

Kai Sun, Ph.D.

Department of Geography, University at Buffalo, SUNY

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Academic Appointment

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| 2023 – present | Postdoctoral Associate, Department of Geography, University at Buffalo |
| 2021 – 2023 | Postdoc Researcher, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences |

Education

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| 2017 – 2021 | Ph.D., Cartography and GIS, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences |
| 2017 – 2019 | Visiting Ph.D., Geography, Department of Geography, University at Buffalo |
| 2014 – 2017 | M.S., Cartography and GIS, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences |
| 2010 – 2014 | B.S., Remote sensing science and technology, School of Remote Sensing and Information Engineering, Wuhan University |

Research Areas

Geographic Information Science, Geospatial Artificial Intelligence, Spatially Explicit Model, Disaster management

Publications (*Corresponding author)

1. **Sun, K.**, Hu, Y., Gaurish L., & Zhou, R. Z. Spatial cross-validation for GeoAI, In: S. Gao, Y. Hu, and W. Li (Eds), Handbook of Geospatial Artificial Intelligence, Taylor & Francis Group.
2. Zhu, Y., **Sun, K.***, Wang, S., Zhou, C., Lu, F., Lv, H., Qiu, Q., Wang, X. & Qi, Y., 2023. An adaptive representation model for geoscience knowledge graphs considering complex spatiotemporal features and relationships. Science China Earth Sciences, 1-16.
3. Li, W., **Sun, K.***, Zhu, Y., Ding, F., Hu, L., Dai, X., Song, J., Yang, J., Qian, L. & Wang, S., 2024. GeoTPE: A neural network model for geographical topic phrases extraction from literature based on BERT enhanced with relative position embedding.

Expert Systems with Applications, 235, 121077.

4. **Sun, K.**, Hu, Y., Ma, Y., Zhou, R.Z. & Zhu, Y., 2023. Conflating point of interest (POI) data: A systematic review of matching methods. *Computers, Environment and Urban Systems*, 103, 101977.
5. Dai, X., Zhu, Y., **Sun, K.***, Zou, Q., Zhao, S., Li, W., Hu, L. & Wang, S., 2023. Examining the Spatially Varying Relationships between Landslide Susceptibility and Conditioning Factors Using a Geographical Random Forest Approach: A Case Study in Liangshan, China. *Remote Sensing*, 15(6), 1513.
6. Wang, S., Yan, X., Zhu, Y., Song, J., **Sun, K.**, Li, W., Hu, L., Qi, Y., & Xu, H. (2022). New Era for Geo-Parsing to Obtain Actual Locations: A Novel Toponym Correction Method Based on Remote Sensing Images. *Remote Sensing*, 14(19), 4725.
7. Wang, S., Zhu, Y., Qi, Y., Hou, Z., **Sun, K.**, Li, W., Hu, L., Yang, J., & Lv, H. (2022). A unified framework of temporal information expression in geosciences knowledge system. *Geoscience Frontiers*, 101465.
8. Wang, S., Zhu, Y., Qian, L., Song, J., Yuan, W., **Sun, K.**, Li, W., & Cheng, Q. (2022). A novel rapid web investigation method for ecological agriculture patterns in China. *Science of The Total Environment*, 156653.
9. Jiang, D., Ma, T., Hao, M., Ding, F., **Sun, K.**, Wang, Q., Kang, T., Wang, D., Zhao, S., Li, M., Xie, X., Fan, P., Meng, Z., Zhang, S., Qian, Y., Edwards, J., Chen, S., & Li, Y. (2022). Quantifying risk factors and potential geographic extent of African swine fever across the world. *PloS one*, 17(4), e0267128.
10. Qiu, Q., Xie, Z., Wang, S., Zhu, Y., Lv, H., & **Sun, K.** (2022). ChineseTR: A weakly supervised toponym recognition architecture based on automatic training data generator and deep neural network. *Transactions in GIS*, in press.
11. Zhu, Y., **Sun, K.**, Hu, X., Lv, H., Wang, X., Yang, J., Wang, S., Li, W., Song, J., Su, N., & Mu, X. (2022). Research and practice on the framework for the construction, sharing, and application of large-scale geoscience knowledge graphs. *Journal of Geo-information Science*, in press. (in Chinese)
12. **Sun, K.**, Hu, Y., Song, J., & Zhu, Y. (2021). Aligning geographic entities from historical maps for building knowledge graphs. *International Journal of Geographical Information Science*, 35(10), 2078-2107.
13. Li, W., **Sun, K.**, Zhu, Y., Song, J., Yang, J., Qian, L., & Wang, S. (2021). Analyzing the research evolution in response to COVID-19. *ISPRS International Journal of Geo-Information*, 10(4), 237-260.
14. **Sun, K.**, Zhu, Y., Pan, P., Hou, Z., Wang, D., Li, W., & Song, J. (2019). Geospatial

data ontology: the semantic foundation of geospatial data integration and sharing. *Big Earth Data*, 3(3), 269-296.

15. **Sun, K.**, Zhu, Y., & Song, J. (2019). Progress and challenges on entity alignment of geographic knowledge bases. *ISPRS International Journal of Geo-Information*, 8(2), 77-101.
16. Yang, J., Zhu, Y., Song, J., Lu, F., **Sun, K.**, & Li, W. (2018). A Precise Description Approach on the Result of Automatic Data Matching for Geo-spatial Model. *Journal of Geo-information Science*, 20(6), 744-752. (in Chinese)
17. Zhu, Y., Zhu, A. X., Song, J., Yang, J., Feng, M., **Sun, K.**, Zhang J., Hou Z., & Zhao, H. (2017). Multidimensional and quantitative interlinking approach for linked geospatial data. *International Journal of Digital Earth*, 10(9), 923-943.
18. Zhu, Y., Zhu, A. X., Feng, M., Song, J., Zhao, H., Yang, J., Zhang Q., **Sun K.**, Zhang J., & Yao, L. (2017). A similarity-based automatic data recommendation approach for geographic models. *International Journal of Geographical Information Science*, 31(7), 1403-1424.
19. Li, W., Zhu, Y., Song, J., **Sun, K.**, & Yang, J. (2017). Geospatial Data Provenance-Ontology and Its Application in Data Linking. *Journal of Geo-information Science*, 19(10), 1261-1269. (in Chinese)
20. **Sun, K.**, Zhu, Y., Pan, P., Luo, K., Wang, D., & Hou, Z. (2016). Research on Morphology-Ontology and Its Application in Geospatial Data Discovery. *Journal of Geo-information Science*, 18(8), 1011-1021. (in Chinese)
21. **Sun, K.**, Zhu, Y., Pan, P., Luo, K., Wang, D., & Hou, Z. (2015). Morphology-ontology of geospatial data and its application in data discovery. In 2015 23rd International Conference on Geoinformatics (pp. 1-6). IEEE.

Teaching

- GEO 514: GIS and Machine Learning (Spring 2024, at University at Buffalo)

Professional Presentations

1. Oral presentation (2023): GALLOC: A GeoAnnotator for Labeling LOCation descriptions from disaster-related text messages, *the 4th Spatial Data Science Symposium*, September 5-6, 2023, online.
2. Oral presentation (2023): GALLOC: A GeoAnnotator for Labeling LOCation descriptions from disaster-related text messages, *International Symposium on Location-Based Big Data and GeoAI*, August 12, 2023, online.
3. Oral presentation (2022): Geospatial data ontology: the semantic foundation of

geospatial data integration and sharing, *International Training Workshop on Resource & Environment Scientific Data Sharing and Disaster Risk Reduction Knowledge Service along the Belt and Road*, November 20-24, 2022, online.

4. Oral presentation (2022): Aligning geographic entities from historical maps based on spatial mapping transformation, *The 5th International Conference on Big Earth Data*, November 12-13, 2022, online.
5. Oral presentation (2021): Geospatial data ontology: the semantic foundation of geospatial data integration and sharing, *the 19th International Conference on Spatial Data Handling and Geographic Intelligence*, August 13-14, 2021, online.
6. Oral presentation (2015): Morphology-Ontology of Geospatial Data and its Application in Data Discovery, *the 23rd International Conference on Geoinformatics*, June 19-21, 2015, Wuhan, China.

Service of Peer Reviewer for Academic Journals

- International Journal of Geographical Information Science
- Transactions in GIS
- Information Processing and Management
- Computers & Geosciences
- Journal of Earth Science
- PLOS ONE
- Remote Sensing

Awards

- Excellent Graduate, by IGSNRR, 2021
- Doctor Fellowship, by IGSNRR, 2018, 2019
- Joint Ph.D. Student Scholarship, by China Scholarship Council, 2018
- Undergraduate Fellowship, by Wuhan University, 2011, 2012