

# RONGXIANG SU

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## RESEARCH INTERESTS

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- Movement Analysis
- Human Mobility
- Travel Behavior
- Accessibility and Space-time Modeling

## EDUCATION

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**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

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### Postdoctoral Fellow

*MIT Senseable City Lab (PIs: Paolo Santi, Carlo Ratti)* 01/2024 - present

- Food AI: Understanding the impact of the food environment on human daily diet (Dubai Future Foundation)

### Graduate Student Researcher

*GeoTrans Laboratory, UCSB (PI: 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: 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: Kaiqiang An, Guoping Liu)

05/2019 - 08/2019

- Fetched Didi vehicle tracking data from the Spark platform to compute movement parameters. These features were then used to build a logistic regression model to identify drivers' detour behavior. The recall rate was improved by 0.37 compared to the statistical-based baseline approach.
- Trained a Siamese LSTM network using Tensorflow to identify street closures with a recall rate of 0.97.

## Research Assistant

Wuhan University, China (PI: Zhixiang Fang)

09/2016 - 06/2019

- Investigated the impact of the emerging e-hailing services in China on traditional taxi ridership using taxi trajectory data.

## PUBLICATIONS (ORCID: 0000-0003-1966-7289)

1. **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
2. **Su, R.**, Dodge, S., Goulias, K. (2022). 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
3. **Su, R.**, Dodge, S., Goulias, K. (2022). 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**)
4. **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**)
5. **Su, R.**, Xiao, J., McBride, E.C., Goulias, K. (2021). Understanding seniors daily mobility patterns in California using human mobility motifs. *Journal of Transport Geography*, 94, 103117. doi:10.1016/j.jtrangeo.2021.103117
6. **Su, R.**, McBride, E.C., Goulias, K. (2021). 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
7. **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
8. **Su, R.**, McBride, E.C., 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
9. **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.
10. **Su, R.**, Fang, Z., Xu, H., Huang, L. (2018). 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
11. **Su, R.**, Fang, Z., Luo, N., Zhu, J. (2018). 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
12. 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

13. 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
14. 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
15. Goulias, K., **Su, R.**, McBride, E.C. (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).
16. Xiao, J., **Su, R.**, McBride, E.C., 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
17. Goulias, K., McBride, E.C., **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)
18. 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

## PUBLICATIONS IN REVIEW

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1. **Su, R.**, Xiao, J., Shi, H., Goulias, K. (2024). Nonlinear relationship between VMT and the built environment: A quantile regression approach. *Transportation Research Part A: Policy and Practice*. (in revision)
2. **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*. (in revision)
3. Shi, H., Xiao, J., **Su, R.**, Goulias, K. (2024). Measurement of happiness of daily activity-travel schedules. *Travel Behaviour and Society*. (in revision)
4. **Su, R.**, Dodge, S. (2024). Spatiotemporal dynamics of racial-ethnic diversity and segregation: Insights from mobile phone data. (in preparation)

## PRESENTATIONS

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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

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### Teaching Assistant (UCSB)

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

*Fall 2019, Fall 2020*

- Instructed a diverse group of both graduate and undergraduate students in the practical application of R programming for processing, analyzing, and visualizing transportation data.

*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.

## SERVICES

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**Peer Reviewer for Academic Journals/Conferences** (36 peer review records as of 01/2024): Nature Human Behaviour, International Journal of Geographical Information Science, Transactions in GIS, Transportation Research Part A: Policy and Practice, Transportation Research Part C: Emerging Technologies, IEEE Transactions on Intelligent Transportation Systems, Journal of Transport Geography, Travel Behaviour and Society, Transportation, GIScience&Remote Sensing, European Journal of Transport and Infrastructure Research, IEEE Access, Journal of Spatial Information Science, , Public Transport, Transportation Letters, Transportation Research Board Annual Meeting, Transportation Research Record, Computational Urban Science, Data Science for Transportation, npj Sustainable Mobility and Transport

**UCSB University Service:** 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)

**Professional Society Memberships:** American Association of Geographers (2019-present), International Association of Chinese Professionals in Geographic Information Sciences (2023-present)

## FELLOWSHIPS, SCHOLARSHIPS & AWARDS

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AAG-GISS Specialty Group Student Paper Competition Honorable Mention Award	2023
<b>Jack and Laura Dangermond Fellowship, UCSB (\$5,000)</b>	2022
<b>Geography Department Excellence in Research Award, UCSB</b>	2022
<b>Chinese Government Award for outstanding self-financed students abroad (\$6,000)</b>	2022
Chinese-American Engineers and Scientists Association of Southern California Scholarship	2022
Geography Department Summer Research Stipend Award, UCSB	2021
Multidisciplinary Research on the Coronavirus and its Impacts Grant, UCSB	2020
Outstanding Graduate Student Award, Wuhan University (Top 10%)	2019
Chen-Yongling Scholarship, Wuhan University	2018
First-Class Scholarship, Wuhan University (Top 10%)	2018
Distinguished College Graduate, Hefei University of Technology (Top 10%)	2016
First-Class Scholarship, Hefei University of Technology (Top 4%)	2014, 2015

## TRAVEL AWARDS

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