Wenbo Lv

undergraduate

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Curriculum Vitae
Tuesday 22nd April, 2025

Some stuff about me

- My research interests lie in **advancing methodologies in spatial causal inference** and **developing high-performance computational tools**, with a primary focus on *R packages*.
- Currently, my work centers on **Empirical Dynamic Modeling (EDM)** framework for modeling *dynamic system* and **Difference-in-Differences (DID)** methods for *event studies*. I am particularly interested in leveraging these approaches to address critical challenges in *urban sustainability*, *climate change mitigation*, and broader global issues.
- I possess expertise in *data analysis*, *statistical modeling*, and the development of *R packages* and open-source analytical tools utilizing **R**, **C++**, and **Python**.
- I have contributed to the **development** and **maintenance** of several open-source spatial analysis tools within the R community and remain dedicated to **advancing open-source geospatial analysis software**.

Education

2021-2025 **BSc In Geographic Information Science** Shaanxi Normal University
Xi'an, Shaanxi

Publications

1. Lv, W., Lei, Y., Liu, F., Yan, J., Song, Y., & Zhao, W. (2025). Gdverse: An r package for spatial stratified heterogeneity family. *Transactions in GIS*, *29*(2), 29:e70032. https://doi.org/10.1111/tgis.70032
2. Lv, W., Liu, F., Cai, K., Cao, Y., Deng, M., Liang, W., Yan, J., & Wang, G. (2024). Distinguishing the impacts and gradient effects of climate change and human activities on vegetation cover in the weihe river basin, china. *Journal of Geophysical Research: Biogeosciences*, *129*(10). https://doi.org/10.1029/2024jg008297
3. Chen, C., Song, Y., Lv, W., Shemery, A., Hampson, K., Yi, W., Zhong, Y., & Wu, P. (2025). Predicting pavement cracking performance using laser scanning and geocomplexity-enhanced machine learning. *Computer-Aided Civil and Infrastructure Engineering*. https://doi.org/10.1111/mice.13489
4. Song, Z., Liu, F., Lv, W., & Yan, J. (2023). Classification of urban agricultural functional regions and their carbon effects at the county level in the pearl river delta, china. *Agriculture*, *13*(9). https://doi.org/10.3390/agriculture13091734
5. Song, Z., Liu, F., & Lv, W. (2023). *Spatiotemporal characteristics and optimization strategies of urban-rural development disparities in china's urban agglomerations(in chinese)* (pp. 1418–1429). People's Cities, Empowered by Planning - Proceedings of the 2023 China Urban Planning Annual Conference (14 Regional Planning; Urban Economy). https://link.cnki.net/doi/10.26914/c.cnkihy.2023.061565

Honor

2024.12 **Longi Non-Education Major Scholarship**
2024.11 **First Prize in the 13th National University Student GIS Application Skills Competition**
2024.06 **National University Student Innovation and Entrepreneurship Training Program Qualified Completion**
2023.12 **Grand Prize in the 12th National University Student GIS Application Skills Competition**
2023.11 **First Prize in the Second National University Student Ecological Environment Management Research Innovation Competition**
2023.12 **Second Prize of the 5th 'Guodi Cup' National College Student Natural Resource Science and Technology Competition, China Society of Natural Resources**
2021.10 **Outstanding Individual in Military Training Publicity for College Students, Shaanxi Normal University**

Unpublished

First Author **Measuring causal associations by geographical cross mapping cardinality** Transferred to IJGIS
Second Author **Zoning-dependent determinants of greenspace exposure: Evidence from multi-source remote sensing observations in China** Submitted to IEEE Geoscience and Remote Sensing Letter, currently under review

Third Author	**Agricultural policies reshape cropland patterns with varying impacts - a case of soybeans from Heilongjiang Province**	Submitted to Land Use Policy, currently under review
First Author	**Decomposing Spatial Causality through Mutual Information**	In writing
First Author	**On the role of explicit spatial information in stratified heterogeneity**	In writing
First Author	**Geocomplexity Mitigates Spatial Bias**	In writing

Developed Spatial Analysis Toolkit

Package	Description	Source Code	Language
spEDM	Spatial Empirical Dynamic Modeling	https://github.com/stscl/spEDM	C++, R
gdverse	Analysis of Spatial Stratified Heterogeneity	https://github.com/stscl/gdverse	R, C++, Python
itmsa	Information-Theoretic Measures for Spatial Association	https://github.com/stscl/itmsa	C++, R
GD	Geographical Detectors for Assessing Spatial Factors	https://github.com/ausgis/GD	R
sdsfun	Spatial Data Science Complementary Features	https://github.com/stscl/sdsfun	R, C++
sesp	Spatially Explicit Stratified Power	https://github.com/stscl/sesp	R, C++
cisp	A Correlation Indicator Based On Spatial Patterns	https://github.com/stscl/cisp	R
geocomplexity	Mitigate Spatial Bias Through Geographical Complexity	https://github.com/ausgis/geocomplexity	C++, R, C
geosimilarity	Geographically Optimal Similarity	https://github.com/ausgis/geosimilarity	R
geocn	Loads Spatial Data Sets of China	https://github.com/stscl/geocn	R
qgisprocess	R package to use QGIS processing algorithms	https://github.com/r-spatial/qgisprocess	R
spEcula	Spatial Prediction Methods In R	https://github.com/SpatLyu/spEcula	R
tidyrgeoda	A tidy interface for rgeoda	https://github.com/SpatLyu/tidyrgeoda	R