YUE LIN

Assistant Instructional Professor
Center for Spatial Data Science
University of Chicago
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EDUCATION

2023	**Ph.D., Geography** The Ohio State University, Columbus, OH
2022	**M.A., Geography** The Ohio State University, Columbus, OH
2022	**Graduate Certificate in College and University Teaching** The Ohio State University, Columbus, OH
2019	**B.S., Geographic Information Science** Wuhan University, Wuhan, China

ACADEMIC EMPLOYMENT

2023–	Assistant Instructional Professor, Division of the Social Sciences and the College, University of Chicago, Chicago, IL
2022–2023	Graduate Research Associate, Center for Urban and Regional Analysis, The Ohio State University, Columbus, OH
2022	Instructor of Record, Department of Geography, The Ohio State University, Columbus, OH
2019–2021	Graduate Teaching Associate, Center for Urban and Regional Analysis, The Ohio State University, Columbus, OH

RESEARCH AND TEACHING INTERESTS

Geospatial data science
Geospatial computing
Urban informatics
Geospatial technology & social justice
Location privacy

AWARDS AND HONORS

External

2023	CaGIS Doctoral Student Scholarship Award, *Cartography and Geographic Information Society*
2023	IJGI Travel Award, *ISPRS International Journal of Geo-Information*
2022	Third Place Doctoral Student Paper Award, *East Lakes Division of the American Association of Geographers*
2022	ICA Scholarship, *International Cartographic Association*
2022	Third Place Student Lightening Talks Award, *University Consortium for Geographic Information Science*
2022	Student Travel Award, *Spatial Analytics and Modeling Specialty Group, American Association of Geographers*
2021	First Place Doctoral Student Paper Award, *East Lakes Division of the American Association of Geographers*

2021 First Place Student Paper Award, *University Consortium for Geographic Information Science*
2021 First Place Award, AAG Robert Raskin Student Competition, *Cyberinfrastructure Specialty Group, American Association of Geographers*
2020 AAG Kauffman Runner-Up Award for Best Student Paper in Geography & Entrepreneurship, *American Association of Geographers*

Internal

2023 E. Willard and Ruby S. Miller Award, *The Ohio State University*
2022 Career Development Grant Award, *Council of Graduate Students, The Ohio State University*
2022 Fenburr Travel Scholarship for Outstanding PhD Student, *The Ohio State University*
2019 Department Travel Scholarship for AAG Annual Meeting, *The Ohio State University*
2019 Outstanding Bachelor's Thesis Award, *Wuhan University*
2019 Outstanding Graduate Award, *Wuhan University*
2018 Wang Zhizhuo Innovative Talent Scholarship (First Class), *Wuhan University*
2017 Zhonghaida Scholarship (First Class), *Wuhan University*
2016–2018 Outstanding Student Award, *Wuhan University*
2016 Second Class Scholarship, *Wuhan University*

GRANTS

2023 PI. History of Cartography. *Experiential Learning Grants, Chicago Studies, University of Chicago*, $2,500.
2022 PI. Location privacy and confidentiality: Towards ethical geospatial big data harnessing. *UCGIS I-GUIDE Community Champions Program, University Consortium for Geographic Information Science*, $3,000.
2020–2021 Key personnel (with PI: Ningchuan Xiao). Human mobility: Understanding the impact of COVID-19 and its social and economic contexts in Columbus, OH using traffic camera feeds. *National Science Foundation Geospatial Fellows Program, University of Illinois at Urbana-Champaign*, $2,400.

PUBLICATIONS

Refereed Journal Articles

2024 **Lin, Y.** & Xiao, N. Exploring the tradeoff between privacy and utility of complete-count census data using a multiobjective optimization approach. *Geographical Analysis*. Forthcoming.
2023 **Lin, Y.** Synthetic population data for small area estimation in the United States. *Environment and Planning B: Urban Analytics and City Science*. In Press. doi:10.1177/23998083231215825.
2023 **Lin, Y.** & Xiao, N. Generating small areal synthetic microdata from public aggregated data using an optimization method. *The Professional Geographer*, 75(6), 905–915.
2023 **Lin, Y.** Geo-indistinguishable masking: Enhancing privacy protection in spatial point mapping. *Cartography and Geographic Information Science*, 50(6), 608–623.
2023 **Lin, Y.** & Xiao, N. Assessing the impact of differential privacy on population uniques in geographically aggregated data: The case of the 2020 U.S. Census. *Population Research and Policy Review*, 42(5), 81.
2023 **Lin, Y.**, Xu, C., & Wang, J. sandwichr: Spatial prediction in R based on spatial stratified heterogeneity. *Transactions in GIS*, 27(5), 1579–1598.
2023 **Lin, Y.**, Li, J., Porr, A., Logan, G., Xiao, N. & Miller, H. Creating building-level, three-dimensional digital models of historic urban neighborhoods from Sanborn Fire Insurance maps using machine learning. *PLoS ONE*, 18(6), e0286340.

2023 **Lin, Y.** & Xiao, N. A computational framework for preserving privacy and maintaining utility of geographically aggregated data: A stochastic spatial optimization approach. *Annals of the American Association of Geographers*, 113(5), 1035–1056.

2022 **Lin, Y.** & Xiao, N. Identifying high accuracy regions in traffic camera images to enhance the estimation of road traffic metrics: A quadtree-based method. *Transportation Research Record*, 2676(12), 522–534.

2021 Zhang, X., **Lin, Y.**, Cheng, C., & Li, J. Determinant powers of socioeconomic factors and their interactive impacts on particulate matter pollution in North China. *International Journal of Environmental Research and Public Health*, 18(12), 6261.

2021 **Lin, Y.**, Kang, M., & He, B. Spatial pattern analysis of address quality: A study on the impact of rapid urban expansion in China. *Environment and Planning B: Urban Analytics and City Science*, 48(4), 724–740.

2020 **Lin, Y.**, Wang, J., & Xu, C. Theoretical and empirical comparative evaluations on measures of map association. *Journal of Geographical Systems*, 22, 361–390.

2020 **Lin, Y.**, Kang, M., Wu, Y., Du, Q., & Liu, T. A deep learning architecture for semantic address matching. *International Journal of Geographical Information Science*, 34(3), 559–576.

2019 **Lin, Y.**, Cai, Y., Gong, Y., Kang, M., & Li, L. Extracting urban landmarks from geographical datasets using a random forests classifier. *International Journal of Geographical Information Science*, 33(12), 2406–2423.

Refereed Conference Proceedings

2023 **Lin, Y.** & Xiao, N. Investigating MAUP effects on census data using approximately equal-population aggregations. *12th International Conference on Geographic Information Science (GIScience 2023)*, September 12–15, Leeds, UK.

2022 **Lin, Y.** & Xiao, N. Developing synthetic individual-level population datasets: The case of contextualizing maps of privacy-preserving census data. *AutoCarto 2022*, November 2–4, Redlands, CA.

Software

2022 **Lin, Y.**, Xu, C., & Wang, J. sandwichr: Spatial prediction based on spatial stratified heterogeneity. R package version 1.0.4. https://cran.r-project.org/web/packages/sandwichr/

PRESENTATIONS († PRESENTING AUTHOR)

Papers Presented at Professional Meetings

2024 Lin, Y.† Geo-indistinguishable masking: Enhancing privacy protection in spatial point mapping. *The 2024 Annual Meeting of the American Association of Geographers*, April 16–20, Honolulu, HI.

2023 Lin, Y. & Xiao, N.† Investigating MAUP effects on census data using approximately equal-population aggregations. *12th International Conference on Geographic Information Science (GIScience 2023)*, September 12–15, Leeds, UK.

2023 Lin, Y.† & Xiao, N. Exploring the tradeoff between privacy and utility of geographic data using a multiobjective optimization approach. *The 2023 Annual Meeting of the American Association of Geographers*, March 23–27, Denver, CO.

2023 Lin, Y., Li, J., Porr, A., Logan, G., Xiao, N. & Miller, H.† Creating high resolution, three-dimensional digital models of historic urban neighborhoods from Sanborn Fire Insurance maps using machine learning. *The 2023 Annual Meeting of the American Association of Geographers*, March 23–27, Denver, CO.

2022 Lin, Y.† & Xiao, N. Developing synthetic individual-level population datasets: The case of contextualizing maps of privacy-preserving census data. *AutoCarto 2022, The 24th International Research Symposium on Cartography and GIScience*, November 2–4, Redlands, CA.

2022 Lin, Y.† & Xiao, N. Exploring tradeoffs between privacy and utility of geographic data using a multiobjective optimization approach. *The 2022 Annual Meeting of the East Lakes Division of the American Association of Geographers*, October 27–28, Muskegon, MI.

2022 Lin, Y.† & Xiao, N. Spatial optimization for protecting privacy and preserving utility of geographically aggregated data. *UCGIS Symposium 2022: GIScience Forward: Meeting the Challenge*, June 7–9, Syracuse, NY.

2022 Lin, Y.† & Xiao, N. Examining threats to location privacy in geographically aggregated data with the protection of differential privacy. *The 2022 Annual Meeting of the American Association of Geographers*, February 25–March 1, virtual.

2021 Lin, Y.†, Xu, C., & Wang, J. Sandwich: An R package for spatial interpolation based on spatial stratified heterogeneity. *The 2021 Joint Annual Meeting of Applied Geography Conference/East Lakes AAG/West Lakes AAG*, October 14–16, virtual.

2021 Lin, Y.† & Xiao, N. Traffic density estimation from camera feeds using deep learning and high accuracy regions. *UCGIS Symposium 2021: Advancing GIScience-informed Policy Solutions*, June 7–11, virtual.

2021 Lin, Y.† & Xiao, N. Using deep learning and high accuracy regions for vehicle detection and traffic density estimation from traffic camera feeds. *The 2021 Annual Meeting of the American Association of Geographers*, April 7–11, virtual.

2021 Lin, Y.†, Kang, M., Wu, Y., Du, Q., & Liu, T. A deep learning architecture for semantic address matching. *The 2021 Annual Meeting of the American Association of Geographers*, April 7–11, virtual.

2020 Lin, Y.†, Cai, Y., Gong, Y., Kang, M., & Li, L. Extracting urban landmarks from geographical datasets using a random forests classifier. *Symposium on AI and Social Good, Carnegie Mellon University*, April 23–24, virtual.

Campus and Departmental Talks

2023 Lin, Y.†. Responsible spatial data science: Privacy and fairness in data and algorithms. *GIS Day, University of Chicago*, November 15, Chicago, IL.

2023 Lin, Y.†, Li, J., Porr, A., Logan, G., Xiao, N. & Miller, H. Creating building-level, three-dimensional digital models of historic urban neighborhoods from Sanborn Fire Insurance maps using machine learning. *Center for Spatial Data Science, University of Chicago*, November 13, Chicago, IL.

2023 Lin, Y.† Privacy and utility of geographic data. *Graduate Colloquium, The Ohio State University*, January 20, Columbus, OH.

2022 Lin, Y.† Exploring tradeoffs between privacy and utility of geographic data. *GeoWeek, The Ohio State University*, November 14, Columbus, OH.

2022 Lin, Y.† Navigating tradeoffs between privacy and utility in geographic data releases. *Geography Grad Students' Reports from the Field, The Ohio State University*, September 23, Columbus, OH.

2021 Lin, Y.† & Xiao, N. Does differential privacy protect location privacy in geographically aggregated data publication? *3C GIS Day(s), The Ohio State University*, November 15–19, virtual.

2020 Lin, Y.† & Xiao, N. Traffic density estimation from camera feeds: An approach using deep learning and high accuracy regions. *GeoWeek, The Ohio State University*, November 16, virtual.

2020 Lin, Y.†, Cai, Y., Gong, Y., Kang, M., & Li, L. Extracting urban landmarks from geographical datasets using a random forests classifier. *Geography Visit Day, The Ohio State University*, March 20, virtual.

Poster Presentations

2023 Lin, Y.† & Xiao, N. Exploring tradeoffs between privacy and utility of geographic data using a multiobjective optimization approach. *The 37th Edward F. Hayes Advanced Research Forum, The Ohio State University*, February 24, Columbus, OH.

2022 Lin, Y.† & Xiao, N. Generating small area synthetic microdata for public use: Towards accessible and reproducible spatial data science. *2022 Interdisciplinary Research Fall Forum, The Ohio State University*, November 7–9, Columbus, OH.

2022 Lin, Y.†, Li, J., Porr, A., Logan, G., Xiao, N. & Miller, H. Ghost neighborhoods of Columbus: Reconstructing historical neighborhoods from Sanborn maps using machine learning. *2022 Interdisciplinary Research Fall Forum, The Ohio State University*, November 7–9, Columbus, OH.

2022 Lin, Y.† & Xiao, N. A stochastic spatial optimization approach to privacy and utility of geographically aggregated data. *UCGIS Symposium 2022: GIScience Forward: Meeting the Challenge*, June 7–9, Syracuse, NY.

Invited Talks

2023 Privacy and utility of geographic data: Revealing, evaluating, and mitigating the externalities of geographic privacy protection. *Shijian Forum, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences*, August 10, Beijing, China.

2021 Towards transparent and ethical human mobility data (panelist). *Geospatial Fellows Webinar Series, University of Illinois at Urbana-Champaign*, June 28, virtual.

Conference Session Organization

2024 Co-chair, Responsible GeoAI: Privacy, fairness, and interpretability in spatial data science. *The 2024 Annual Meeting of the American Association of Geographers*, April 16–20, Honolulu, HI.

MEDIA COVERAGE

2023 Ayurella Horn-Muller. 3D digital models are resurrecting lost neighborhoods. *Axios*. June 28. https://www.axios.com/2023/06/28/3d-digital-models-are-resurrecting-lost-neighborhoods

2023 Jeff Grabmeier. Turning old maps into 3D digital models of lost neighborhoods. *Ohio State News*. June 28. https://news.osu.edu/turning-old-maps-into-3d-digital-models-of-lost-neighborhoods

2022 Logan Nowlin. Lost Columbus communities reborn with Ghost Neighborhoods project. *The Lantern*. November 22. https://www.thelantern.com/2022/11/lost-columbus-communities-reborn-with-ghost-neighborhoods-project

2022 Jeff Grabmeier. Recreating "ghost neighborhoods" destroyed by highways: Ohio State researchers studying impact on vulnerable communities. *Ohio State News*. September 15. https://news.osu.edu/recreating-ghost-neighborhoods-destroyed-by-highways

TEACHING

University of Chicago

2023– SOCI 20253: Introduction to Spatial Data Science (Summer 2024)
SOSC 13320: Social Science Inquiry: Spatial Analysis III (Spring 2024)
GISC 28400: GIScience Practicum (Spring 2024)
GISC 28100: Introduction to Geocomputation (Winter 2024)
GISC 28800: History of Cartography (Winter 2024)
GISC 28300: Topics in Geographic Information Science (Autumn 2023)

The Ohio State University

2022 **Instructor of Record**
GEOG 5201: Geovisualization (Spring 2022)

2019–2021 **Graduate Teaching Associate**
GEOG 4103: Introductory Spatial Data Analysis (Spring 2021)
GEOG 5226: Spatial Simulation and Modeling in GIS (Autumn 2020)
GEOG 5201: Geovisualization (Spring 2020 & Autumn 2021)
GEOG 5222: GIS Algorithms and Programming (Autumn 2019)

SERVICE

University Service

2020–2021 Ph.D. Representative on Graduate Studies Committee, Graduate Geography Organization, *The Ohio State University*

Professional Service

2023–2024 Mentor, Women+ in Geospatial Mentorship Programme, *Women+ in Geospatial*

2023 Fellow, Grad WINGS (Women+ in Geospatial Science) Workshop, Training and Retaining Leaders in STEM - Geospatial Sciences (TRELIS-GS) Program, *University Consortium of Geographic Information Science*

2023 Research mentor, Research Mentoring Sessions, The 2023 Annual Meeting of the American Association of Geographers, *American Association of Geographers*

2022–2023 Committee member, Education Committee, *University Consortium for Geographic Information Science*

2022 Student assistant, AutoCarto 2022, The 24th International Research Symposium on Cartography and GIScience, *Cartography and Geographic Information Society*

2022 Co-chair, Organizing Committee, AAG 2022 Summer Series Graduate Forums, *American Association of Geographers*

2021–2022 Committee member, Award Committee, Graduate Student Affinity Group (GSAG), *American Association of Geographers*

Reviewer

Journals: Annals of GIS, Data, International Journal of Environmental Research and Public Health, ISPRS International Journal of Geo-Information, Sensors, Sustainability, The Professional Geographer, Transactions in GIS

Conferences: GIScience (2023)

Professional Memberships

American Association of Geographers
Cartography and Geographic Information Society

SKILLS

Programming languages: Python, R, C/C++, NetLogo
Geospatial software: ArcMap, ArcGIS Pro, ArcGIS CityEngine, QGIS