



# 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** 981/211 - **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** 981/211 - **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

**International Conference IPC2025 - Presented an Oral Report**

Perth, Australia

TITLE: “A Novel Geospatial Machine Learning Approach for Uncovering Wheat Production Disparities: Evidence from Australia”

Aug. 2025

• Contributed to the discussion on geospatial machine learning applications in agricultural production research through the presentation.

**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] (Accept; in press.)
- [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., Ren, K., Wu, P., Pseudo-spatial learning. (Under Review)
- [2] 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)
- [3] Yang, X., Song, Y., Yoo C., Ren, K., Wu, P., Irregular anisotropy in surface urban heat island footprint. (Under review)
- [4] 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)
- [4] 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](#)
- [5] 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](#)

- **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.  
[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.

## 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

### ISPRS Technical Commission IV Symposium 2024 - CONFERENCE STAFF

- Assist in the management and organization of the Conference.

Perth, Australia

22-25 Oct. 2024

### The 10<sup>th</sup> International Conference on Innovative Production and Construction (IPC 2024) -

#### COMMITTEE AND CONFERENCE STAFF

- Participate in organizing conferences and manage the official website.

Perth, Australia

11 & 12 Jul. 2024

### GISphere - COMMUNITY VOLUNTEER

- Manage and edit the GISInfo Study Abroad Guide, and operate the official WeChat and study abroad group for updates.

Perth, Australia

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