Zhicheng Deng

School of Urban Planning and Design
Peking University

zhicheng.deng@stu.pku.edu.cn
Tel: +86 15531550711

EDUCATION

2023–26 **Peking University**, Master of Science in *Geography (Smart Cities and Big Data)*
Supervisor: Asst. Prof. Zhaoya Gong and Prof. Pengjun Zhao
GPA: 3.94/4.0 (Ranked: 1st/50)
Coursework: Urban Space-Time Analytics and GeoComputation; Smart Cities: Theories and Methods

2021–22 **The Hong Kong Polytechnic University**, Exchange Student in *Land Surveying and Geo-Informatics*
GPA: 3.94/4.3
Coursework: Urban Informatics and City Planning; Cartography and Geovisualization

2019–23 **Nanjing Normal University**, Bachelor of Science in *Geographic Information Science*
Supervisor: Prof. Linwang Yuan and Prof. Zhaoyuan Yu
GPA: 91.84/100 (Ranked: 1st/70)
Coursework: Principles of GIS; Geographic Modeling Methods; Spatial Data Mining; Python for Spatial Analysis

RESEARCH AND PUBLICATIONS

(* denotes the corresponding author, and † denotes equal contributions)

Human Mobility and Spatial Behavior

Developing data-driven approaches (e.g., tensor decomposition) and mechanism-based models (e.g., activity region model) to capture the spatiotemporal regularities of human mobility, analyzing different travel behaviors, and understanding their responses to external disruptions such as extreme weather events.

[1] Zhaoya Gong, **Zhicheng Deng***, Junqing Tang, Hongbo Zhao, Zhengying Liu, and Pengjun Zhao. (2025). "Uncovering human behavioral heterogeneity in urban mobility under the impacts of disruptive weather events." *International Journal of Geographical Information Science*, 39(5), 951–974. (Corresponding author with supervisor being first author)

[2] **Zhicheng Deng**, Zhaoya Gong, Jean-Claude Thill, and Elizabeth C. Delmelle. "Modeling hierarchical patterns of human activity spaces using a relational space-time framework." *Computer, Environment and Urban Systems*, in submission.

[3] **Zhicheng Deng**†, Zhaoya Gong†, Haoran Zhang, Ran Tao, and Pengjun Zhao. "Discovering the scales of human mobility under natural hazards." *Nature Communications*, in submission.

[4] **Zhicheng Deng**, Zhaoya Gong, and Pengjun Zhao. (2023). "Uncovering Spatiotemporal Patterns of Travel Flows Under Extreme Weather Events by Tensor Decomposition." In *12th International Conference on Geographic Information Science (GIScience 2023)* (Vol. 277, p. 27:1-27:6). Schloss Dagstuhl – Leibniz-Zentrum für Informatik.

GeoAI and Large Language Model

Developing AI- and LLM-based frameworks that explicitly integrate spatiotemporal and contextual information to enhance the modeling of spatiotemporal data and effectively support downstream tasks.

[1] **Zhicheng Deng**, and Zhaoya Gong. (2025). "Simple Yet Effective: Supervised Fine-Tuning of Large Language Models for Multi-City Human Mobility Prediction." *SIGSPATIAL'25: Proceedings of the 33rd ACM International Conference on Advances in Geographic Information Systems*, accepted.

[2] Luyao Niu†, **Zhicheng Deng**†, Boyang Li, Nuoxian Huang, and Wenjia Zhang. (2025). "AskNearby: An LLM-Based Application for Neighborhood Information Retrieval and Personalized Cognitive-Map Recommendations." *GEOAI'25: Proceedings of the 8th ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery*, accepted.

[3] Chenglong Wang†*, and **Zhicheng Deng**†*. (2023). "Multi-perspective Spatiotemporal Context-aware Neural Networks for Human Mobility Prediction." *HuMob'23: Proceedings of the 1st ACM SIGSPATIAL International Workshop on Human Mobility Prediction Challenge*, 32-36.

Urban Function Modeling

Integrating multi-source heterogeneous urban spatiotemporal data—such as traffic flow and POI datasets—to strengthen modeling capabilities for urban function analysis and related urban tasks.

[1] **Zhicheng Deng**, Xiangting You, Zhaoyang Shi, Hong Gao, Xu Hu, Zhaoyuan Yu, and Linwang Yuan. (2022). "Identification of Urban Functional Zones Based on the Spatial Specificity of Online Car-Hailing Traffic Cycle." *ISPRS International Journal of Geo-Information*, 11(8), 435.

[2] Zhaoya Gong, Chenglong Wang, Bin Liu, Binbo Li, Wei Tu, Yuting Chen, **Zhicheng Deng**, and Pengjun Zhao. (2025). "Multi-spatial urban function modeling: A multi-modal deep network approach for transfer and multi-task learning." *International Journal of Applied Earth Observation and Geoinformation*, 136, 104397.

PROJECTS

2024–25 ***AskNearby*: Bridging Small Neighborhoods with Large Language Model**
- **Principal Investigator**, funded by Shenzhen Nanshan Charity Federation (¥120,000)
- Developed and launched an app integrating a large language model with spatial cognition and a spatiotemporal social platform, gaining over 2,000 users

SELECTED HONORS AND AWARDS

2024 Merit Student of Peking University

2024 Gold Award, The 7th Social Innovation Project Competition for College Students in Nanshan

2024 Finalist, Baidu Ernie Cup Innovation Challenge 2024

2024 Tiehan Scholarship, Peking University Shenzhen Graduate School

2023 Outstanding Graduate of Nanjing Normal University

2022 Third Prize, Python Programming Group A, The National Finals of the 13th Blue Bridge Cup

2021 National Third Prize, SuperMap Cup University GIS Contest (Top 5 Teams)

SERVICES AND RESEARCH SKILLS

Reviewer International Journal of Geographical Information Science, Journal of Transport Geography, Travel Behaviour and Society, Sustainable Cities and Society, Cities, TRB Annual Meeting

Mentorship Xinshu Li & Wei Shi (Master's student, Peking University)

Programming Python (proficient), SQL, R, C/C++ (working knowledge)

Software ArcGIS, QGIS, Microsoft Office, Photoshop, SPSS, LaTex, Git

Language TOEFL: 101 (Reading:27, Listening:26, Speaking:22, Writing:26), Chinese Mandarin (Native)

Updated October 2025