

CURRICULUM VITAE

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EDUCATION

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| Ph.D. @ Wuhan University
(09/2015-12/2019) | Cartography and Geographic Information Science
Dissertation: <i>Big Data-Driven Analysis on Urban Activity Space Dynamics</i> |
| M.E. @ Wuhan University
(09/2013-06/2015) | Surveying and Mapping Engineering
Dissertation: <i>Cabdrivers' Behavior Patterns Analysis from the Trajectory Data</i> |
| B.S. @ Wuhan University
(09/2009-06/2013) | Geographic Information System
Dissertation: <i>Risk Assessment for Drought Disaster Based on Graphic Modeling</i> |

RESEARCH INTERESTS

- Human Dynamics and Urban Informatics
- Spatiotemporal Data Mining and Social Computing
- Human Mobility and Social Inequality
- Data-driven Urban Analytics
- Economic Geography and Fintech

PROFESSIONAL POSITIONS

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| 09/2023-Present | Assistant Professor, Shenzhen University, Shenzhen, China |
| 02/2022-08/2023 | Research Fellow, University College London, UK |
| 03/2021-11/2021 | Postdoctoral Fellow, The Hong Kong Polytechnic University, Hong Kong |
| 01/2020-02/2021 | Postdoctoral Fellow, Shenzhen University, Shenzhen, China |

RESEARCH PROJECTS

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| 2021-2023 | National Natural Science Foundation of China (NSFC), “ <i>Method of Measuring Urban Inequality Based on Multi-dimensional Activity Space Features</i> (基于多维活动空间特征的城市不平等性测度方法研究)”. (PI, CNY 240,000) <ul style="list-style-type: none">▪ Inferring individual activity space features from big data.▪ Measuring disparities in activity patterns among different social groups based on inferred activity space features.▪ Modeling the associations between urban spatial structure and activity disparities. |
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- 2021-2022 Postdoctoral Science Foundation of China, “*Identifying the boundaries and spatial structure of metropolitan areas using multi-source big data* (大数据解析都市圈范围及其空间结构)”. (PI, CNY 80,000)
- Inferring mobility patterns from multi-source spatio-temporal data.
 - Identifying the boundaries of metropolitan areas based on multi-dimensional indicators.
 - Revealing the spatial structure of metropolitan areas from the dual perspective of "function-network".
- 2023 European Research Council (ERC) Starting Grant, “*Redefining Variability: EvALuating Land Use and TRansport Impacts on Urban Mobility PatternS (realTRIPS)*” (Core researcher)
Project website: <https://smartcityanalysis.com/>
- Developing a set of mobility measures using emerging location data in a series of urban development scenarios.
 - Testing the generic applicability of the proposed framework, methods and models by applying them to case studies in typical urban contexts.
- 2019-2023 National Natural Science Foundation of China-Joint Programming Initiative Urban Europe (NSFC-JPI_UE), “*SIMETRI: SustaInable Mobility and Equality in mega-ciTy RegIons-Patterns, Mechanisms and Governance* (超大城市区域的可持续交通与均等化：模式、机理与治理)”. (Core researcher, CNY 2,200,000)
Project website: <https://simetri.uk/>
- Developing a data analysis and simulation platform.
 - Studying socio-spatial segregation using new sources of big data.
 - Investigating the influencing factors of socio-spatial inequality.
- 2017-2020 National Natural Science Foundation of China (NSFC), “*Data-driven Research on Spatial Selection Behavior Mechanism* (大数据驱动的空间选择行为机制研究)”. (Core researcher, CNY 650,000)
- Exploring individual travel trajectory and attribute characteristics from various big data, including public transit smart card data, private vehicle plate recognition data.
 - Evaluating individual and collective characteristics and differences based on data-driven approach.
- 2024-2025 Open Fund of State Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, “*Sustainable Smart City: Unpack Urban Mobility and Inequality* (可持续智慧城市：利用深度学习和大数据解读城市移动性和平等性)” (PI, CNY 50,000)
- Representation learning method and model construction for dynamic mobility graphs.
 - Expression of place attributes based on urban morphology and scene theory.
 - A case study of urban inequality from a mobility perspective.

PUBLICATIONS (FIRST AUTHOR AND CORRESPONDING AUTHOR)

- **Gao, Q.-L.**, Zhong, C*., & Wang, Y. Unpacking urban scaling and socio-spatial inequalities in mobility: Evidence from England. *Environment and Planning B: Urban Analytics and City Science*, 2024, 51(7), 1531-1547.
- **Gao, Q.L.**, Zhong, C*., Yue, Y., Cao, R., Zhang, B. Income estimation based on human mobility patterns and machine learning models. *Applied Geography*, 2024, 163, 103179.
- **Gao, Q.L.**, Yue, Y., Zhong, C., Cao, J., Tu, W., Li, Q.Q. Revealing transport inequality from an activity space perspective: A study based on human mobility data. *Cities*, 2022, 131, 104036.
- Yang, Y., Zhong, C., **Gao, Q.L.***. An extended node-place model for comparative studies of transit-oriented development. *Transportation Research Part D: Transport and Environment*, 2022, 113, 103514.
- Li, Q.-Q., Yue, Y., **Gao, Q.-L.***, Zhong, C., Barros, J. Towards a new paradigm for segregation measurement in an age of big data. *Urban Informatics*, 2022, 1(1), 1-15.
- **Gao, Q.-L.**, Yue, Y*., Tu, W., Cao, J., Li, Q.-Q. Segregation or integration? Exploring activity disparities between migrants and settled urban residents. *Transactions in GIS*, 2021, 25(6), 2791-2820.
- **Gao, Q.-L.***. Big data-driven analysis on urban activity space dynamics. *Acta Geodaetica et Cartographica Sinica (测绘学报)*, 2020, 50(6), 850.
- **Gao, Q.-L.**, Li, Q.-Q*., Zhuang, Y., Yue, Y., Liu, Z.-Z., Li, S.-Q., Sui, D. Urban commuting dynamics in response to public transit upgrades: A big data approach. *PloS one*, 2019, 14(10), e0223650.
- **Gao, Q.-L.**, Li, Q.-Q*., Yue, Y., Zhuang, Y., Chen, Z.-P., Kong, H. (2018). Exploring changes in the spatial distribution of the low-to-moderate income group using transit smart card data. *Computers, Environment and Urban Systems*, 2018, 72, 68-77.

OTHER PUBLICATIONS

- Cao, R.* , **Gao, Q.-L.**, Qiu, G. Responsible urban intelligence: Towards a research agenda (Vision Paper). *Spatial Data Science Symposium 2023 Short Paper Proceedings*, 2023.
- Liao, C., Cao, R.* , **Gao, Q.-L.**, Cao, J., & Luo, N. Exploring how street-level images help enhance remote sensing-based local climate zone mapping. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 2023, 16, 7662-7674.
- Cao, J., Tu, W., Cao, R., **Gao, Q.**, Chen, G., & Li, Q. Untangling the association between urban mobility and urban elements. *Geo-spatial Information Science*, 2023, 1-19.
- Zhang, B., Zhong, C.* , **Gao, Q.**, Shabrina, Z. Delineating urban functional zones using mobile phone data: a case study of cross-boundary integration in Shenzhen-Dongguan-Huizhou Area. *Computers, Environment and Urban Systems*, 2022, 98, 101872.
- Zeng, J., Yue, Y*., **Gao, Q.**, Gu, Y., & Ma, C. Identifying localized amenities for gentrification using a machine learning-based framework. *Applied Geography*, 2022, 145, 102748.
- Wang, Y., Zhong, C.* , **Gao, Q.**, Cabrera-Arnau, C. Understanding internal migration in the UK before and during the COVID-19 pandemic using Twitter data. *Urban Informatics*. 2022, 1, 15.
- Liang, Y., **Gao, Q.**, Guo, Li., Yue, Y. Multi-level analysis of commuting heterogeneity incorporating urban spatial factors. *Urban Transport of China (城市交通)*, 2022, 20(04), 111-119.
- Yue, Y., Hu, Z., Gao, Q.-L., Wang, C-S. Geospatial Big Data Analytics and the Progress of SDGs in the Greater Bay Area. *Planning Theory & Practice*, 2022, 23(5): 783-789.
- Cao R, Tu W, Cai J, Zhao T, Xiao J, Cao J, **Gao Q**, Su H. Machine learning-based economic

development mapping from multi-source open geospatial data. *ISPRS Annals of Photogrammetry, Remote Sensing & Spatial Information Sciences*. 2022 May 1(4).

- Cao, J., Li, Q., Tu, W*, **Gao, Q.**, Cao, R., & Zhong, C. Resolving urban mobility networks from individual travel graphs using massive-scale mobile phone tracking data. *Cities*, 2020, 110, 103077.
- Tu, W*, Cao, J., **Gao, Q.**, Cao, R., Fang, Z., Yue, Yang., Li, Q. Sensing urban dynamics by fusing multi-source spatio-temporal big data. *Geomatics and Information Science of Wuhan University (武汉大学学报-信息科学版)*, 2020, 45(12), 1875.
- Yeh, A.G., Yue, Y., Zhou, X., **Gao, Q. L.** Big data, urban analytics and the planning of smart cities, 2020. In *Handbook of Planning Support Science*. Edward Elgar Publishing.
- Liu, C. K., Jia, T., **Gao, Q. L.**, Wang, Y. L., Qin, K., Tao, H. B. (2016). Study on location and allocation of healthcare center based on improved genetic algorithm. *Computer Engineering and Applications*, 52(6), 13-18.
- Jia, T., Tao, H., Qin, K., Wang, Y., Liu, C., **Gao, Q.** Selecting the optimal healthcare centers with a modified p-median model: a visual analytic perspective. *International Journal of Health Geographics (计算机工程与应用)*. 2014 13(1), 42.

AWARDS

- 2024 **Shenzhen Talent C**
鹏城孔雀特聘岗位 C 档
Shenzhen University
CAAI-BDSC2024 New Rising Star
2024 年度社会计算青年学者新星
Shenzhen University
- 2023 **Geographic Information Technology Progress Award, First Class (Ranked 12th/20)**
地理信息科技进步奖 一等奖
Shenzhen University

TEACHING AND SUPERVISION EXPERIENCES

- 2024 **Machine Learning 2024 Spring (WeBank Master)**
Shenzhen University
Artificial Intelligence and Machine Learning 2024 Spring (Nantes Master)
Shenzhen University
Master Dissertation Co-Supervision (AI)
Shenzhen University
Master Dissertation Supervision (Nantes)
Shenzhen University
Undergraduate Dissertation Supervision (WeBank)
Shenzhen University
大数据与城市分析 (Guest Lecture)
Shenzhen University
交通地理信息系统 (Guest Lecture)
Shenzhen University
E-commerce Case Analysis 2024 Autumn (Nantes Undergraduate)

- Shenzhen University
- 2023 **Master Dissertation Co-Supervision 2023**
University College London
E-commerce Case Analysis 2023 Autumn (Nantes Undergraduate)
Shenzhen University
- 2022 **Advanced Geographic Information Systems (Guest Lecture)**
The Hong Kong Polytechnic University
大数据与城市分析 (Guest Lecture)
Shenzhen University
- Master Dissertation Supervision 2022**
University College London
- Quantitative Methods 22/23 (Teaching assistant)**
University College London
- UCL Arena for Postdocs 2022 (six weeks)**
University College London

INVITED/CONFERENCE TALKS

- 2024 **Gao, Q.-L.** Income estimation using smart card data and machine learning models. The 19th Annual Conference on Theories and Methods of Geographic Information Science (第十九届地理信息科学理论与方法学术年会). On-site. Xi'an, China. **Invited talk.**
- 2024 **Gao, Q.-L.** Social and geographic computing on urban socio-spatial inequality. The 4th Space Information and Technology Application Conference (第四届空间信息技术应用大会). On-site. Changsha, China. **Invited talk.**
- 2024 **Gao, Q.-L.** Rethinking urban inequality from the geo-computational social sciences perspective. China National Conference on Big Data & Social Computing 2024 (第九届全国大数据与社会计算学术会议). On-site. Harbin, China. **Lighting talk.**
- 2024 **Gao, Q.-L.** Understanding urban equity using human mobility big data: Theory, method and application. The 14th Spatially Integrated Humanities and Social Sciences Academic Forum (第十四届空间综合人文学与社会科学学术论坛). On-site. Nanchang, China. **Invited talk.**
- 2023 **Gao, Q.-L.,** Wang, Y., Zhong, C. Understanding urban inequality and scaling law: A human mobility perspective, 2023. On-site. Glasgow, UK. Poster.
- 2022 **Gao, Q.-L.,** Zhong, C. Yue, Y. SIMETRI: Socio-spatial inequalities and human mobility in megacities?. Hybrid Symposium on Applied Urban Modelling, 2022. Oral presentation.
- 2021 **Gao, Q.-L.,** Zhong, C. Yue, Y. Activity inequality by income status?. The 2021 European Colloquium on Theoretical and Quantitative Geography, 2021. Online. Oral presentation.
- Gao, Q.-L.** Understanding socio-spatial inequality using human mobility data. The Smart Cities Research Institute (SCRI) salon, 2021. Hong Kong, China. Invited talk.
- 2020 **Gao, Q.-L.,** Yue, Y. Li, Q.-Q. Revealing activity disparity between different social groups by travel mode. The 16th Workshop on Spatial Behavior and Planning, 2020. Xiamen, China. Oral presentation.
- 2019 **Gao, Q.-L.,** Yue, Y. Li, Q.-Q. Exploring the spatial segregation of new migrants based on activity space: A big data approach. The 27th International Conference on Geoinformatics, 2019. Sydney Australia. Oral presentation.

Gao, Q.-L., Yue, Y. Li, Q.-Q. Understanding socio-spatial segregation from activity space: A big data approach. The 13th IACP conference, 2019. Chengdu, China. Oral presentation.

Gao, Q.-L., Yue, Y. Li, Q.-Q. Urban commuting dynamics in response to public transit upgrades: A big data approach. The 16th Interactional Conference on Computers in Urban Planning and Urban Management, 2019. Wuhan, China. Poster.

2017 **Gao, Q.-L.**, Yue, Y. Li, Q.-Q. Identifying intra-city residential spatial distribution changes using transit smart card data, The 25th International Conference on Geoinformatics, 2017. Buffalo, U.S. Oral presentation.

PROFESSIONAL SKILLS

- Strong skills in spatiotemporal data analytics, urban modeling, and visualization, statistics.
- Domain knowledge in GIS, urban geography, transportation studies, urban theories, data science and machine learning.
- Proficient in programming languages such as Python, Matlab.
- Expert in ArcGIS, GeoDa, QGIS, SPSS.