

Xiaobai Angela Yao

Professor of Geography

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ACADEMIC POSITIONS

Professor Department of Geography, University of Georgia, USA. 2016 - present
Associate Professor Department of Geography, University of Georgia, USA. 2008 –2016
Assistant Professor Department of Geography, University of Georgia, USA. 2002 –2008

GUEST/VISITING POSITIONS

Guest Professor. Chair of Cartography. Technical University of Munich. Germany. December, 2023

Guest Professor, Department of Geography and Regional Research, University of Vienna, Austria. May -July 2017

Visiting Professor, Department of Urban Planning and Design, Tsinghua University, China. July – December 2011

EDUCATION

Ph.D. Geography, 2002. University at Buffalo, the State University of New York, USA

M.S. GIS and urban analysis, 1997. Twente University (formerly ITC), the Netherlands

B.S. GIS and urban planning, 1990. Wuhan University (formerly WTUSM), China

RESEARCH INTERESTS

Geospatial data science: GIScience, Spatial Statistics, Network Analysis, GeoAI, Cartography and Visualization

Subject areas of focus: Human dynamics, public health

PUBLICATIONS

BOOK

Jiang, B. and X. Yao. (eds) 2010. *Geospatial Analysis and Modelling of Urban Structure and Dynamics*. In GeoJournal Library Book Series. Dordrecht, the Netherlands: Springer. ISBN: 9048185718.
<https://link.springer.com/book/10.1007/978-90-481-8572-6>

JOURNAL ARTICLES (graduate advisees underlined, * corresponding author)

- Yang, H., Yao, X. A.*, Roozkhosh, F., Liu, R., & Mai, G. (2025). From theory to deep learning: Understanding the impact of geographic context factors on traffic violations. *Computers, Environment and Urban Systems*, 119, 102268. <https://doi.org/10.1016/J.COMPENVURBSYS.2025.102268>
- Yang, H., Yao, X. A.*, Whalen, C. C., & Kiwanuka, N. (2025). Exploring human mobility: a time-informed approach to pattern mining and sequence similarity. *International Journal of Geographical Information Science*, 39(3): 627-651. <https://doi.org/10.1080/13658816.2024.2427258>
- Roozkhosh F., Yao A.*, Yang H, Song S, Liu T. (2024). Geospatial analysis of dementia mortality and its associations with demographic and socioeconomic factors. *Journal of Alzheimer's Disease Reports*. 8(1):1484-1492. doi:10.3233/ADR-240107
- Razavi-Termeh, S. V., Sadeghi-Niaraki, A., **Yao, X. A.**, Naqvi, R. A., & Choi, S.-M. (2024). Assessment of noise pollution-prone areas using an explainable geospatial artificial intelligence approach. *Journal of Environmental Management*, 370, 122361. <https://doi.org/10.1016/j.jenvman.2024.122361>
- Yao, A.**, Madden, M., Buckley, A., Delmelle, E., & Sinha, G. (2024). Bringing ethics to cartography and geographic information science: AutoCarto 2022. *Cartography and Geographic Information Science*, 51(4), 487–491. <https://doi.org/10.1080/15230406.2024.2352534>
- Yang, R. J. Fernandez, G. Mai, **A Yao**. (2024). Measuring the Visual Quality of Street Space Using Machine Learning. *Journal of Digital Landscape Architecture*. 9:756-763.
- Gomez, B., Roozkhosh, F., Yao, A., Chastain, D. B., & Johnson, B. R. (2024). Examining the potential of pharmacies to expand pre-exposure prophylaxis access along Georgia's fixed-route public transit: A geospatial analysis. *Journal of the American Pharmacists Association*, 64(4), 102087. <https://doi.org/10.1016/j.japh.2024.102087>
- Liu, G. J He, Z. Luo, **XA Yao**, Q Fan, (2024). Understanding route choice behaviors' impact on traffic throughput in a dynamic transportation network. *Chaos, Solitons & Fractals*. 181, 114605. <https://doi.org/10.1016/j.chaos.2024.114605>
- Delmelle, E., Bearman, N., & Yao, X. A. (2024). Developing geospatial analytical methods to explore and communicate the spread of COVID-19. *Cartography and Geographic Information Science*, 51(2), 193–199. <https://doi.org/10.1080/15230406.2024.2325495>
- Tahmasbi, B., F. Roozkhosh, X.A. Yao. (2024). Encounter Network and its application to study epidemic spreading. *Transportation Research Record*. 03611981241240770.
- Tian, Y., Yao, XA.*, Madden, M. Grundstein, A. (2024). Synergic effects of meteorological factors on urban form-outdoor exercise relationship: A study with crowdsourced data. *Journal of Geographical Systems* 26, 47–72 <https://doi.org/10.1007/s10109-023-00424-x>
- Yao, X.A.***, A. Crooks, B Jiang., J. Krisp, X. Liu, H. Huang. (2023). An Overview of Urban Analytical Approaches to Combating the Covid-19 Pandemic. *Environment and Planning B: Urban Analytics and City Science*. 50(5):1133-1143. <https://doi.org/10.1177/23998083231174748>
- Yang, H., X.A. Yao.*, R. Liu, C. Whalen. (2023). Developing a place-time-specific transmissibility index to measure and examine the spatiotemporally varying transmissibility of COVID-19. *Annals of the American Association of Geographers*. 113(6):1419-1443.

<https://doi.org/10.1080/24694452.2023.2182758>. (Received *The Globe Award for Methodological Advancement* from the Department of Geography, University of Georgia).

- Tian, Y., Wang, A., Mora, S., deSouza, P., **Yao, X.**, Duarte, F., Lin, H., & Ratti, C. (2023). Improving NO₂ prediction by integrating tree diversity, urban form, and scale sensitivity through mobile monitoring. *Applied Geography*. 154:102943. <https://doi.org/10.1016/j.apgeog.2023.102943>
- Wei, X., & **Yao, X.** (2022). A GIS representation framework for location-based social media activities. *Transactions in GIS*. 26(3) : 1444 -1464. <https://doi.org/10.1111/tgis.12929>
- Tian, Y., deSouza, P., Mora, S., **Yao, X.**, Duarte, F., Norford, L. K., Lin, H., Ratti, C. (2022). Evaluating the Meteorological Effects on the Urban Form–Air Quality Relationship Using Mobile Monitoring. *Environmental Science & Technology*. 56(11):7328-7336. <http://doi:10.1021/acs.est.1c04854>
- Tian, Y., & **Yao, X***. (2022). Urban form, traffic volume, and air quality: A spatiotemporal stratified approach. *Environment and Planning B: Urban Analytics and City Science*, 49(1), 92–113. <https://doi.org/10.1177/2399808321995822>
- Oh, D., **Yao, XA*** (2021). Geo-Information Assessing Place Type Similarities Based on Functional Signatures Extracted from Social Media Data. *ISPRS International Journal of Geo-Information* 10 (9), 626. <https://doi.org/10.3390/ijgi10090626>
- Huang, H., **Yao, X. A.**, Krisp, J. M., & Jiang, B. (2021). Analytics of location-based big data for smart cities: Opportunities, challenges, and future directions. *Computers, Environment and Urban Systems*, 90, 101712. <https://doi.org/10.1016/J.COMPENVURBSYS.2021.101712>
- Fan Q, X.A. **Yao XA**, X. Han. 2021 Spatial variation and disparity in female breast cancer relative survival in the United States. *Cancer*. doi: <http://doi.org/10.1002/cncr.33801>.
- Wei, X., **X. Yao***. 2021. Constructing and analyzing spatial-social networks from location-based social media data. *Cartography and Geographic Information Science* 48(3):258-274. <https://doi.org/10.1080/15230406.2021.1891974>
- Liu, R., **X.Yao**, C. Guo & X. Wei. 2021. Can we forecast presidential election using twitter data? An integrative modelling approach, *Annals of GIS*, 27(1):43-56. DOI: [10.1080/19475683.2020.1829704](https://doi.org/10.1080/19475683.2020.1829704). (Received the 1st place *Most Downloaded Paper Award* and 3rd Place *Best Paper Award* of the journal in 2021).
- Mertzlufft, C. E., M. Madden, N. Gottdenker, J. Runk, A. Saldana, S. Tanner, J. Calzada, **X. Yao**. 2020. Landscape disturbance impacts on Attalea butyracea palm distribution in central Panama. *International Journal Of Health Geographics* 19, 58(2020). doi:[10.1186/s12942-020-00244-y](https://doi.org/10.1186/s12942-020-00244-y)
- Tian, Y., **X.Yao***, L .Mu. Q. Fan. Y. Liu. 2020. Integrating meteorological factors for a better understanding of the urban form-air quality relationship. *Landscape Ecology*. 35(10): 2357-2373. <https://doi.org/10.1007/s10980-020-01094-6>
- Liu, G., **X Yao**, Q. Fan. 2020. Agglomeration centrality examination of cities: an urban transport perspective. *Sustainable Cities and Society*. 61:102273. <https://doi.org/10.1016/j.scs.2020.102273>
- Rickless, D. **Yao, X***. Orland, B. Welch-Devine, M. 2020. Assessing social vulnerability through a local lens: An integrated geovisual approach. *Annals of the American Association of Geographers*. 110(1): 36-66. <https://doi.org/10.1080/24694452.2019.1625750>

- Pei, Y. **X.Yao**, A.Dang. 2019. Child-friendliness of urban neighborhood from a Healthy-City perspective. *Urban Development Studies*. ISSN: 1006-3862. 2019 (4):69-78.
- Mutembo, S., Mutanga, J.N., Musokotwane, K., Kanene, C., Dobbin, K. **X. Yao**, Li, C., Marconi, V.C., Whalen, C. 2019. Urban-rural disparities in treatment outcomes among recurrent TB cases in Southern Province, Zambia. *BMC Infectious Disease* 19, 1087. doi:10.1186/s12879-019-4709-5
- Liu, G*. **X. Yao***, Z. Luo, S. Kang, W. Long, Q. Fan, P. Gao. 2019. Agglomeration Centrality to examine spatial scaling law in cities. *Computers, Environment and Urban Systems*. 77:101357. <https://doi.org/10.1016/j.compenvurbsys.2019.101357>
- Yao, X***, Huang, H., Jiang, B., & Krisp, J. M. 2019. Representation and analytical models for location-based big data. *International Journal of Geographical Information Science*, 33(4): 707-713. doi: [10.1080/13658816.2018.1562068](https://doi.org/10.1080/13658816.2018.1562068)
- Tian, Y*, **X. Yao***, L. Chen*. 2019. Analysis of spatial and seasonal distributions of air pollutants by incorporating urban morphological characteristics. *Computers, Environment and Urban Systems*. 75:35-48. <https://doi.org/10.1016/j.compenvurbsys.2019.01.003>
- Xi, D*. Q. Fan*, **X. Yao***, W. Jiang*, D. Duan*. 2016. A visual salience model for wayfinding in 3D virtual urban environments. *Applied Geography*. 75: 176-187. <http://dx.doi.org/10.1016/j.apgeog.2016.08.014>
- Sahoo K, G.L. Hawkins, **X.A.Yao**, K.Samples, S. Mani. 2016. GIS-based biomass assessment and supply logistics system for a sustainable biorefinery: A case study with cotton stalks in the Southeastern US. *Applied Energy*. 182:260-273. <http://dx.doi.org/10.1016/j.apenergy.2016.08.114>
- Wei, X*, and **X.Yao**. 2015. 3D model construction in an urban environment from sparse LiDAR points and aerial photos – a statistical approach. *Geomatica*. 69(3): 271-284. DOI:10.5623/cig2015-302
- Chen, A*, **X.A.Yao**, R.Sun, & L. Chen. 2014. Effect of urban green patterns on surface urban cool islands and its seasonal variations. *Urban Forestry & Urban Greening*. 13(4):646-654. DOI:10.1016/j.ufug.2014.07.006
- Wei, X. and **X.Yao**. 2014. A Hybrid GWR-Based Height Estimation Method for Building Detection in Urban Environments. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences* 2(2):23-29. DOI: 10.5194/isprsannals-II-2-23-2014
- Wei, X. and **X.Yao**. 2014. Random Walking Value for Ranking Spatial Characteristics in Road Networks. *Geographical Analysis* 46(4):411-434. DOI: 10.1111/gean.12064
- Yao, X.** and S. Zhang. Social-spatial structure of Beijing: a spatial-temporal analysis. 2014. *International Journal of Society System Science* 6(1):18-33. DOI: 10.1504/IJSSS.2014.059923
- Jang, W. and **X.Yao**. 2014. Track Ethnically Divided Commuting Patterns Over Time – Method and a Case Study of Metropolitan Atlanta. *Professional Geographer*. 66(2):274-283. DOI: 10.1080/00330124.2013.784952
- Jang, W. and **X. Yao**. 2011. Interpolating Spatial Interaction Data. *Transactions in GIS*. 15(4):541-555. DOI: 10.1111/j.1467-9671.2011.01273.x (received **Best Student Paper award** at the 2010 UCGIS Symposium)
- Coleman, J.B. **X. Yao**, T. Jordan, and M. Madden. 2011. Holes in the Ocean: Filling Voids in Bathymetric Lidar Data. *Computers and Geosciences*. 37 (4):474-484. doi:10.1016/j.cageo.2010.11.008

- Shen, Z., **X.A.Yao**, M. Kawakami, P.Chen. 2011. Simulating spatial market share patterns for impacts analysis of large-scale shopping center on downtown revitalization. *Environment and Planning B: Planning and Design* 38(1):142-162. DOI: 10.1068/b35138
- Kim, H. and **X. Yao**. 2010. Pycnophylactic interpolation revisited: integration with dasymetric method. *International Journal of Remote Sensing*. 31(21):5657-5671. DOI:10.1080/01431161.2010.496805
- Yao, X.** and Jiang, B. 2009. Geospatial Modeling of Urban Environments. Editorial. *Environment and Planning B: Planning and Design*. 36(5):769-771. doi:10.1068/b3605ged
- Yao, X.** and L. Zou. 2008. Interoperable Internet Mapping - An Open Source Approach. *Cartography and Geographic Information Science*. 35(4):279-293. DOI:10.1559/152304008786140560
- Yao, X.** 2007. Where are public transit needed? - Examining potential demand for public transit for commuting trips. *Computers, Environment, and Urban Systems*. 31(5):535-550. doi:10.1016/j.compenvurbsys.2007.08.005. (Note: The journal article has been invited for reprint in one edited book)
- Yao, X.** and J.C. Thill. 2007. Neuro-Fuzzy Modeling of Context-Contingent Proximity Relations. *Geographical Analysis: An International Journal of Theoretical Geography*. 39(2):169-194. DOI: 10.1111/j.1538-4632.2007.00700.x
- Jiang, B. and **Yao, X.** 2006. Location-Based Services and GIS in Perspective. *Computers, Environment and Urban Systems*. 30(6): 712-725. doi:10.1016/j.compenvurbsys.2006.02.003 (Note: The journal article has been invited for reprints in two edited books).
- Yao, X.** and Thill, J.C. 2006. Spatial Queries With Qualitative Locations In Spatial Information Systems. *Computers, Environment and Urban Systems*. 30(4):485-502. doi:10.1016/j.compenvurbsys.2004.08.001
- Yao, X.** and Thill, J.C. 2005. How Far Is Too Far – A Statistical Approach To Proximity Modeling. *Transactions in GIS*. Vol. 9(2): 157-178. DOI: 10.1111/j.1467-9671.2005.00211.x
- Yao, X.** and B. Jiang. 2005. Visualization of Qualitative Locations. *Cartography and Geographic Information Science*. 32(4):219-229. DOI:10.1559/152304005775194683

PREPRINT

- Dai, H., Li, Y., Liu, Z., ...Yao, X., ... & Liu, T. (2023). AD-AutoGPT: An Autonomous GPT for Alzheimer's Disease Infodemiology. [10.48550/ARXIV.2306.10095](https://arxiv.org/abs/10.48550/ARXIV.2306.10095)

PEER-REVIEWED BOOK CHAPTERS and CONFERENCE PAPERS (graduate advisees underlined)

- Mai, G., **X. Yao**, Y Xie, J Rao, H Li, Q Zhu, Z Li, and N Lao. 2024. SRL: Towards a General-Purpose Framework for Spatial Representation Learning. In *Proceedings of the 32nd ACM International Conference on Advances in Geographic Information Systems (SIGSPATIAL '24)*. Association for Computing Machinery, New York, NY, USA, 465–468. <https://doi.org/10.1145/3678717.3691246>
- Cao, Q., N. Wu, ..., **X Yao**,G Mai. (2024). TorchSpatial: A Python Package for Spatial Representation Learning and Geo-Aware Model Development. In *Proceedings of the 3rd ACM SIGSPATIAL International Workshop on Spatial Big Data and AI for Industrial Applications (SigSpatial-GeoIndustry '24)*. Association for Computing Machinery, New York, NY, USA, 39–42. <https://doi.org/10.1145/3681766.3699608>

- Tahmasbi, B., Roozkhosh, F., & **Yao, X. A.*** (2023). Assessing Epidemic Spreading Potential with Encounter Network (Short Paper). In *12th International Conference on Geographic Information Science (GIScience 2023)*. Schloss Dagstuhl-Leibniz-Zentrum für Informatik. <https://doi.org/10.4230/LIPICs.GIScience.2023.70>
- Yao, X.** 2021. Spatial Queries. Geographic Information Science & Technology Body of Knowledge (BoK). (gisbok.ucgis.org).
- Fan, Q., X.Yao. A. Dang. 2020. Spatio-temporal Analysis and Data Mining of the 2014-2016 Ebola Virus Disease Outbreak in West Africa. In Y. Lu., & E. Delmelle (Eds.), *Geospatial Technologies for Urban Health*. Springer. pp.181-208.
- Wei, X. and **X. Yao***. 2018. A Conceptual Framework for Representation of Location-based Social Media Activities. In Winter, S., Sester, M., Griffin, A. (Eds.), *Proceedings 10th International Conference on Geographic Information Science (GIScience 2018)*, LIPICS Vol. 114. ISBN 978-3-95977-083-5. DOI: [10.4230/LIPICs.GISCIENCE.2018.62](https://doi.org/10.4230/LIPICs.GISCIENCE.2018.62)
- Brown, C. and **X. Yao.** 2015. Development of a Nationwide Road Change Database for the U.S. in the Post-Recession Years (2008–2012). Chapter 10. In Francis Harvey and Yee Leung (eds) *Advances in Spatial Data Handling and Analysis*. 2015. Springer. pp.163-181.
- Shen, Z., **X.Yao**, M. Kawakami, P. Chen, M. Koujin. 2012. Integration of MAS and GIS using Netlogo. In Z.Shen (eds) *Geospatial Techniques in Urban Planning*, *Advances in Geographic Information Science*. Berlin: Springer-Verlag. pp.369-388.
- Yao, X.** 2010. Modeling and analyzing cities as spatio-temporal places. In B.Jiang and X.Yao (eds) *Geospatial Analysis and Modelling of Urban Structure and Dynamics*. Dordrecht, the Netherlands: Springer. pp.311-328.
- Jiang, B, and **X.Yao.** 2010. Geospatial Analysis and Modeling of Urban Structure and Dynamics: An Overview. In B.Jiang and X.Yao (eds) *Geospatial Analysis and Modelling of Urban Structure and Dynamics*. Dordrecht, the Netherlands: Springer. pp.3-11.
- Yao, X.** Qualitative Spatial Reasoning and GIS. 2009. In M. Madden (ed) *Manual of Geographic Information Systems*. 1st edition. ASPRS publisher. pp.71-86.
- Yao X.** 2009. Georeferencing, Geocoding. In Kitchen R, Thrift N (eds) *International Encyclopedia of Human Geography*, Volume 1, Oxford: Elsevier. pp. 458-465.
- Shen, Z., **X.Yao**, M. Kawakami, M.Kojin. 2009. Simulating the impact of large-scale center location on downtown revitalization. *Proceedings of the 11th International Conference on Computers in Urban Planning and Urban Management*. Hongkong. June 16-18, 2009. Ed by A.G.O. Yeh and F. Zhang. Hong Kong : University of Hong Kong, 2009. ISBN 978-962-7589-0
- Thill, J.C. Kretzschmar, W.A., Casas, I. and **Yao, X.** 2007. Detecting geographic and socio-economic associations in English dialect features with self-organising maps. In Agarwal, P. and Skupin, A. (Eds) *Self-Organising Maps: Applications in Geographic Information Science*, West Sussex, UK: Wiley. pp87-106.
- Thill, J.C. and **Yao, X.** 1999. Urban Land Management in Transitional Countries: A Decision Support Prototype for Shanghai. In J.C. Thill (ed) *Spatial Multicriteria Decision Making and Analysis: A Geographic Information Sciences Approach*, Brookfield, VT: Ashgate. pp. 175-197.

SELECTED HONORS AND AWARDS

- 2024 **Best Paper Award** (co-author and advisor). The 71st North American Meetings of the Regional Science Association International. Nov. 14-16, 2024. New Orleans, USA.
Paper title: *From Theory to Deep Learning: Understanding the Impact of Geographic Context Factors on Traffic Violations*
- 2024 **Third Place Winner**, John Odland Student Paper Competition, AAG Annual Meeting. Apr. 2024, Honolulu, HI.
Paper title: *Exploring Human Mobility Patterns: A Novel Approach to Sequential Pattern Mining and Similarity Measurement*.
- 2023 **Best Paper Award** (co-author and advisor), Globe Paper Competition, Department of Geography, UGA (05/2023). Paper Title: *Developing a Place-Time-Specific Transmissibility Index to Measure and Examine the Spatiotemporally Varying Transmissibility of COVID-19*
- 2022 Annals of GIS **Most downloaded paper award** (1st place) in 2021 (co-author and advisor)
Paper title: *Can we forecast presidential election using Twitter data? An integrative modeling approach*
- 2022 Annals of GIS Best paper award (3rd place winner) in 2021 (co-author and advisor)
- 2010 **Transactions in GIS Best Paper Award** (co-author and advisor). University Consortium of Geographic Information Science (UCGIS) summer symposium, June 15-16, 2010. Hilton Head, SC.
Paper title: *Interpolating spatial interaction data*
- 2005 **ESRI-UCGIS Young Scholar Award**. University Consortium of Geographic Information Science (UCGIS). 2004 Sarah Moss Fellowship. University of Georgia, 2004-2005.
- 2002 **Best Paper Award**, GIS Specialty Group Student Paper Competition, AAG Annual Meeting, Los Angeles, CA. 2002.

SELECTED PROFESSIONAL SERVICES

- Cartography and Geographic Information Society (CaGIS):** *Vice President, President-Elect, President, and Past-President* (2021- 2024)
- International Cartographic Association (ICA)** Commission of Geospatial Analysis and Modeling (GAM):
Chair (2015 - 2023); *Vice Chair* (2011- 2015),
- University Consortium for Geographic Information Science (UCGIS):** *delegate* (2013- 2020), *Director* (2020-2023), *Treasurer* (2023-present)
- Incoming Editor in Chief.** Cartography and Geographic Information Science. (2025-)