

# Wenbo Lv

undergraduate

## Curriculum Vitae

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📍 Xi'an, Shaanxi  
🏠 spatlyu.github.io  
✉ lyu.geosocial@gmail.com  
🔗 SpatLyu  
🆔 0009-0002-6003-3800

## Education

2021-2025	<b>Geographic Information Science</b> Xi'an, Shaanxi	Shaanxi Normal University
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## 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, Wen-Bo, 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, Wenbo, & 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, Wenbo. (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	<b>Grand Prize in the 12th National University Student GIS Application Skills Competition</b>
2023.11	<b>First Prize in the Second National University Student Ecological Environment Management Research Innovation Competition</b>
2023.12	<b>Second Prize of the 5th 'Guodi Cup' National College Student Natural Resource Science and Technology Competition, China Society of Natural Resources</b>
2021.10	<b>Outstanding Individual in Military Training Publicity for College Students, Shaanxi Normal University</b>
2024.06	<b>National University Student Innovation and Entrepreneurship Training Program Qualified Completion</b>

## Unpublished

First Author	<b>gdverse: An R package facilitating spatial stratified heterogeneity analysis with geographical detector models</b>	Submitting to TGIS
First Author	<b>Collaborative modeling of spatial dependence and spatial stratified heterogeneity</b>	In writing
First Author	<b>An interpretable stratified power model to assess strength and direction of spatial associations</b>	In writing
First Author	<b>Geocomplexity Mitigates Spatial Bias</b>	In writing

## In research

Leader

**Extract Urban Spatial Boundaries in Xi'an City Using Deep Learning**

- Utilized advanced spatial sampling methods and unsupervised algorithms to automatically generate sample sets. Employed geographically weighted neural networks combined with logistic regression to extract urban spatial boundaries

**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
sesp	Spatially Explicit Stratified Power	<a href="https://github.com/ausgis/sesp">https://github.com/ausgis/sesp</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
qgisprocess	R package to use QGIS processing algorithms	<a href="https://github.com/r-spatial/qgisprocess">https://github.com/r-spatial/qgisprocess</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