



# Kai Ren

GIS & RS · AGRICULTURE · CLIMATE CHANGE · GEOSPATIAL INTELLIGENCE · SOFTWARE DEVELOPMENT

Northwest A&F University, China / Curtin University, Australia

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“You have to believe in yourself. That’s the secret of success.”

## Summary

Kai Ren is a Ph.D. Candidate at Northwest A&F University. Dedicated to advancing knowledge in GIS and Agriculture through rigorous research and academic inquiry. Passionate about GIS · RS · Agriculture · Geospatial Intelligence and wanna to be an academic excellence.

## Education

**Curtin University** Ranked #183 in QS 2026 - **Research Associate in Geospatial Analysis and Sustainability**

Perth, Australia

• School of Design and the Built Environment · Curtin Geospatial Intelligence Lab

Mar. 2023 - Mar. 2025

**Northwest A&F University** 985/211 - **Ph.D. Student in Land Resources and Spatial Information Technology**

Yangling, China

• College of Natural Resources and Environment · State Key Laboratory of Soil and Water Conservation and Desertification Control

Sep. 2020 - Sep. 2025

**Nanjing Normal University** 211 - **M.S. in Cartography and Geographic Information System (GIS)**

Nanjing, China

• College of Geographic Sciences · Key Laboratory of Virtual Geographic Environment Ministry of Education (VGE)

Sep. 2016 - Jun. 2019

**Northwest A&F University** 985/211 - **B.S. in Geographic Information System (GIS)**

Yangling, China

• College of Natural Resources and Environment

Sep. 2012 - Jun. 2016

## Skills

**Programming** R, Python, Java, LaTeX, C, C#, C++, SQL, and Machine Learning (Random Forest, Decision Tree, Neural Networks etc.)

**Software** Google Earth Engine (GEE), ArcGIS Pro, Erdas, ENVI, Illustrator, Eclipse, IntelliJ IDEA, Pycharm, Photoshop

**Web Development** Back-end: Java, Spring Boot, Struts-Spring-Hibernate, Flask; Front-end: HTML-CSS-JS, Vue

## Presentations

**GIS Workshop**

Perth, Australia

Gave a presentation “Sharing Tools and Techniques in Data Visualization”

Dec. 2023

• Introduce and teach the scientific drawing tool Adobe Illustrator and the use of LaTeX tools, and introduce how to build social media matrix.

**6<sup>th</sup> City+ International Conference (City+@Perth)**

Perth, Australia

Presentation on the Conference during Session 5 with the Theme of Spatial methods.

Sep. 2023

• Integrating machine learning and spatial stratified heterogeneity to analyze spatial disparities and determinants of wheat production in Australia.

## Publications

- **Author:** [1] **Ren, K.**, Song, Y.\*, Li, L., Mancini, F., Xiao, Z., Zhang, X., Qu, R., Yu, Q.\*, 2025. Identifying climate and environmental determinants of spatial disparities in wheat production using a geospatial machine learning model. *GIScience & Remote Sensing*, 62(1): 2533487. [Top Journal in Zone 1] [url](#)  
[2] **Ren, K.**, Song, Y.\*, Yu, Q.\*, Second-dimension outliers for spatial prediction. *International Journal of Geographical Information Science*. [Top Journal in Zone 1] (Decision pending)  
[3] **Ren, K.**, Song, Y., Yu, Q., Spatial outliers as a pattern measure for explaining heterogeneity. (Under Review)
- **Co-author:** [1] Yang, X., Song, Y., Yoo C., **Ren, K.**, Wu, P., 2025. Irregular anisotropy in surface urban heat island footprint. *Sustainable Cities and Society*, p.106779. [url](#)  
[2] Yang, L., Luo, P., Zhang, Z., Song, Y., **Ren, K.**, Zhang, C., Awange, J., Atkinson, P.M. and Meng, L., 2024. A spatio-temporal unmixing with heterogeneity model for the identification of remotely sensed MODIS aerosols: Exemplified by the case of Africa. *International Journal of Applied Earth Observation and Geoinformation*, 132, p.104068. [url](#)  
[3] Zhang, X., Song, Y., Dewan, A., Guo, Z., Cao, X., Bie, Q., Xie, Y., Ma, X., **Ren, K.**, Zhang, H. and Xi, G., 2024. Ecological influence of oasisation on peripheral regions. *International Journal of Applied Earth Observation and Geoinformation*, 132, p.104004. [url](#)  
[4] Xiao, Z., Song, Y., **Ren, K.**, Zheng, X., Zhang, Z., Wu, P., Evaluating urban greenspace quality and its impact on mortality risk: A longitudinal ecological study in Australia. (Under Review)  
[5] Yang, X., Song, Y., **Ren, K.**, Wu, P., Pseudo-spatial learning. (Under Review)  
[6] Li, L., He, Q., Shi, Y., Feng, P., Shi, L., **Ren, K.**, Yao, N., Liu, K., Harrison, M. T., Li, Y., Liu, D. L., Huete, A., Yu, Q., Yang, G., Robustness and uncertainty in drought trend projections across dryland and non-dryland regions under greenhouse warming. (Under Review)
- **Software Copyright:** [1] Structural Surface Recognition and Intelligent Analysis System of Layered Geological Body. (No. 2019SR0706808)  
[2] Dianchi Lake Water Body Cyanobacteria Bloom Drift Simulation System. (No. 2018SR955442)

- [3] Simulation System of Total Suspended Solids in Large Water Bodies. (No. 2018SR798096)
- [4] Hydrogeological Modeling and Simulation System. (No. 2017SR427979)
- [5] 3D Modeling and Analysis System of Underground Space. (No. 2017SR431955)
- [6] Multi-Dimensional Grid Adaptive Generation System For Geoscience Simulation. (No. 2017SR374939)
- [7] Dynamic Visualization System For Geoscience Model Simulation. (No. 2017SR374929)
- **Conference:** [1] **Ren, K.**, Song, Y. and Yu, Q. (2025). A Novel Geospatial Machine Learning Approach for Uncovering Wheat Production Disparities: Evidence from Australia. *The 11<sup>th</sup> International Conference on Innovative Production and Construction (IPC2025)*. Perth, Australia.
- [2] **Ren, K.**, Song, Y., & Yu, Q., etc. (2024). Assessing the Impact of ENSO and Indian Ocean Dipole on Australian Bushfires Using Random Forests. *2024 American Geophysical Union (AGU24)*. Washington, D.C., USA.
- [3] **Ren, K.** & Song, Y. (2023). Local spatial heterogeneity of Wheat Yields in Western Australia. In *Proceedings of City+2023@Perth International Conference on Geospatial Big Data and Artificial Intelligence for Cities*. Perth, Curtin University, Australia.

## Peer Review

- Resources, Conservation and Recycling (**IF 10.9**)
- International Journal of Applied Earth Observation and Geoinformation (**IF 8.6**)
- All Earth (IF 2.6)
- GIScience & Remote Sensing (**IF 6.9**)
- Geoscientific Model Development (**IF 4.9**)
- Journal of Spatial Science (IF 1.7)

## Experience

- The 11<sup>th</sup> International Conference on Innovative Production and Construction (IPC 2025)** - **Committee** *Perth, Australia*  
 • Participate in organizing conferences and manage the official website. *4 & 9 Aug. 2025*
- ISPRS Technical Commission IV Symposium 2024** - **Conference staff** *Perth, Australia*  
 • Assist in the management and organization of the Conference. *22 -25 Oct. 2024*
- The 10<sup>th</sup> International Conference on Innovative Production and Construction (IPC 2024)** - **Committee** *Perth, Australia*  
 • Participate in organizing conferences and manage the official website. *11 & 12 Jul. 2024*
- GISphere** - **Community Volunteer** *Perth, Australia*  
 • Manage and edit the GISInfo Study Abroad Guide, and operate the official WeChat and study abroad group for updates. *Dec. 2022 - Present*

## Activities

- Visited Rio Tinto (the world's Top 2 largest metals and mining corporation) *Feb. 2024, Perth, Australia*
- Australian-French Association for Research and Innovation (AFRAN) Forum *26 Oct. 2023, Perth, Australia*
- Vicarious calibration of the NASA PACE: deployment of the MarONet (Marine Optical Network) off Perth *20 Oct. 2023, Perth, Australia*
- Precision Agriculture meeting at Centre for Crop and Disease Management, Curtin University *6 Sep. 2023, Perth, Australia*
- Project exchange meeting at Main Roads Western Australia *Mar. 2023, Perth, Australia*

## Honors & Awards

- 2025 **International Conference Committee**, One of the Committees of an the 11<sup>th</sup> International Conference on Innovative Production and Construction (IPC 2025, 4-9 August 2025, Perth, Australia) *Perth, Australia*
- 2024 **International Conference Staff**, ISPRS Technical Commission IV Symposium 2024. October 22 - 25, 2024. *Perth, Australia*
- 2024 **International Conference Committee**, One of the Committees of an the 10<sup>th</sup> International Conference on Innovative Production and Construction (IPC 2024, 11-12 July 2024, Perth, Australia) *Perth, Australia*
- 2023 **International Conference Committee**, One of the Organizers of an International Academic Conference, City+2023@Perth, with the theme of Geospatial Big Data and Artificial Intelligence for Cities *Perth, Australia*
- 2022 **Bronze Award (Provincial Level)**, in the 11<sup>th</sup> Challenger Cup Shaanxi University Student Entrepreneurship Plan Competition *Xi'an, China*
- 2022 **Silver Award**, in the 10<sup>th</sup> Challenge Cup College Student Entrepreneurship Plan Competition of Northwest A&F University *Yangling, China*
- 2019 **Outstanding Graduate**, Nanjing Normal University *Nanjing, China*
- 2018 **Excellent Postgraduate (Four times)**, Nanjing Normal University *Nanjing, China*
- 2017 **First-class scholarship (Two times)**, Nanjing Normal University *Nanjing, China*
- 2015 **Excellence Award**, Organize the pastoral envoy team of Northwest A&F University and won the "Excellent Award" at the university level *Yangling, China*
- 2015 **Excellence Award**, The National Science and Technology Innovation Project Numerical Simulation and Mechanism Research of Loess Slope Cultivated Land Microtopography *Yangling, China*
- 2014 **Excellent Award**, Organize the activity of Three Visits to the Countryside, Investigation Service in Ansai Comprehensive Test Station of Soil and Water Conservation, and won the Excellent Award at the university level *Yangling, China*