

# RONGXIANG SU

Massachusetts Institute of Technology, Cambridge, MA 02139 USA

+1 (805)-722-6334 ♦ rxsu@mit.edu ♦ Website ♦ LinkedIn

## RESEARCH INTERESTS

---

- Geospatial Data Science
- Human Mobility/Travel Behavior
- Urban Analytics
- Accessibility and Space-time Modeling

## EDUCATION

---

**University of California Santa Barbara** 09/2019 - 12/2023

Ph.D. in Geography

Dissertation: Sensing Human Activity and Interaction Patterns through Movement Observations

Co-chairs: Konstadinos Goulias, Somayeh Dodge

**Wuhan University, China** 09/2016 - 06/2019

M.S. in Cartography and Geographic Information System

Advisor: Zhixiang Fang

**Hefei University of Technology, China** 09/2012 - 06/2016

B.S. in Geographic Information System

## PROFESSIONAL EMPLOYMENT HISTORY

---

**Postdoctoral Fellow** in Complexity and Urban Science

*Senseable City Lab, MIT (PIs: Dr. Paolo Santi, Dr. Carlo Ratti)*

01/2024 - present

- Explainable Artificial Intelligence Approaches to Understand the Locality Behavior in Individual Food Delivery Choices
- Optimization Approaches for Enhancing Local Mobility through Ride-Sharing during Big Events

**Graduate Student Researcher**

*GeoTrans Laboratory, UCSB (PI: Dr. Konstadinos Goulias)*

09/2019 - 12/2023

- Spatial Microanalysis and Equity Assessment of Joint Relationships among Destination Choice, Activity Duration, and Mode Choice, 2021-2023 (USDOT Pacific Southwest Region University Transportation Center)
- Revisiting the Impact of Teleworking on Activity-Travel Behavior using Recent Data and Sequence-based Analytical Techniques, 2019-2021 (USDOT Pacific Southwest Region University Transportation Center)

*MOVE Laboratory, UCSB (PI: Dr. Somayeh Dodge)*

05/2020 - 12/2023

- Advancing Methods to Trace and Contextualize Space-Time Interaction Patterns in Movement Data, 2022-2023 (NSF #2217460)
- Modeling Movement and Behavior Responses to Environmental Disruptions, 2021-2023 (NSF CAREER #2043202)

## Machine Learning Engineer Intern

Didi Chuxing, Beijing, China (Mentors: Mr. Kaiqiang An, Mr. Guoping Liu) 05/2019 - 08/2019

- Analyzed Didi vehicle movement tracking data using the Spark platform to compute movement parameters. Developed a logistic regression model to detect drivers' detour behavior, achieving a 0.37 improvement in recall rate compared to a statistical-based baseline.
- Developed a Siamese LSTM network using TensorFlow to identify street closures, achieving a recall rate of 0.97.

## Research Assistant

Wuhan University, China (PI: Dr. Zhixiang Fang) 09/2016 - 06/2019

- Analyzed the impact of emerging e-hailing services on traditional taxi ridership in China using floating car data.

## REFEREED JOURNAL PUBLICATIONS

---

1. **Su, R.**, Liu, Y., Dodge, S. (2024). ORTEGA v1.0: An open-source Python package for context-aware interaction analysis using movement data. *Movement Ecology*, 12, 20. doi: 10.1186/s40462-024-00460-2
2. Shi, H., Xiao, J., **Su, R.**, Goulias, K. (2024). Measurement of happiness of daily activity-travel schedules. *Travel Behaviour and Society*, 36, 100807.
3. **Su, R.**, Goulias, K. (2023). Untangling the relationships among residential environment, destination choice, and daily walk accessibility. *Journal of Transport Geography*, 109, 103595. doi: 10.1016/j.jtrangeo.2023.103595
4. Shi, H., **Su, R.**, Goulias, K. (2023). Exploring the impact of COVID-19 pandemic on Americans time use related subjective well-being. *Wellbeing, Space and Society*, 100148. doi:10.1016/j.wss.2023.100148
5. **Su, R.**, Dodge, S., Goulias, K. (2022b). A classification framework and computational methods for human interaction analysis using movement data. *Transactions in GIS*, 26(4), 1665-1682. doi: 10.1111/tgis.12960
6. **Su, R.**, Dodge, S., Goulias, K. (2022a). Understanding the impact of temporal scale on human movement analytics. *Journal of Geographical Systems*, 24(3), 353-388. doi:10.1007/s10109-021-00370-6 (JGS Editors' choice article)
7. Shi, H., **Su, R.**, Xiao, J., Goulias, K. (2022). Spatiotemporal analysis of activity-travel fragmentation based on spatial clustering and sequence analysis. *Journal of Transport Geography*, 102, 103382. doi: 10.1016/j.jtrangeo.2022.103382
8. **Su, R.**, Xiao, J., McBride, E., Goulias, K. (2021b). Understanding seniors daily mobility patterns in California using human mobility motifs. *Journal of Transport Geography*, 94, 103117. doi:10.1016/j.jtrangeo.2021.103117
9. **Su, R.**, McBride, E., Goulias, K. (2021a). Unveiling daily activity pattern differences between telecommuters and commuters using human mobility motifs and sequence analysis. *Transportation Research Part A: Policy and Practice*, 147, 106-132. doi:10.1016/j.tra.2021.03.002
10. **Su, R.**, Goulias, K. (2021). Evolution of the Chinese Spring Festival Travel network during the COVID-19 early outbreak. *Transportation letters*, 13(5-6), 492-500. doi:10.1080/19427867.2021.1896065
11. Dodge, S., **Su, R.**, Johnson, J., Simcharoen, A., Goulias, K., Smith, J., Ahearn, S. (2021). ORTEGA: an object-oriented time-geographic analytical approach to trace space-time contact patterns in movement data. *Computers, Environment and Urban Systems*, 88, 101630. doi: 10.1016/j.compenvurbsys.2021.101630
12. **Su, R.**, McBride, E., Goulias, K. (2020). Pattern recognition of daily activity patterns using human mobility motifs and sequence analysis. *Transportation Research Part C: Emerging Technologies*, 120,

102796. doi:10.1016/j.trc.2020.102796

13. Fang, Z., Huang, S., **Su, R.**, Xiao, H. (2020). Detecting hierarchical congestion intervals based on the fusion of multi-source highway data. *Geomatics and Information Science of Wuhan University*, 45(5), 682-690. (in Chinese)
14. **Su, R.**, Fang, Z. (2019). A review of studies in taxi mobility and e-hailing taxi service. *Journal of Smart Cities*, 4(1), 1-6.
15. Fang, Z., **Su, R.**, Huang, L. (2018). Understanding the effect of an E-hailing app subsidy war on taxicab operation zones. *Journal of Advanced Transportation*, 2018. doi:10.1155/2018/7687852
16. **Su, R.**, Fang, Z., Xu, H., Huang, L. (2018b). Uncovering Spatial Inequality in Taxi Services in the Context of a Subsidy War among E-Hailing Apps. *ISPRS International Journal of Geo-Information*, 7(6), 230. doi:10.3390/ijgi7060230
17. **Su, R.**, Fang, Z., Luo, N., Zhu, J. (2018a). Understanding the dynamics of the pick-up and drop-off locations of taxicabs in the context of a subsidy war among e-hailing apps. *Sustainability*, 10(4), 1256. doi:10.3390/su10041256

## OTHER PUBLICATIONS

---

1. **Su, R.**, Dodge, S., Goulias, K. (2021). A time-geographic approach to quantify the duration of interaction in movement data. In *Proceedings of the 1st ACM SIGSPATIAL International Workshop on Animal Movement Ecology and Human Mobility* (pp. 18-26). **(Best Paper Award)**
2. Xiao, J., **Su, R.**, McBride, E., Goulias, K. (2020). Exploring the correlations between spatiotemporal daily activity-travel patterns and stated interest and perception of risk with self-driving cars. *AGILE: GIScience Series*, 1, 1-15. doi:10.5194/agile-giss-1-22-2020
3. Goulias, K., **Su, R.**, McBride, E. (2020). Revisiting the Impact of Teleworking on Activity-Travel Behavior Using Recent Data and Sequence-Based Analytical Techniques. *Research report to Pacific Southwest Region University Transportation Center*.
4. Goulias, K., McBride, E., **Su, R.** (2020). Life cycle stages, daily contacts, and activity-travel time allocation for the benefit of self and others. In: *Scheiner, J. and Rau, H. (eds) Mobility Across the Life Course*, Publisher: Edward Elgar. (Book chapter)

## PUBLICATIONS IN REVIEW

---

1. **Su, R.**, Xiao, J., Shi, H., Goulias, K. (2024a). Nonlinear relationship between VMT and the built environment: A quantile regression approach. *Transportation Research Part A: Policy and Practice*. (in revision)
2. **Su, R.**, Newsham, N., Dodge, S. (2024b). Spatiotemporal dynamics of ethnoracial diversity and segregation in Los Angeles County: Insights from mobile phone data. *Computers, Environment and Urban Systems*. (in revision)
3. **Su, R.\***, Eshtiyagh, J.\*, Santi, P., Hu, S., Duarte, F., Mazzarello, M., Ratti, C. (2025). Determinants of the localized behavior of individual online food delivery choices. *2025 Transportation Research Board Annual Meeting*. (in review)

\* indicates equal contribution

## PRESENTATIONS

---

1. Spatiotemporal Dynamics of Racial-ethnic Diversity and Segregation: Insights from Mobile Phone Data. *ESRI Higher Education Webinar: Discover the Power of Spatial Data Science for Advancing Knowledge* (online). December 7, 2023. (Panelist)

2. Spatiotemporal Dynamics of Racial-ethnic Diversity and Segregation: Insights from Mobile Phone Data. *Spatial Hour at the Center for Spatial Studies and Data Science*. UCSB, California. November 29, 2023. (Oral presentation)
3. ORTEGA: An open-source Python package for context-aware interaction analysis based on movement data. *2023 GISS Specialty Group Student Paper Competition, American Association of Geographers Annual Meeting*. Denver, CO. March 24, 2023. (Full paper submission; Oral presentation; **Honorable Mention Award**)
4. Toward a taxonomy and computational methods for human interaction analysis using movement data. *2022 ESRI User Conference*. San Diego, California, July 12, 2022. (Oral presentation)
5. Heterogeneity in the relationship of vehicle miles traveled with the built environment: A quantile regression approach. *2022 UCGIS Symposium*. Syracuse, NY. June 7-9, 2022. (Extended abstract submission; Lightning talk, acceptance rate: 9/40)
6. Understanding the impact of temporal scale on human movement analytics. *2022 American Association of Geographers Annual Meeting* (online). February 26, 2022. (Oral presentation)
7. A time-geographic approach to quantify the duration of interaction in movement data. *1st ACM SIGSPATIAL International Workshop on Animal Movement Ecology and Human Mobility*. Beijing, China (online). November 2, 2021. (Full paper submission; Oral presentation; **Best Paper Award**)
8. Unveiling the taxonomy of daily travel and time use patterns using human mobility motifs and sequence analysis. *2021 American Association of Geographers Annual Meeting* (online). April 8, 2021. (Oral presentation)
9. An exploration of human mobility motifs in the California component of the 2017 National Household Travel survey. *hEART 2020: 9th Symposium of the European Association for Research in Transportation* (online). February 3-4, 2021. (Extended abstract submission; Recorded oral presentation)
10. Unveiling daily activity pattern differences between telecommuters and commuters using human mobility motifs and sequence analysis. *2021 Transportation Research Board Annual Meeting* (online). January 27, 2021. (Poster presentation)
11. Pattern recognition of daily activity patterns using human mobility motifs and sequence analysis. *2021 Transportation Research Board Annual Meeting* (online). January 26, 2021. (Poster presentation)
12. Unveiling daily activity pattern differences between telecommuters and commuters using human mobility motifs and sequence analysis. *Activity and Time-Use Patterns Subcommittee Meeting of 2021 Transportation Research Board Annual Meeting* (online). January 5, 2021. (Invited talk)
13. Accurate road anomaly detection by trajectory mining. *1st ACM SIGSPATIAL International Workshop on Ride-hailing Algorithms, Applications, and Systems*. Chicago, IL. November 5, 2019. (Full paper submission; Poster presentation)
14. Uncovering the changes of urban taxi travel demand in the context of a subsidy war among e-hailing apps. *China Geographic Information Science Theory and Methodology Annual Conference*. Taiyuan, China. November 2-4, 2018. (Full paper submission; Oral presentation; **Best Paper Award**)
15. Uncovering the changes of the pick-up and drop-off locations of taxicabs in the context of a subsidy war among e-hailing apps. *The 9th International Forum of Spatially Integrated Humanities and Social Sciences*. Shanghai, China. June 23-25, 2018. (Oral presentation)

## TEACHING EXPERIENCE

---

### Teaching Assistant (UCSB)

*GEOG 111A/211A: Transportation Planning and Modeling*

*Fall 2019, Fall 2020*

- Instructed a diverse group of graduate and undergraduate students in applying R programming

for processing, analyzing, and visualizing transportation data (e.g., travel survey).

*GEOG 111B: Transportation Modeling and Simulation*

*Winter 2020, Winter 2021*

- Developed and curated a comprehensive set of laboratory materials and assignments, guiding undergraduate students through essential statistical techniques for transportation modeling and simulation. Topics cover cluster analysis, linear regression, negative binomial regression, Poisson regression, multinomial logit models, and discrete choice modeling.

*GEOG 111C: Smart Green Cities*

*Spring 2020*

- Led engaging discussions on the theoretical foundations and real-world implementations of smart and sustainable urban development during class sessions. Additionally, supervised and assessed group presentations by undergraduate students, fostering a collaborative learning environment.

## STUDENT MENTORING AND SERVICES

---

### Undergraduate mentoring:

- AlQasem Senegali - Computer Science & Engineering Major, MIT (*09/2024 - present*): Guided the implementation and interpretation of nonlinear machine learning-based regression models to understand how various factors influence the locality behavior of individual food delivery choices.
- Enerelt Delgerdalai - Computer Science & Engineering Major, MIT (*09/2024 - present*): Supervised the improvement of computational methods for measuring local behavior in individual online food delivery choices.
- Tongli Zhang - Department of Statistics and Applied Probability, UCSB (*2023*): Supervised the enhancement of our ORTEGA Python package for movement interaction analysis, with a focus on improving its features and computational efficiency.
- Qianyu He - Department of Geography, UCSB (*2023*): Guided the documentation and implementation of our ORTEGA Python package leveraging tiger movement data collected in Thailand.

### Peer reviewer for academic journals/conferences (*55 peer review records as of 09/2024*):

- **Geography and GIS:** International Journal of Geographical Information Science, Transactions in GIS, Journal of Transport Geography, GIScience&Remote Sensing, Journal of Spatial Information Science
- **Transportation:** Transportation Research Part A: Policy and Practice, Transportation Research Part C: Emerging Technologies, IEEE Transactions on Intelligent Transportation Systems, Travel Behaviour and Society, Transportation, European Journal of Transport and Infrastructure Research, Public Transport, Transportation Letters, Transportation Research Board Annual Meeting, Transportation Research Record, World Transport Convention, Data Science for Transportation, npj Sustainable Mobility and Transport, Transportation Planning and Technology
- **Other:** Nature Human Behaviour, Scientific Reports, IEEE Access, International Journal of Data Science and Analytics, Applied Energy, Computational Urban Science, Applied Network Science, Journal of Happiness Studies, Humanities and Social Sciences Communications

**UCSB departmental services:** Geography Sport Committee (2019-2020), Geography Events Committee (2020-2021), volunteer for the Geography Peer Mentor Program (2022-2023), volunteer for the department's open house for prospective graduate students (2023), volunteer in graduate student panel for the department's "How-to-Apply" orientation for prospective graduate students (2021)

## FELLOWSHIPS, SCHOLARSHIPS & AWARDS

---

AAG-GISS Specialty Group Student Paper Competition Honorable Mention Award

*2023*

<b>Jack and Laura Dangermond Fellowship, UCSB (\$5000)</b>	<i>2022</i>
<b>Geography Department Excellence in Research Award, UCSB</b>	<i>2022</i>
<b>Chinese Government Award for outstanding self-financed students abroad (\$6000)</b>	<i>2022</i>
Chinese-American Engineers and Scientists Association of Southern California Scholarship (\$1000)	<i>2022</i>
Geography Department Summer Research Stipend Award, UCSB (\$4850)	<i>2021</i>
Multidisciplinary Research on the Coronavirus and its Impacts Grant, UCSB (\$2000)	<i>2020</i>
Outstanding Graduate Student Award, Wuhan University (Top 10%)	<i>2019</i>
Chen-Yongling Scholarship, Wuhan University	<i>2018</i>
First-Class Scholarship, Wuhan University (Top 10%)	<i>2018</i>
Distinguished College Graduate, Hefei University of Technology (Top 10%)	<i>2016</i>
First-Class Scholarship, Hefei University of Technology (Top 4%)	<i>2014, 2015</i>

## TRAVEL AWARDS

---

AAG Spatial Analytics and Modeling Speciality Group Student Travel Award	<i>2023</i>
AAG Transportation Geography Specialty Group Travel Award	<i>2023</i>
Jack and Laura Dangermond Travel Award for 2023 AAG Annual meeting	<i>2023</i>
UCSB Graduate Student Association Conference Travel Grant	<i>2023</i>
UCSB Doctoral Student Travel Grant	<i>2022</i>
UCGIS Symposium Travel Award	<i>2022</i>
UCSB Graduate Student Association Conference Travel Grant	<i>2022</i>
Jack and Laura Dangermond Travel Award for 2022 ESRI User Conference	<i>2022</i>
Jack and Laura Dangermond Travel Award for 2022 AAG Annual meeting	<i>2022</i>
Jack and Laura Dangermond Travel Award for 2021 ACM SIGSPATIAL Conference	<i>2021</i>
Jack and Laura Dangermond Travel Award for 2021 AAG Annual meeting	<i>2020</i>
Jack and Laura Dangermond Travel Award for 2021 TRB Annual meeting	<i>2020</i>
Jack and Laura Dangermond Travel Award for 2019 ACM SIGSPATIAL Conference	<i>2019</i>

*(Last updated September 15, 2024)*