

Ryan Zhenqi Zhou

Last updated: *August 2026*

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RESEARCH EXPERTISE

- GeoAI, Geospatial Data Science, Disaster Resilience, Population Health, Human Mobility

AWARDS & HONORS

2026	Excellence in Research, Scholarship and Creativity Award, by <i>University at Buffalo - SUNY</i>
2025	CaGIS Student Scholarship (1-3 awardees nationwide per year), by <i>Cartography and Geographic Information Society (CaGIS)</i> [Media Report]
2025	Hugh W. Calkins Applied GIS Award, by <i>Department of Geography at the University at Buffalo - SUNY</i>
2025	AAG SAM Student Travel Award, by <i>AAG Spatial Analysis & Modeling Specialty Group (SAM)</i>
2024	CESASC Scholarship, by <i>Chinese-American Engineers and Scientists Association of Southern California (CESASC)</i>
2024	Michael Trapasso Climate Impacts Award, by <i>Department of Geography at the University at Buffalo - SUNY</i>
2024	Hugh W. Calkins Applied GIS Award, by <i>Department of Geography at the University at Buffalo - SUNY</i>
2023	Student Fellow, by <i>2023 NSF I-GUIDE Summer School Program</i>
2023	Hugh W. Calkins Applied GIS Award, by <i>Department of Geography at the University at Buffalo - SUNY</i>
2021	Outstanding Graduate Award, by <i>Nanjing Forestry University</i>
2020	National Scholarship Award, by <i>Department of Education, China</i>
2020	Merit Student Award, by <i>Nanjing Forestry University</i>
2020	First-class Scholarship Award, by <i>Nanjing Forestry University</i>
2019	Best Project Award, International Digital Urban Design Week held by <i>International Society of City & Regional Planners (ISOCARP)</i> and <i>Southeast University</i> in Nanjing

EDUCATION

2021 – 2026	Ph.D. in GIScience and GeoAI University at Buffalo - SUNY, USA
Supervisor:	Dr. Yingjie Hu
2018 - 2021	Master of Engineering in Landscape Architecture Nanjing Forestry University, China
2014 - 2018	Bachelor of Agriculture in Landscape Gardening Zhejiang A&F University, China

EXTERNAL GRANTS

2022	Student PI , “Understanding community resilience in the 2021 Texas winter storm through human mobility data and its association with locations reported on social media”, Research Experience for Graduates (REG) Supplement Grant, National Science Foundation , 2022-2023, \$6000.
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PUBLICATIONS

Publications as the First Author

2025	Zhou R.Z. , Hu Y., Sun K., Muldoon R., Clark S., & Joseph K. (2025): Explainable GeoAI and statistical analysis reveal complementary insights about disparities of 311 help requests during the 2022 Buffalo blizzard. <i>International Journal of Disaster Risk Reduction</i> , 105635. https://doi.org/10.1016/j.ijdr.2025.105635
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- 2024** **Zhou R.Z.**, Hu Y., Zou L., Cai H., & Zhou B. (2024): Understanding the disparate impacts of the 2021 Texas winter storm and power outages through mobile phone location data and nighttime light images. *International Journal of Disaster Risk Reduction*, 103, 104339. <https://doi.org/10.1016/j.ijdr.2024.104339>
- 2022** **Zhou R.Z.**, Hu Y., Tirabassi J.N., Ma Y., & Xu Z. (2022): Deriving neighborhood-level diet and physical activity measurements from anonymized mobile phone location data for enhancing obesity estimation. *International Journal of Health Geographics*, 21, 22. <https://doi.org/10.1186/s12942-022-00321-4>
- 2021** **Zhou R.Z.**, Xu Z., Liu A., Zhou S., Mu L., & Zhang X. (2021): Mapping the accessibility of medical facilities of Wuhan during the COVID-19 pandemic. *International Journal of Geo-Information*, 10(5), 318. <https://doi.org/10.3390/ijgi10050318>
- 2020** **Zhou R.Z.** & Xu Z. (2020): Detecting the pedestrian shed and walking route environment of urban parks with open-source data: a case study in Nanjing, China. *International Journal of Environmental Research and Public Health*, 17(13), 4826. <https://doi.org/10.3390/ijerph17134826>

Publications as a Co-author

- 2025** Kim, J., Hu, Y., Elhami-Khorasani, N., Sun, K., & **Zhou, R. Z.** (2025): Assessment of deep learning models integrated with weather and environmental variables for wildfire spread prediction and a case study of the 2023 Maui fires. *Natural Hazards*, 122(1), 10. <https://doi.org/10.1007/s11069-025-07807-x>
- 2025** Chen, Y., Nelson, J. K., Zhou, B., **Zhou, R. Z.**, Ye, S., Liu, H., Gu, Z., Kar, A., Kwon, H., Chen, P., Sun, M., & Kang, Y. (2025): Where are GIScience faculty hired from? Analyzing faculty mobility and research themes through hiring networks. *Cartography and Geographic Information Science*, 1-25. <https://doi.org/10.1080/15230406.2025.2567564>
- 2025** Sun K., Hu Y., Joseph K., & **Zhou R.Z.** (2025): GALLOC: a GeoAnnotator for Labeling LOcation descriptions from disaster-related text messages. *International Journal of Geographical Information Science*, 1-31. <https://doi.org/10.1080/13658816.2025.2464643>
- 2024** Sun K., **Zhou R.Z.**, Kim J., & Hu Y. (2024): PyGRF: an improved Python Geographical Random Forest model and case studies in public health and natural disasters. *Transactions in GIS*, 28(7), 2476-2491. <https://doi.org/10.1111/tgis.13248>
- 2024** Tirabassi, J. N., Wang, J., **Zhou, R. Z.**, & Hu, Y. (2024): Human mobility data demonstrates increase in park visitation since start of COVID-19 pandemic in Buffalo, New York. *Preventive Medicine Reports*, 102650. <https://doi.org/10.1016/j.pmedr.2024.102650>
- 2023** Sun K., Hu Y., Lakhanpal, G., & **Zhou, R.Z.** (2023): Spatial cross-validation for GeoAI. *Handbook of Geospatial Artificial Intelligence*, Taylor & Francis Group.
- 2023** Hu, Y., Mai, G., Cundy, C., Choi, K., Lao, N., Liu, W., Lakhanpal, G., **Zhou, R.Z.**, & Joseph, K. (2023): Geo-knowledge-guided GPT models improve the extraction of location descriptions from disaster-related social media messages. *International Journal of Geographical Information Science*, 1-30. <https://doi.org/10.1080/13658816.2023.2266495>
- 2023** 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. <https://doi.org/10.1016/j.compenvurbsys.2023.101977>
- 2023** Xu Z., Li M., Chen Y., & **Zhou R.Z.** (2023): Assessing the cycling accessibility of comprehensive parks with online maps: a case study of Nanjing City. *Journal of Nanjing Forestry University Natural Science*, 1-8 (in Chinese).
- 2022** Zhang B., Dong Y., Kelobonye K., **Zhou R.Z.**, & Xu Z. (2022): Delineating walking catchment of the existing and proposed public sports facilities with open-source data: a case study of Nanjing. *Applied Spatial Analysis and Policy*, 16, 729-749. <https://doi.org/10.1007/s12061-022-09499-3>
- 2022** Chen Y., Zhang B., Li M., **Zhou R.Z.**, & Xu Z. (2022): Concatenating daily exercise routes with public sports facilities, bicycle lanes, and green spaces: a feasibility analysis in Nanjing, China. *Land*, 11, 2251. <https://doi.org/10.3390/land11122251>
- 2022** Yue M., Hu Y., Moncrieff G.R., Slingsby J.A., Wilson A.M., Maitner B., & **Zhou R.Z.** (2022): Forecasting vegetation dynamics in an open ecosystem by integrating deep learning and environmental variables. *International Journal of Applied Earth Observation and Geoinformation*, 114, 103060. <https://doi.org/10.1016/j.jag.2022.103060>
- 2022** Dong Y., Zhang B., **Zhou R.Z.**, & Xu Z. (2022): Assessing the accessibility of swimming pools in Nanjing by walking and cycling using Baidu Maps. *International Journal of Geo-Information*, 11(10), 515. <https://doi.org/10.3390/ijgi11100515>

- 2021 Xu Z., **Zhou R.Z.**, Wang Y., Han L., & Xing J. (2021): Analysis on walking shed in comprehensive parks and urban form from a Park-City perspective. *City Planning Review*, 45(03), 81-90 (in Chinese).
- 2021 Xu Z., Liu A., **Zhou R.Z.**, & Han L. (2021): Analyzing and scenarioizing walking routes and urban context of middle school students with Baidu Map: a case study of Jianye District of Nanjing. *Modern Urban Research*, 2, 33-40 (in Chinese).
- 2021 Xu Z., Gao Z., **Zhou R.Z.**, & Zhang J. (2021): Research on campus sitting space: a case study of Nanjing Forestry University. *Modern Urban Research*, 4, 30-35 (in Chinese).
- 2020 Liu A., Kelobonye K., **Zhou R.Z.**, Xu Q., Xu Z., & Han L. (2020): School commuting mode shift: a scenario analysis for active school commuting using GIS and online map API. *International Journal of Geo-Information*, 9(9), 520. <https://doi.org/10.3390/ijgi9090520>
- 2020 Zhang J., **Zhou R.Z.**, & Xu Z. (2020): Suitability evaluation of university facilities layout based on demand characteristics: taking several universities in Nanjing as examples. *Modern Urban Research*, 4, 43-51 (in Chinese).

Manuscripts in Preparation

- 2026 **Zhou R.Z.**, Zhang L., Joseph K., Muldoon R., Clark S., Yin F., & Hu Y. (2026): Understanding disrupted human mobility and its spatial disparities during the 2022 Buffalo blizzard using mobile phone location data and transformer models, *Under review*.

CONFERENCE & WORKSHOP PRESENTATIONS

- 2025 **Oral presentation:** Explainable GeoAI and statistical analysis reveal complementary insights about disparities of 311 help requests during the 2022 Buffalo blizzard, in the *2025 AAG Annual Meeting*, Mar. 26, 2025, Detroit, USA.
- 2024 **Poster presentation:** Understanding the disparate impacts of the 2021 Texas winter storm and power outages through mobile phone location data and nighttime light images, in the *31st International Conference on Geoinformatics, CPGIS*, Aug. 15, 2024, Toronto, Ontario, Canada.
- 2023 **Oral presentation:** Improving the 3D representation of rivers in digital elevation models (DEM), in the *2023 NSF I-GUIDE Summer School*, Aug. 11, 2023, Boulder, Colorado, USA.
- 2023 **Oral presentation:** Understanding spatial and temporal impacts of the Texas winter storm in 2021 via mobile phone location data and nighttime light images, in the *2023 AAG Annual Meeting*, Mar. 26, 2023, Denver, Colorado, USA.
- 2022 **Oral presentation:** Deriving neighborhood-level diet and physical activity measurements from anonymized mobile phone location data for enhancing obesity estimation, in the *GEOMED 2022*, Oct. 14, 2022, University of California, Irvine, California, USA.
- 2022 **Poster presentation:** Human mobility data demonstrates increase in park visitation since start of COVID-19 pandemic in Buffalo, New York, in the *American College of Preventive Medicine (ACPM) 2022 annual meeting*, Jun. 15-18, 2022, Denver, Colorado, USA (Co-author).
- 2022 **Poster presentation:** Mapping the accessibility of medical facilities of Wuhan the COVID-19 pandemic, in the *University Consortium for Geographic Information Science (UCGIS) Symposium 2022*, Jun. 7-9, 2022, Syracuse, New York, USA.
- 2022 **Oral presentation:** The role of place visits related to diet and physical activity from mobile phone location data in enhancing obesity estimation at the neighborhood level, in the *Graduate Student Lightning Talks, Spring 2022 Colloquium Speaker Series, UB Department of Geography*, Feb. 18, 2022, Buffalo, New York, USA.
- 2019 **Poster presentation:** Measuring the walkability around the urban parks: a case study of Nanjing, in the *16th International Conference on Urban Health*, Nov. 4-8, 2019, Xiamen, Fujian, China.
- 2019 **Poster presentation:** Mapping the service area and population of urban parks for park city initiative: a case study of Nanjing, in the *16th International Conference on Urban Health*, Nov. 4-8, 2019, Xiamen, Fujian, China.
- 2019 **Oral presentation:** Old community renovation based on data analysis, in the *9th Summer Workshop DigitalFUTURES YOUNG Forum 2019—Architectural Intelligence held at the School of Architecture and Urban Planning (CAUP), Tongji University*, Jun. 30 to Jul. 6, 2019, Shanghai, China.
- 2019 **Poster presentation:** Intelligence and Strategy of Urban Deduction—Spark Planning (UrbanGAN), in the *9th Summer Workshop DigitalFUTURES SHANGHAI 2019—Architectural Intelligence held at the School of Architecture and Urban Planning (CAUP), Tongji University*, Jun. 30 - Jul. 6, 2019, Shanghai, China (Co-author).

- 2019** **Oral presentation:** Social Loop, loops to connect city and communities, in the *International Digital Urban Design Week held by International Society of City & Regional Planners (ISOCARP) and Southeast University*, Jun. 10-15, 2019, Nanjing, Jiangsu, China.
- 2018** **Poster presentation:** The urban community agriculture practices in Chinese cities: case studies in Nanjing, in the *15th International Conference on Urban Health*, Nov. 27-30, 2018, Kampala, Uganda, Africa (Co-author).

PROFESSIONAL EXPERIENCE

- August 2026 – Present** **Yale Center for Geospatial Solutions**, Research Data Specialist
- August 2021 – May 2026** **GeoAI Lab**, University at Buffalo – SUNY, Research Assistant
I conduct research on geospatial data science and AI with applications in the areas of disaster resilience (e.g., winter storms) and public health (e.g., obesity estimation)
- May 2024 – May 2026** **World Bank – IFC**, Global Health, Geospatial Data Scientist | Consultant
Research Project: A geospatial analysis of SafeCare healthcare facilities characteristics, climate risks, and economic and demographic factors in Kenya and Tanzania
- August 2024 – May 2025** **Cornell University**, Department of Population Health Sciences, Research Assistant
Research Project: Using machine learning to identify social risk factors of hypertension and diabetes in New York City: evidence to support the HealthyNYC initiative
- August 2023 – August 2023** **NSF I-GUIDE Summer School**, Student Fellow
Research Project: Improving the 3D representation of rivers in digital elevation models (DEM)

TEACHING EXPERIENCE

- August 2022 – May 2023** Department of Geography, University at Buffalo – SUNY, Teaching Assistant
GEO 481/506 Geographical Information Systems Lab
Student Evaluation: 4.75/5 (Gold Standard)

TECHNICAL SKILLS

- **Programming/Tools:** Python, ArcGIS Pro, R, SQL, Git
- **Python Libraries:** NumPy, Pandas, GeoPandas, Shapely, Fiona, Rasterio, Folium, SciPy, Scikit-Learn, Keras, TensorFlow, Matplotlib, Seaborn, Bokeh, Request, Json, PyQt
- **Models:** Regression (OLS, GWR, MGWR, etc.), Tree-based Models (RF, XGBoost, GRF), Neural Networks (DNN, etc.), Time Series Models (LSTM, Transformer, etc.), Explainable AI (SHAP), Generative AI (GPT), Clustering (K-means)

SERVICE

Peer Review for Academic Journals

- Computational Urban Science
- Environment and Planning B: Urban Analytics and City Science
- Journal of Maps
- Royal Society Open Science
- International Journal of Digital Earth
- Transactions in GIS
- Scientific Data
- Spatial and Spatio-temporal Epidemiology
- International Journal of Disaster Risk Reduction
- Urban Informatics
- iScience

- PLOS One
- International Journal of Geographical Information Science
- Big Earth Data
- International Journal of Health Geographics

Voluntary Service

- CPGIS Website and Email List Committee member, Apr. 2026-Present, USA
- Co-organizer of GeoAI for Disaster Resilience session at AAG, Mar. 26, 2025, USA
- Host of GISalon, GISphere (International Student Academic Organization), Oct. 2021-Jul. 2024, USA
- Faculty Liaison for PhD, Geography GSA, University at Buffalo - SUNY, Sept. 2022-May. 2024, USA
- Conference Assistant, 2024 CESASC 62nd Annual Convention, May 4, 2024, USA
- Conference Assistant, 2023 AAG Annual Meeting, Mar. 23-27, 2023, USA

Media Coverage

UB Now: UB PhD student receives national cartography and geographic information society scholarship

Channel 2 WGRZ: Study looks at social media's role in connecting the community during the 2022 blizzard

Buffalo News: Facebook groups saved lives during '22 blizzard. UB studying how they kept communities connected