Luyu Liu

Auburn University

Department of Geosciences

Haley Center, 2046J, 351 Thach Concourse

Auburn, AL 36849

Email: luyuliu@auburn.edu

Website: https://luyuliu.github.io

GitHub: https://github.com/luyuliu

Education

The Ohio State University	Columbus, OH
• Ph.D. Geography, GIS	2019 – 2023
• M.A. Geography, GIS	2017 – 2019
• Graduate Certificate in College and University Teaching	2020 – 2021

Peking University	Beijing, China
• B.S. Environmental Science	2013 – 2017
• B.S. Mathematics and Applied Mathematics	2014 – 2017

Employment

Auburn University, Department of Geosciences, Assistant Professor	2024 - present
University of Florida, Department of Civil & Coastal Engineering, Postdoc Researcher	2023 - 2024
The Ohio State University, Department of Geography, Graduate Researcher	2017 - 2022

Honors and Awards

Outstanding Dissertation Award by AAG Transportation Geography Specialty Group	2024
Best Paper Award 2023, Journal of Geographical Systems	2023
Presidential Fellowship, The Ohio State University	2022 – 2023
TR Lakshmanan and Lata Chatterjee Award 2020	2020
Collaborative Achievement in Sustainability Award from Mid-Ohio Regional Planning Commission (as group)	2020
Scholarship of Tiehan, Peking University	2013 – 2016
Honorable mentioned by "Mathematical Contest in Modeling" sponsored by COMAP	2016
President of "Outstanding Class" award winner of Peking University	2015

Publications

<u>Published Journal Articles</u>

Liu, L., & Miller, H. J. (2024). Accessibility derivative: measuring the accessibility contribution of public transit routes. *Environment and Planning B: Urban Analytics and City Science*, 23998083241272098.

Liu, L., Lee, J., & Miller, H. J. (2024). Evaluating accessibility benefits and ridership of bike-transit integration through a social equity lens. *Computers, Environment, and Urban Systems*, 112, 102150.

Ahmed, N., Lee, J., **Liu, L.**, Kim, J., Jang, K. M., & Wang, J. (2024). The cost of climate change: A generalized cost function approach for incorporating extreme weather exposure into public transit accessibility. *Computers, Environment and Urban Systems*, 112, 102145.

Liu, L., Porr, A., & Miller, H. J. (2024). Measuring the impacts of disruptions on public transit accessibility and reliability. *Journal of Transport Geography*, 114, 103769.

Javanmard, R., Lee, J., Kim, J, **Liu, L.**, and Diab, E. (2023). The impacts of the modifiable areal unit problem (MAUP) on social equity analysis of public transit reliability. *Journal of Transport Geography*, 106, 103500.

Liu, L., Kar, A., Tokey, A. I., Le, H. T., & Miller, H. J. (2023). Disparities in public transit accessibility and usage by people with mobility disabilities: An evaluation using high-resolution transit data. *Journal of Transport Geography*, 109, 103589.

Liu, L., Porr, A., & Miller, H. J. (2023). Realizable accessibility: evaluating the reliability of public transit accessibility using high-resolution real-time data. *Journal of Geographical Systems*, 25(3), 429-451.

Liu, L., & Miller, H. J. (2022). Measuring the impacts of dockless micro-mobility services on public transit accessibility. *Computers, Environment, and Urban Systems*, 98, 101885.

Liu, L., & Miller, H. J. (2021). Measuring risk of missing transfers in public transit systems using high-resolution schedule and real-time bus location data. *Urban Studies*, 58(15), 3140-3156..

Liu, L., & Miller, H. J. (2020). Does real-time transit information reduce waiting time? An empirical analysis. *Transportation Research Part A: Policy and Practice*, 141, 167-179.

Liu, L., Miller, H. J., & Scheff, J. (2020). The impacts of COVID-19 pandemic on public transit demand in the United States. *Plos one*, 15(11), e0242476.

Park, Y., Mount, J., **Liu, L.**, Xiao, N., & Miller, H. J. (2019). Assessing public transit performance using real-time data: spatiotemporal patterns of bus operation delays in Columbus, Ohio, USA. *International Journal of Geographical Information Science*, , 34(2), 367-392.

Book Chapters
Liu, L., & Miller, H. J. (2024). Measuring Public Transit Resilience with High-resolution Real-time Geospatial Data. *Urban Human Mobility* (In press).

Liu, L. (2025). Impacts of COVID-19 on Passenger Transportation. *International Encyclopedia of Geography* (In press).

Liu, L. (2025). General Transit Feed Specification. *International Encyclopedia of Geography* (In press).

In-progress Publications
Dai, Y., **Liu, L.**, Wang, K., Li, M., & Yan, X. A Deep Learning-based Bus Stop Amenities Assessment System with Low-cost Google Street View Images. (Submitted).

Recalde, A., **Liu, L.**, Zhang, X., & Zhao, X. Assessing Evacuation Destination Preference during Hurricane Ian: A Gravity Model Approach with Large-scale Mobile Device Location Data. (Submitted)

Lyu, D., **Liu, L.**, Campbell, C., Zhang, Y., & Yan, X. Potentials and limitations of large-scale mobile phone GPS data for food access analysis (Submitted).

Liu, L., Zhang, X., Jiang, S., & Zhao, X. Measuring evacuees' behavior during Hurricane Ian using large-scale mobile phone GPS data (Submitted).

Liu, L., Li, X., Pereira, R. H., & Yan, X. Measuring extreme heat exposure in public transit systems in Florida, US (Submitted).

Tokey, A. T., **Liu, L.**, & Miller, H. J. (2024). Measuring the Impacts of Sidewalks on Public Transit First Mile/Last Mile Accessibility and their Association with Social and Demographic Factors (In preparation).

Liu, L., & Smith, M. Compare disparities in public transit accessibility of Black communities in 1910 and 2019 with historical transit data (In preparation).

Qian, Y., **Liu, L.**, & Yan, X. Big data, big bias? On Factors Influencing Public Transit and Shared Micromobility Integration. (In preparation).

<u>Conference Presentations</u>
Dai, Y., **Liu, L.**, Wang, K., Li, M., & Yan, X. A Deep Learning-based Bus Stop Amenities Assessment System with Low-cost Google Street View Images. *Transportation Research Board Annual Meeting 2025*, Washington, DC.

Recalde, A., **Liu, L.**, Zhang, X., & Zhao, X. Assessing Evacuation Destination Preference during Hurricane Ian: A Gravity Model Approach with Large-scale Mobile Device Location Data. *Transportation Research Board Annual Meeting 2025*, Washington, DC.

Lyu, D., **Liu, L.**, Campbell, C., Zhang, Y., & Yan, X. Potentials and limitations of large-scale mobile phone GPS data for food access analysis. *Transportation Research Board Annual Meeting 2025*, Washington, DC.

Liu, L., Zhang, X., Jiang, S., & Zhao, X. Measuring evacuees' behavior during Hurricane Ian using large-scale mobile phone GPS data. *Transportation Research Board Annual Meeting 2025*, Washington, DC.

Liu, L., Li, X., Pereira, R. H., & Yan, X. Measuring extreme heat exposure in public transit systems in Florida, US. *Transportation Research Board Annual Meeting 2025*, Washington, DC.

Qian, Y., **Liu, L.**, & Yan, X. Big data, big bias? On Factors Influencing Public Transit and Shared Micromobility Integration. *Transportation Research Board Annual Meeting 2025*, Washington, DC.

Tokey, A. T., **Liu, L.**, & Miller, H. J. (2024). Measuring the Impacts of Sidewalks on Public Transit First Mile/Last Mile Accessibility and their Association with Social and Demographic Factors. *CAGIS – University Consortium for Geographic Information Science Symposium 2024*, Columbus, Ohio.

Liu, L., Yan, X., & Pereira, R. H. M. (2024). Measuring Extreme Heat Exposure in Public Transit Systems in Florida, US. *Gulf of Mexico Conference 2024*, Tampa, FL.

Zhao, X., Sun, Y., Huang, S., Lindell, M. K., Zhang, X., & **Liu, L.** (2024). Fusing Small and Big Data to Advance Understanding of Hurricane Evacuation. *Gulf of Mexico Conference 2024*, Tampa, FL.

Liu, L., & Miller, H. J. (2024). Accessibility derivative: measuring the accessibility contribution of public transit routes. *Transportation Research Board Annual Meeting 2024*, Washington, DC.

Liu, L., Kar, A., Tokey, A. I., Le, H. T., & Miller, H. J. (2023). Disparities in public transit accessibility and usage by people with mobility disabilities: An evaluation using high-resolution transit data. *Transportation Research Board Annual Meeting 2023*, Washington, DC.

Liu, L., Porr, A., & Miller, H. J. (2023). Realizable accessibility: evaluating the reliability of public transit accessibility using high-resolution real-time data. *Transportation Research Board Annual Meeting 2023*, Washington, DC.

Liu, L., Miller, H. J., Schenk, J., Puranik, D. (2022). New data for understanding and planning public transit. *Ohio Public Transit Association Annual Meeting 2022*, Columbus, Ohio.

Liu, L., Zhang, X., Zhao, X. (2024). Assessing evacuation behavior during Hurricane Ian with large-scale GPS data. *American Association of Geographers Annual Meeting 2024*.

Liu, L., Miller, H. J. (2023). Accessibility derivative: measuring the accessibility contribution of public transit routes. *American Association of Geographers Annual Meeting 2023*.

Liu, L., Miller, H. J. (2022). Measuring the impacts of dockless micro-mobility services on public transit accessibility *American Association of Geographers Annual Meeting 2022*.

Liu, L., Miller, H. J. (2021). Revisiting the impacts of transit real-time information on waiting time reduction: an empirical analysis in Columbus, Ohio. *American Association of Geographers Annual Meeting 2021*.

Liu, L., Miller, H. J. (2019). Measuring public transit transfer risk using highresolution schedule and real-time location data. *American Association of Geographers Annual Meeting 2019*, Washington, DC.

Root, E. D., **Liu, L.**, Porr, A. (2019). Addressing birth outcomes with data analytics and spatial analysis. *18th International Medical Geography Symposium 2019*, Queenstown, New Zealand.

Conference Sessions & Panels

Lee, J., **Liu, L.**, Kar, A., & Le, H. (2023). Transportation & Environmental Exposure. *American Association of Geographers Annual Meeting 2025*, Detroit, MI.

Liu, L., Lee, J., Jed, L., Miller, H. J., Xiao, N. (2023). Data-driven movement analytics. *American Association of Geographers Annual Meeting 2023*, Denver, CO.

Research Funding & Experiences

High-resolution Measurement of Transit Riders' Extreme Heat Exposure across U.S. Cities   2024 - present

- Funder: USDOT, Tier 1 University Transportation Center
- Collaborators: Drs. Yan Xiang, Wesley Marshall, Aditi Misra, Manish Shirgaokar
- Amount: $225,000
- Role: PI

Assessing Bus Stop Amenities Using Google Street View Images and Computer Vision   2024 - present

- Funder: USDOT, Tier 1 University Transportation Center
- Collaborators: Drs. Yan Xiang, Guang Tian, Reid Ewing, and Justyna Kaniewska
- Amount: $150,000
- Role: co-PI

Analyzing transit-based evacuation demand in hurricanes   2023 - 2024

- Funder: USDOT, Tier 1 University Transportation Center
- Collaborators: Dr. Yan Jacob Xiang and Dr. Xilei Zhao
- Amount: $150,000
- Role: Lead researcher

Shared micromobility as a last-mile complement to public transit   2023 - 2024

- Funder: USDOT, Tier 1 University Transportation Center
- Collaborators: Dr. Yan Jacob Xiang and Dr. Xilei Zhao
- Amount: $225,000
- Role: Lead researcher

Downscaling Soil Moisture for Drought Monitoring with Machine Learning Methods   2020 - 2023

- Funder: Sharpe Innovation Commons Seed Grant Award, the Ohio State University
- Collaborators: Dr. Zack Leasor and Dr. Chen Zhao
- Role: Awardee and coauthor

MORPC sustainability dashboard   2019 – 2020

- Funder: Mid-Ohio Regional Planning Commission
- Collaborators: Dr. Harvey Miller and Dr. Ningchuan Xiao
- Role: Lead programmer and first author

Columbus Urban & Regional Information Observatory (CURIO)   2017 – 2018
- Funder: Center for Urban and Regional Analysis, the Ohio State University
- Collaborators: Dr. Harvey Miller and Dr. Ningchuan Xiao
- Role: Lead programmer

Infant Mortality Research Partnership (IMRP) online GIS platform   2018 – 2019
- Funder: Dr. Elisabeth Root
- Collaborators: Dr. Elisabeth Root
- Role: Lead programmer and coauthor

Neighborhood polygon algorithm based on network analysis   2017 – 2018
- Funder: Institute for Population Research, The Ohio State University
- Collaborators: Dr. Christopher Browning and Dr. Catherine Calder
- Role: Lead programmer

Teaching and Public Speaking

Primary Instructor

Auburn University GEOG 5880: Advanced GIS, 3 credits   2025

The Ohio State University GEOG 5210: Fundamental GIS, 3 credits   2021
Student rating: 4.71/5 (University average: 4.48), 34 enrollments

University Consortium for Geographic Information Science (UCGIS) Workshop: Full-stack Geo-visualization 101: How to Make Productive Webmaps   2021
Participants rating: 4.44/5, 19 enrollments

Harvard University Vizathon: Learn to Make Your First Web Map   2021
Workshop organizer and instructor

Guest Lecturer

Auburn University: Geometric design   2024
Guest lecture on GIS application

University of Florida: Sustainable Transportation and Public Transit   2023
Guest lecture on GTFS data

University of Florida: Applied Data Science in Civil and Environmental Engineering   2023
Guest lecture on database

The Ohio State University GEOG 5201: GeoVisualization   2022
Guest lecture on web-based geo-visualization

The Ohio State University GEOG 2200: Mapping Our World   2020
Guest lecture on geo-visualization

West Washington University ENVS 412: Environmental Journalism 2021
Speaker on COVID impact on public transit

Media

KCBS Radio: "Using new technology to observe real-time impacts on public transportation"	2023
Tech Times: "New Tech Shows How Public Transit Can Be Disrupted by a Major Sporting Event"	2023
Ohio State News: "Why buses can't get wheelchair users to most areas of cities"	2023
Reddit r/science: "Why buses can't get wheelchair users to most areas of cities" With 14.7k upvote as of Oct 2023.	2023
ZME Science: "Wealth and race influenced public transportation in the pandemic"	2020
Study Finds: "Study: Transit apps are MORE likely to make you miss the bus than save you time!"	2020

Service

Peer Review for Journals (Stopped counting after Sep 2023)

Sustainable Cities and Society

Transportation Research Part C: Emerging Technologies

Transportation Research Part D: Transport and Environment

Journal of Transport Geography

Journal of Geographical Systems

Public Transport

Transportation

International Journal of Geo-Information

Case Studies on Transport Policy

Travel Behavior and Society

Transactions in Urban Data, Science, and Technology

BioMedical Engineering OnLine

Transport Policy

Transaction in GIS

Journal of Public Transportation

Transportation Research Record

Data Science For Transportation

American Journal of Infection Control

Department/University Service

Graduate Geography Organization, Social Chair	2021 – 2022

Student Supervision

Muhammad Muzzamil H Khattak, PhD Geosciences, Auburn University	2025 - present
Xi Guan, Master of Regional Planning, Cornell University	2024 - present
Michael Smith, MCRP. Urban Planning, The Ohio State University	2022 - present

Xiaojian Zhang, Ph.D. Civil Engineering, University of Florida	2023 - 2024
Duanya Lyu, Ph.D. Civil Engineering, University of Florida	2023 - present
Yiheng Qian, Ph.D. Civil Engineering, University of Florida	2023 - 2024
Anran Zheng, M.E. Civil Engineering, University of Florida, employed at AECOM	2023

Student Committee

Michael Agbozo, Ph.D. in Geography, Auburn University	2024 - present
Gifty Gavor, M.S. in Geography, Auburn University	2024 - present
Lander Stone, M.S. in Geography, Auburn University	2024 - present
Md Mahmud Hossain, Ph.D Civil Engineering, Auburn University	2024