

# Luyu Liu

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**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

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|--|----------------|
| 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

### Published Journal Articles

Qian, Y., **Liu, L.**, & Yan, X. Big Data, Big Bias? On Factors Influencing Public Transit and Shared Micromobility Integration. *Transportation Research Part D*, 148, 104977.

Lyu, D., **Liu, L.**, Campbell, C., Zhang, Y., & Yan, X. (2025). Potentials and limitations of large-scale, individual-level mobile location data for food acquisition analysis. *Health & Place*, 95, 103526. <https://doi.org/10.1016/j.healthplace.2025.103526>

**Liu, L.**, Li, X., Pereira, R. H., & Yan, X. (2025). Measuring exposure to extreme heat in public transit systems. *Journal of Transport Geography*, 128, 104383.

Javanmard, R., **Liu, L.**, Long, J. A., & Lee, J. (2025). Using Realtime GTFS to generate easy-to-use transit accessibility measures under travel time uncertainty. *Travel Behaviour and Society*, 41, 101054.

Tokey, A. I., **Liu, L.**, & Miller, H. J. (2025). Measuring the impacts of sidewalks on public transit first mile/last mile accessibility and their association with social and demographic factors. *Transportation Research Interdisciplinary Perspectives*, 33, 101576.

Dai, Y., **Liu, L.**, Wang, K., Li, M., & Yan, X. (2025). Using computer vision and street view images to assess bus stop amenities. *Computers, Environment and Urban Systems*, 117, 102254.

**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. (2025). Measuring Resilience with Public High-Transit Resolution Real-Time Geospatial Data. *Urban Human Mobility: Practices, Analytics, and Strategies for Smart Cities*, 283.

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

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

#### In-progress Publications

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)

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

#### Conference Presentations

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.

**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 Micro-mobility 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**

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| High-resolution Transit Riders Extreme Heat Exposure across U.S. Cities  | 2024           |
| <ul style="list-style-type: none"> <li>• Funder: USDOT, Tier 1 University Transportation Center</li> <li>• Collaborators: Drs. Yan Xiang, Wesley Marshall, Aditi Misra, Manish Shirgaokar</li> <li>• Amount: \$225,000</li> <li>• Role: PI</li> </ul>            |                |
| Assessing Bus Stop Amenities Using Google Street View Images and Computer Vision   | 2024           |
| <ul style="list-style-type: none"> <li>• Funder: USDOT, Tier 1 University Transportation Center</li> <li>• Collaborators: Drs. Yan Xiang, Guang Tian, Reid Ewing, and Justyna Kaniewska</li> <li>• Amount: \$150,000</li> <li>• Role: co-PI</li> </ul>           |                |
| Understanding heat exposure-aware accessibility by transit in the era of climate change  | 2024 - present |
| <ul style="list-style-type: none"> <li>• Funder: Social Sciences and Humanities Research Council</li> <li>• Collaborators: Drs. Jinhyung Lee, Ehab Diab, Jed Long, James Voogt, Jinfei Wang</li> <li>• Amount: \$50,000</li> <li>• Role: collaborator</li> </ul> |                |
| Analyzing transit-based evacuation demand in hurricanes  | 2023 - 2024    |
| <ul style="list-style-type: none"> <li>• Funder: USDOT, Tier 1 University Transportation Center</li> <li>• Collaborators: Dr. Yan Jacob Xiang and Dr. Xilei Zhao</li> <li>• Amount: \$150,000</li> <li>• Role: Lead researcher</li> </ul>                        |                |
| Shared micromobility as a last-mile complement to public transit   | 2023 - 2024    |
| <ul style="list-style-type: none"> <li>• Funder: USDOT, Tier 1 University Transportation Center</li> <li>• Collaborators: Dr. Yan Jacob Xiang and Dr. Xilei Zhao</li> <li>• Amount: \$225,000</li> <li>• Role: Lead researcher</li> </ul>                        |                |
| Downscaling Soil Moisture for Drought Monitoring with Machine Learning Methods   | 2020 - 2023    |
| <ul style="list-style-type: none"> <li>• Funder: Sharpe Innovation Commons Seed Grant Award, the Ohio State University</li> <li>• Collaborators: Dr. Zack Leasor and Dr. Chen Zhao</li> <li>• Role: Awardee and coauthor</li> </ul>                              |                |
| MORPC sustainability dashboard   | 2019 – 2020    |
| <ul style="list-style-type: none"> <li>• Funder: Mid-Ohio Regional Planning Commission</li> <li>• Collaborators: Dr. Harvey Miller and Dr. Ningchuan Xiao</li> <li>• Role: Lead programmer and first author</li> </ul>   |                |

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| Columbus Urban & Regional Information Observatory (CURIO)   | 2017 – 2018 |
| <ul style="list-style-type: none"> <li>• Funder: Center for Urban and Regional Analysis, the Ohio State University</li> <li>• Collaborators: Dr. Harvey Miller and Dr. Ningchuan Xiao</li> <li>• Role: Lead programmer</li> </ul> |             |

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| Infant Mortality Research Partnership (IMRP) online GIS platform  | 2018 – 2019 |
| <ul style="list-style-type: none"> <li>• Funder: Dr. Elisabeth Root</li> <li>• Collaborators: Dr. Elisabeth Root</li> <li>• Role: Lead programmer and coauthor</li> </ul> |             |

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| Neighborhood polygon algorithm based on network analysis  | 2017 – 2018 |
| <ul style="list-style-type: none"> <li>• Funder: Institute for Population Research, The Ohio State University</li> <li>• Collaborators: Dr. Christopher Browning and Dr. Catherine Calder</li> <li>• Role: Lead programmer</li> </ul> |             |

## Teaching and Public Speaking

### Primary Instructor

|  |      |
|--|------|
| Auburn University GEOG 5880: Advanced GIS, 3 credits | 2025 |
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| The Ohio State University GEOG 5210: Fundamental GIS, 3 credits   | 2021 |
| Student rating: 4.71/5 (University average: 4.48), 34 enrollments |      |

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| 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   |      |

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

### Guest Lecturer

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|-------------------------------------|------|
| Auburn University: Geometric design | 2024 |
| Guest lecture on GIS application    |      |

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

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

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

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

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

## Media

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|---|------|
| 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"                | 2023 |
| With 14.7k upvote as of Oct 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

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| Graduate Geography Organization, Social Chair | 2021 – 2022 |
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## Student Supervision

|   |                |
|---|----------------|
| Muhammad Muzzamil H Khattak, PhD Geosciences, Auburn University | 2025 - present |
| Xi Guan, Master of Regional Planning, Cornell University        | 2024 - present |
| Taiyu Zhao, Master of Holocene Climates, Cambridge University   | 2024 - present |

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| Michael Smith, MCRP. Urban Planning, The Ohio State University                | 2022 - 2024    |
| 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

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|--|----------------|
| Michael Agbozo, Ph.D. in Geography, Auburn University            | 2024 - present |
| Tonghui Li, Ph.D. in Civil Engineering, Auburn University        | 2025 - present |
| Robert Hernandez, Ph.D. in Geography, Auburn University          | 2025 - present |
| Tony Hall, Ph.D. in Geography, Auburn University                 | 2025 - present |
| Lander Stone, Ph.D in Geography, Auburn University               | 2025 - present |
| Gifty Gavor, M.S. in Geography, Auburn University                | 2024 - 2025    |
| Katie Bendall, M.S. in Geography, Auburn University              | 2024 - 2025    |
| Md Mahmud Hossain, Ph.D. in Civil Engineering, Auburn University | 2024           |