

# Wenbo Lv

undergraduate

## Curriculum Vitae

Monday 21<sup>st</sup> October, 2024

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## Education

2021-2025      **Geographic Information Science**  
Xi'an, Shaanxi

Shaanxi Normal University

## Some stuff about me

- I am passionate about **developing innovative spatial analysis methods** that **leverage spatial relationships**, such as *spatial dependence*, *spatial heterogeneity*, and *geographical similarity*, to advance *urban sustainability* and *climate change mitigation* efforts.
- I am proficient in *data analysis*, *statistical modeling*, and developing *R packages*, as well as open-source analytical software using **R**, **C++**, and **Python**.
- I have experience implementing complex statistical algorithms in **C++** and can efficiently integrate **torch** for machine learning applications.

## Publications

1. 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>
2. 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>
3. 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

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**  
2024.06      **National University Student Innovation and Entrepreneurship Training Program Qualified Completion**

## In research

Leader      **Extraction of Urban Spatial Boundaries in Xi'an City Using Deep Learning**  
➤ Combining advanced spatial sampling and unsupervised algorithms to automatically construct sample sets, and then using geographical neural networks weighted logistic regression to extract urban spatial boundaries  
Leader      **Geocomplexity mitigates spatial bias**  
➤ Considering the Complexity of Spatial Data in Spatial Data Analysis to Improve Modeling Accuracy

## Unpublished

First Author	<b>gdverse: An R package facilitating spatial stratified heterogeneity analysis with geographical detectors</b>	
	In writing	
First Author	<b>Generalized Geographical Detector</b>	In writing

## Developed Spatial Analysis Toolkit

Package	Description	Source Code	Language
gdverse	Analysis of Spatial Stratified Heterogeneity	<a href="https://github.com/stscl/gdverse">https://github.com/stscl/gdverse</a>	R, C++, Python
geocomplexity	Mitigate Spatial Bias Through Geographical Complexity	<a href="https://github.com/ausgis/geocomplexity">https://github.com/ausgis/geocomplexity</a>	C++, R, C
esp	Enhanced Stratified Power	<a href="https://github.com/ausgis/esp">https://github.com/ausgis/esp</a>	R, C++
sdsfun	Spatial Data Science Complementary Features	<a href="https://github.com/stscl/sdsfun">https://github.com/stscl/sdsfun</a>	R, C++
geosimilarity	Geographically Optimal Similarity	<a href="https://github.com/ausgis/geosimilarity">https://github.com/ausgis/geosimilarity</a>	R
GD	Geographical Detectors for Assessing Spatial Factors	<a href="https://github.com/ausgis/GD">https://github.com/ausgis/GD</a>	R
geocn	Loads Spatial Data Sets of China	<a href="https://github.com/stscl/geocn">https://github.com/stscl/geocn</a>	R
spEcula	Spatial Prediction Methods In R	<a href="https://github.com/SpatLyu/spEcula">https://github.com/SpatLyu/spEcula</a>	R
tidyrgeoda	A tidy interface for rgeoda	<a href="https://github.com/SpatLyu/tidyrgeoda">https://github.com/SpatLyu/tidyrgeoda</a>	R
SpatBox	A Python Library For GeoSpatial Data Proprocessing and Modeling	<a href="https://github.com/SpatLyu/spatbox">https://github.com/SpatLyu/spatbox</a>	Python
qgisprocess	R package to use QGIS processing algorithms	<a href="https://github.com/r-spatial/qgisprocess">https://github.com/r-spatial/qgisprocess</a>	R
Rsagacmd	A package for linking R with the open-source SAGA-GIS	<a href="https://github.com/stevenpawley/Rsagacmd">https://github.com/stevenpawley/Rsagacmd</a>	R