

# YUE LIN

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## EDUCATION

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|------|---|
| 2023 | <b>Ph.D., Geography</b><br>The Ohio State University, Columbus, OH  |
| 2022 | <b>M.A., Geography</b><br>The Ohio State University, Columbus, OH   |
| 2022 | <b>Graduate Certificate in College and University Teaching</b><br>The Ohio State University, Columbus, OH |
| 2019 | <b>B.S., Geographic Information Science</b><br>Wuhan University, Wuhan, China                             |

## ACADEMIC EMPLOYMENT

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| 2023– | Assistant Instructional Professor, Division of the Social Sciences and the College, The University of Chicago, Chicago, IL |
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## RESEARCH AND TEACHING INTERESTS

Geospatial data science  
Geocomputation  
Spatial optimization  
Urban informatics  
Location privacy  
GIS and society

## AWARDS AND HONORS

### External

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| 2023 | CaGIS Doctoral Student Scholarship Award, <i>Cartography and Geographic Information Society</i>   |
| 2023 | IJGI Travel Award, <i>ISPRS International Journal of Geo-Information</i>  |
| 2022 | Third Place Doctoral Student Paper Award, <i>East Lakes Division of the American Association of Geographers</i>                           |
| 2022 | ICA Scholarship, <i>International Cartographic Association</i>  |
| 2022 | Third Place Student Lightning Talks Award, <i>University Consortium for Geographic Information Science</i>                                |
| 2022 | Student Travel Award, <i>Spatial Analytics and Modeling Specialty Group, American Association of Geographers</i>                          |
| 2021 | First Place Doctoral Student Paper Award, <i>East Lakes Division of the American Association of Geographers</i>                           |
| 2021 | First Place Student Paper Award, <i>University Consortium for Geographic Information Science</i>  |
| 2021 | First Place Award, AAG Robert Raskin Student Competition, <i>Cyberinfrastructure Specialty Group, American Association of Geographers</i> |
| 2020 | AAG Kauffman Runner-Up Award for Best Student Paper in Geography & Entrepreneurship, <i>American Association of Geographers</i>           |

## Internal

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

## GRANTS

2022	PI. Location privacy and confidentiality: Towards ethical geospatial big data harnessing. <i>UCGIS I-GUIDE Community Champions Program, University Consortium for Geographic Information Science</i> , \$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. <i>National Science Foundation Geospatial Fellows Program, University of Illinois at Urbana-Champaign</i> , \$2,400.

## PUBLICATIONS

### Refereed Journal Articles

2023	<b>Lin, Y.</b> , 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. <i>PLoS ONE</i> . In Press. doi:10.1371/journal.pone.0286340.
2023	<b>Lin, Y.</b> , Xu, C., & Wang, J. sandwichr: Spatial prediction in R based on spatial stratified heterogeneity. <i>Transactions in GIS</i> . In Press. doi:10.1111/tgis.13088.
2023	<b>Lin, Y.</b> & Xiao, N. Generating small area synthetic microdata from public aggregated data using an optimization method. <i>The Professional Geographer</i> . In Press. doi:10.1080/00330124.2023.2207640.
2023	<b>Lin, Y.</b> & Xiao, N. A computational framework for preserving privacy and maintaining utility of geographically aggregated data: A stochastic spatial optimization approach. <i>Annals of the American Association of Geographers</i> , 113(5), 1035–1056.
2022	<b>Lin, Y.</b> & Xiao, N. Identifying high accuracy regions in traffic camera images to enhance the estimation of road traffic metrics: A quadtree-based method. <i>Transportation Research Record</i> , 2676(12), 522–534.
2021	Zhang, X., <b>Lin, Y.</b> , Cheng, C., & Li, J. Determinant powers of socioeconomic factors and their interactive impacts on particulate matter pollution in North China. <i>International Journal of Environmental Research and Public Health</i> , 18(12), 6261.
2021	<b>Lin, Y.</b> , Kang, M., & He, B. Spatial pattern analysis of address quality: A study on the impact of rapid urban expansion in China. <i>Environment and Planning B: Urban Analytics and City Science</i> , 48(4), 724–740.
2020	<b>Lin, Y.</b> , Wang, J., & Xu, C. Theoretical and empirical comparative evaluations on measures of map association. <i>Journal of Geographical Systems</i> , 22, 361–390.
2020	<b>Lin, Y.</b> , Kang, M., Wu, Y., Du, Q., & Liu, T. A deep learning architecture for semantic address matching. <i>International Journal of Geographical Information Science</i> , 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. *GIScience 2023 Short Paper Proceedings*, 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 Online Proceedings*, 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/>

#### Manuscripts in Submission

- [6] **Lin, Y.** Moving beyond anonymity: Embracing a collective approach to location privacy in big data analytics. Submitted to *Environment and Planning F* on June 17, 2023.
- [5] **Lin, Y.** & Xiao, N. Exploring the tradeoff between privacy and utility of geographic data using a multiobjective optimization approach. Submitted to *Geographical Analysis* on March 17, 2023.
- [4] **Lin, Y.** Synthetic population data for small area estimation in the United States. Submitted to *Environment and Planning B: Urban Analytics and City Science* on February 16, 2023.
- [3] Xiao, N., Kim, M.J., & **Lin, Y.** A multistart and recombination algorithm for finding diverse solutions to spatial aggregation problems. Submitted to *GeoInformatica* on February 11, 2023.
- [2] **Lin, Y.** Geo-indistinguishable masking: Enhancing privacy protection in spatial point mapping. Major Revisions at *Cartography and Geographic Information Science*.
- [1] **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. Major Revisions at *Population Research and Policy Review*.

#### PRESENTATIONS (\* PRESENTING AUTHOR)

##### Papers Presented at Professional Meetings

- 2023      Lin, Y. & Xiao, N.\* Investigating MAUP effects on census data using approximately equal-population aggregations. *GIScience 2023, The 12th International Conference on Geographic Information Science*. 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., Porz, 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. *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.<sup>†</sup> & 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.<sup>†</sup> & 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.
- 2022 Lin, Y.<sup>†</sup> & Xiao, N. Location privacy of the geographically aggregated data protected by differential privacy: A case of the United States Census. *The 2022 Annual Meeting of the American Association of Geographers*. February 25–March 1, virtual.
- 2021 Lin, Y.<sup>†</sup>, Xu, C., & Wang, J. sandwichr: 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.<sup>†</sup> & Xiao, N. Identifying high accuracy regions in traffic camera images to enhance density estimation: A quadtree-based method and applications. *UCGIS Symposium 2021: Advancing GIScience-informed Policy Solutions*. June 7–11, virtual.
- 2021 Lin, Y.<sup>†</sup> & Xiao, N. Traffic density estimation from camera feeds: An approach using deep learning and high accuracy regions. *The 2021 Annual Meeting of the American Association of Geographers*. April 7–11, virtual.
- 2021 Lin, Y.<sup>†</sup>, 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.<sup>†</sup>, 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.<sup>†</sup> Privacy and utility of geographic data. *Graduate Colloquium, The Ohio State University*. January 20, Columbus, OH.
- 2022 Lin, Y.<sup>†</sup> Exploring tradeoffs between privacy and utility of geographic data. *GeoWeek, The Ohio State University*. November 14, Columbus, OH.
- 2022 Lin, Y.<sup>†</sup> 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.<sup>†</sup> & 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.<sup>†</sup> & 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.<sup>†</sup>, 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.<sup>†</sup> & 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.<sup>†</sup> & 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.<sup>†</sup>, 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.<sup>†</sup> & 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 Panelist**

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

#### **MEDIA COVERAGE**

- 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– **Assistant Instructional Professor**  
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**

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

##### **Professional**

- 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, <i>University Consortium for Geographic Information Science</i>
2022	Student Assistant, AutoCarto 2022, The 24th International Research Symposium on Cartography and GIScience, <i>Cartography and Geographic Information Society</i>
2022	Co-Chair (with Rachel Arney), Organizing Committee, AAG 2022 Summer Series Graduate Forums, <i>American Association of Geographers</i>
2021–2022	Committee Member, Award Committee, Graduate Student Affinity Group (GSAG), <i>American Association of Geographers</i>

### **Reviewer**

**Journals:** Annals of GIS, 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