (Undergraduate Level), 2023
- First-Class Undergraduate Scholarship for Outstanding Students, Tongji University, 2019 & 2022
- Second-Class Undergraduate Scholarship for Outstanding Students, Tongji University, 2020 & 2021

SKILLS

Research & Analytical Skills:

- **Research & Modelling:** Spatiotemporal and activity–travel behaviour analysis, discrete-choice & RL modelling, agent-based and LLM-based decision-making simulation, transport policy and scenario evaluation.
- **Technical Skills:** Python (pandas, geopandas, NumPy, PyTorch), Mesa ABM, Bokeh/Plotly.
- **Language:** Mandarin Chinese (native), English (IELTS: 6.5).