Ekin Uğurel

Contact Information

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Education & Academic Positions

08/2026–Present **Assistant Professor (tenure-track)** in **Industrial and Systems Engineering**
University of Houston, Houston, TX

01/2026–08/2026 **Postdoctoral Researcher** in the **Resilient Urban Networks (RUN) Lab**
New York University (NYU), New York, NY
PI: Takahiro Yabe, PhD

09/2021–12/2025 **PhD** in **Transportation Engineering (Data Science Option)**
University of Washington, Seattle, WA
Dissertation: Behaviorally Informed Machine Learning for Human Mobility
Advisor: Cynthia Chen, PhD
Co-Advisor: Shuai Huang, PhD

04/2025–08/2025 **Visiting PhD** in the **Machine Learning for Smart Mobility (MLSM)** group
Technical University of Denmark (DTU), Copenhagen, DK
Advisor: Filipe Rodrigues, PhD

09/2021–03/2023 **Master of Science** in **Transportation Engineering**
University of Washington, Seattle, WA
Advisor: Cynthia Chen, PhD

08/2017–05/2021 **B.S., Civil Engineering**
The University of Texas, Austin, TX
Highest Honors
Business Foundations Minor

Publications

Journal Publications (Refereed)

J1. **Uğurel**, E., Guan, X., Wang, Y., Huang, S., Wang, Q., and Chen, C. Correcting missingness in passively-generated mobile data with Multi-Task Gaussian Processes. *Transportation Research Part C: Emerging Technologies 161* (Apr. 2024)

J2. **Uğurel**, E., Huang, S., and Chen, C. Learning to generate synthetic human mobility data: A physics-regularized Gaussian process approach based on multiple kernel learning. *Transportation Research Part B: Methodological 189* (Nov. 2024), 103064

J3. **Uğurel**, E., Wu, X., Wang, R., Lee, B. H. Y., and Chen, C. Metropolitan Planning Organizations' Uses of and Needs for Big Data. *Findings* (Dec. 2024). Publisher: Findings Press

J4. **Uğurel**, E., and Wang, G. Beat the morning rush: Survival analysis-informed DNNs with collaborative filtering to predict departure times. *IEEE Open Journal of Intelligent Transportation Systems* (Feb. 2025)

J5. **Uğurel**, E., Chen, C., Lee, B. H. Y., and Rodrigues, F. On predicting sociodemographics from mobility signals. *Computers, Environment and Urban Systems 127* (July 2026), 102420

J6. Wang, Y., Guan, X., **Uğurel**, E., Chen, C., Huang, S., and Wang, Q. R. Exploring biases in travel behavior patterns in big passively generated mobile data from 11 U.S. cities. *Journal of Transport Geography 123* (Feb. 2025), 104108

J7. He, J., Sheera, A., McFarland, J., Wang, F., Khullar, M., Chavan, S., Herman, B., **Uğurel**, E., and Mashhadi, A. A framework for measuring and benchmarking fairness of generative crowd-flow models. *ACM Journal on Computing and Sustainable Societies 3*, 2 (Apr. 2025), 1–27

J8. Jia, G., Ng, K., **Uğurel**, E., Lee, B., Pendyala, R., and Chen, C. Covid & telecommuting-induced changes in individual activity and travel patterns: Evidence from the puget sound region. *Transport Policy* (Nov. 2025), 103772

J9. Chen, C., Wang, R., Bansal, P., Chen, L., **Uğurel**, E., Zhang, Y., and Wu, X. From biases to opportunities: leveraging location-based-service (lbs) data for next-generation transportation planning. *Transportation Research Part C: Emerging Technologies 182* (2026), 105416

Manuscripts Under Review + Preprints

J10. Wu, X., Wang, Y., **Uğurel, E.**, Huang, S., Chen, C., Wang, R. Location-Based Service (LBS) Data Quality Metrics and Effects on Mobility Inference. *Scientific Reports* (third round). (2026)

J11. **Uğurel, E.**, Coenen, S., and Chen, C. Event detection from novel data sources: Leveraging satellite imagery alongside GPS traces. *arXiv* preprint arXiv:2401.10890. (2024)

J12. **Uğurel, E.** Time-Varying Transition Matrices with Multi-task Gaussian Processes. *arXiv* preprint arXiv:2306.11772. (2023).

J13. Wang, D., McFarland, J., Mashhadi, A., and **Uğurel, E.** Comparing Fairness of Generative Mobility Models. *arXiv* preprint arXiv:2411.04453. (2024).

J14. **Uğurel, E.**, Lin, H., Zheng, Q., Nov, O., and Yabe, T. Algorithmic Mediation of Leisurely Activity Decisions. *Transportation Research Interdisciplinary Perspectives* (under review). (2026).

J15. **Uğurel, E.**, Yabe, T., Chen, C. Self-training for Sociodemographic Inference from Mobility Data. *Transportation Research Part C: Emerging Technologies* (under review). (2026).

J16. **Uğurel, E.**, Zhang, Y. Rethinking Maritime Activity in the Arctic under Geopolitical Uncertainty. *Transport Reviews* (under review; second round). (2026).

Conference Proceedings (Refereed)

C1. **Uğurel, E.**, Huang, S., Chen, C. Gaussian Process Learning for Location-Based Service Data. In *2023 Asia Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC)* (Oct. 2023), pp. 1204-1207. IEEE.

C2. **Uğurel, E.**, Yabe, T. Towards welfare-oriented recommendations in activity-travel behavior. *ACM Conference on Recommender Systems*, pp. 564-573 (Sep. 2026).

- **18% acceptance rate**

C3. Zhang, Y., **Uğurel, E.** Causal-Flow SCM: Calibrated Forecasting and Counterfactual Prioritization for Airport Delay Propagation. *ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems* (Nov. 2026).

- **23.4% acceptance rate**

C4. Shrivatsa, N., **Uğurel, E.**, Yabe, T. GeoRecSim: A Multi-Agent Testbed for Recommender System Design. *GeoSim '26: Proceedings of the 9th ACM SIGSPATIAL International Workshop on GeoSpatial Simulation*, pp. 15-26 (Nov 2026).

Conference Presentations (Refereed)

** presenting author*

1. *January 2027. *AI-Assisted Digital Platforms Reshape Activity-Travel Behavior.* Oral presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
2. *November 2026. *Self-Training for Sociodemographic Inference from Mobility Data.* Oral presentation: INFORMS Annual Meeting, San Francisco, CA.
3. November 2026. *Causal-Flow SCM: Calibrated Forecasting and Counterfactual Prioritization for Airport Delay Propagation.* Oral presentation: ACM SIGSPATIAL Conference (main track), Riverside, CA.
4. *September 2026. *Towards Welfare-oriented Recommendations in Activity-Travel Behavior.* Oral presentation: 20th ACM Conference on Recommender Systems (RecSys '26), Minneapolis, MN.

5. *January 2026. *On Predicting Demographics from Mobility Signals.* Poster presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
6. *January 2026. *Metropolitan Planning Organizations' Uses of and Needs for Big Data.* Poster presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
7. *October 2025. *Learning to generate synthetic human mobility data: A physics-regularized Gaussian process approach based on multiple kernel learning.* Job Market Showcase: INFORMS Annual Meeting, Atlanta, GA.
8. *January 2025. *Learning to generate synthetic human mobility data: A physics-regularized Gaussian process approach based on multiple kernel learning.* Poster presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
9. *January 2025. *Incident Detection from Novel Data Sources: Leveraging Satellite Imagery alongside GPS Traces.* Poster presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
10. *October 2024. *Principled data fusion to infer sociodemographic variables from big mobility data: A semi-supervised Bayesian GP-LVM approach.* Oral presentation: INFORMS Annual Meeting, Seattle, WA.
11. *July 2024. *Uncovering Physics-Regularized Data Generation Processes for Individual Human Mobility: A Multi-Task Gaussian Process Approach Based on Multiple Kernel Learning.* Oral presentation: International Symposium of Traffic and Transportation Theory (ISTTT) 25, Ann Arbor, MI.
12. *November 2023. *Multi-task, Multi-kernel Learning for Location-Based-Service (LBS) Data.* Invited talk: Asia-Pacific Signal and Information Processing Associations (APSIPA), Taipei, Taiwan.
13. *October 2023. *A Physics-Regularized, Multi-Task Gaussian Process with Multiple Kernel Learning to Uncover Mobile Data Generation Processes.* Oral presentation: INFORMS Annual Meeting, Phoenix, AZ.
14. *January 2023. *Correcting Missingness in Passively-Generated Mobile Data with Multi-Task Gaussian Processes.* Oral presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
15. January 2024. *Understanding Transit Ridership Recovery Patterns with Two Perspectives: Rebounding from Rock Bottom or Proximity to pre-COVID Ridership.* Oral presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
16. January 2024. *The Effects of Sparsity in Location-based Service Data on Derived Human Mobility Metrics.* Poster presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
17. January 2024. *COVID-19 and Telecommuting-induced Changes in Individual Activity and Travel Patterns.* Poster presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
18. January 2023. *Managing the Evolving Demand for Curb Space and Alleys: Practical Solutions for Cities.* Oral presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.

19. January 2023. *Exploring Biases in Travel Behavior Patterns in Big Passively-generated Mobile Data from 11 U.S. Cities*. Poster presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.
20. January 2023. *Substitution Patterns Revealed from Peoples Visit Patterns to Downtown and Other Urban Cores from Pre- to During COVID-19*. Poster presentation: Transportation Research Board (TRB) Annual Meeting, Washington, DC.

Invited Talks

March 2025 — **C2SMARTER Student Learning Series**
Organized a workshop on understanding travel demand through passively-generated GPS data using Python. About 25 people joined and followed the coding exercises.
Recording

May 2024 — **Association of Metropolitan Planning Organizations (AMPO) Planning Tools & Training Symposium**
Hosted a workshop on *MPO's uses of and needs for big data* in Albuquerque, NM. Attendance of 50+ long-range transportation planners covering every geographic region in the United States.

February 2024 — **UW Urban Design & Planning Interdisciplinary Research Seminar**
Modeling Human Mobility from GPS Traces: Gaussian Processes, Physics-regularization, and Beyond
Slides

January 2024 — **UW Industrial & Systems Engineering Graduate Seminar Series**
Uncovering physics-regularized data generation processes for individual human mobility: A multi-task Gaussian process approach based on multiple kernel learning.
Flyer

Teaching Experience

08/2026–12/2026 — **University of Houston**
Position: **Sole-instructor**
Course: INDE 2333, *Introductory Statistics for Engineers*
Instructor Contribution Rating: TBD
Participation (**Enrollment**): TBD (**50**+)

09/2024–12/2024 — **University of Washington**
Position: **Sole-instructor**
Course: CET 512, *Transportation Data Collection and Research Design*
Instructor Contribution Rating: 4.1 / 5
Participation (**Enrollment**): 26 (**26**)

Grant Writing Participation

National Science Foundation (NSF)

(G1) **Translating Mobile Data Science into Reliable Tools for Transportation Planning**
(Lead PI: Dr. Ekin Ugurel; pending)

(G2) **Collaborative Research: CPS: Adaptive Cyber-Physical Systems for Growing Volunteer Infrastructure for Shared Mobility in Aging Communities**
(Lead PI: Dr. Ekin Ugurel; pending)

(G3) **Collaborative Research: HCC: Understanding Human–AI Feedback Loops in Activity Choice to Foster Individual Agency**
(Lead PI: Dr. Ekin Ugurel; pending)

National Cooperative Highway Research Program (NCHRP)

(G4) **A System-Level Multi-modal LLM (MLLM) Agent Framework for Automated Data Quality and Operations in DOTs**
(PI: Dr. Takahiro Yabe; unfunded)

Intelligence Advanced Research Projects Activity (IARPA)

(G5) **Translating Fine-grained Human Trajectories into Intelligence by Meaning-making and Reference Matching**
(PI: Dr. Shuai Huang; unfunded)

UW Valle Fellowship

(G6) **Principled Uncertainty Quantification in Transportation Planning**
(PI: Dr. Cynthia Chen; funded)

Mentoring

Saba Sohrabi	*Ph.D. Student* at the University of Houston ISE, Fall 2026 - present
Nahush Shrivatsa	*The Transformative Research Experience (TReX) Fellow* at NYU, Summer 2026
Qingyi Zheng	*Guided Study Participant* at NYU, Spring 2026
Apoorva Sheera	*Data Science for Social Good* (DSSG) Fellow, Summer 2024 **Current Position:** Founding Machine Learning Engineer at Crossfill
Jiaqi (Kiki) He	*Data Science for Social Good* (DSSG) Fellow, Summer 2024 **Current Position:** Software Engineer at Amazon
Manurag Khullar	*Data Science for Social Good* (DSSG) Fellow, Summer 2024 **Current Position:** Ph.D. in AI at the University of Pittsburgh

Sakshi Chavan	*Data Science for Social Good* (DSSG) Fellow, Summer 2024 **Current Position:** M.S. in Information Systems at University of Wisconsin
Liam Chu	*Undergraduate Research Assistant, Summer 2023* **Current Position:** Incoming PhD in Applied Mathematics
Mia Pham	*Undergraduate Research Assistant, Summer 2023* **Current Position:** Program Coordinator & Facilities Manager at UW ISE
Kaylene Gell	*Undergraduate Research Assistant, Spring 2023* **Current Position:** M.S. in Data Science at Georgia Institute of Technology

Peer Review

Journals	Knowledge and Information Systems Artificial Intelligence for Transportation Transportation Journal of Transport Geography Transport Policy Transportation Research Part A: Policy and Practice Transportation Research Part B: Methodological Transportation Research Part C: Emerging Technologies Transportation Research Part E: Logistics and Transportation Review INFORMS Journal on Data Science Transportation Research Record Scientific Reports
Conferences	The International Conference on Computational Social Science (IC2S2) TRB Annual Meeting (AEP50 Transportation Demand Forecasting Committee; AED50 Artificial Intelligence and Advanced Computing Applications Committee; ACP80 Standing Committee on Traffic Simulation).

Professional Organizations

2020-2021	**Chi Epsilon (XE) National Honor Society - UT Austin Chapter** As President of the student chapter, I organized bi-weekly engagements with local civil engineering firms and recruited the top 5% of civil engineering students at the department.
2019-2020	**American Society of Civil Engineers - UT Austin Chapter** Served in a variety of leadership positions, including VP External, where I corresponded with local organizations to fundraise $15,000 for the student chapter and organized career preparation & advancement events like Lunch & Learns, site visits, and LinkedIn workshops.
2018-2019	**Engineers Without Borders-USA Greater Austin Chapter** Managed a group of nine students and professionals in coordinating an irrigation

canal project in Ancash, Peru. Created budgets, performed life-cycle cost analyses, and organized fundraising events. Cooperated with a local NGO in writing pre-trip implementation plans and applying for international grants.

Academic Service

2024-2025 **UW CEE External Engagement Committee, Member**
Serving as a graduate student representative in achieving the committee's three primary objectives: developing strategies to foster relationships with the CEE professional community, maintaining a diverse CEE Advisory Board, and supporting fundraising efforts for infrastructure, education, and research.

2023-2025 **Graduate Student Advisory Board (GSAB), Co-Chair**
Directing activities of the student representatives to faculty and staff in the Department of Civil and Environmental Engineering, including academic support programs, social events, and advocating for student needs in faculty and staff committees.

2023-2024 **Space-Time Reading Group, Organizer**
Organized a bi-weekly reading group focused on spatiotemporal statistical methods and research, broadly construed. The group attracted interested from a diverse range of academics, including those in Environmental Sciences, Transportation Engineering, Statistics, and Health Metrics & Evaluation

2019-2020 **Ramshorn Mentorship Program, Mentor**
Served as a mentor to undergraduate first-years from underserved and marginalized communities in Texas, focusing on building time-management skills, tutoring in rigorous subjects like math, physics, and chemistry, and providing a platform to discuss their academic issues and successes.

Professional Experience

06/2024–09/2024 **Instacart Inc.**
Position: Machine Learning Engineer (Summer Intern)
Supervisor: Houtao Deng, PhD

06/2024–08/2024 **Data Science for Social Good (DSSG), eScience Institute**
Position: Co-Lead
Co-lead: Afra Mashhadi, PhD

06/2019–08/2021 **Mobile Automation and Sensing Systems (MASS) Lab**
Position: Undergraduate Research Assistant (part-time)
Supervisor: Christian Claudel, PhD

06/2022–08/2022 **Fehr & Peers**
Position: Transportation Consultant (Summer Intern)
Supervisor: Aaron Gooze, PE

06/2020–08/2021 **Jacobs Solutions Inc.**
Position: Traffic Engineer (Summer Intern)
Supervisor: Dev Pindoria, PE

02/2020–04/2020 **WGI**
Position: Mobility Consultant (Summer Intern)
Supervisor: Jackson Archer, AICP

06/2019–08/2019 **City of San Marcos, TX**
Position: Transportation Engineer (Summer Intern)
Supervisor: Rohit Vij, PE

Workshops & Development

1. **GeoSMART Hackweek, 2023**: Application of Machine Learning in Hydrology and Cryosphere Sciences. Focused on a project involving the use of multi-kernel Gaussian processes to model spatiotemporal relationships (i.e., leveraging correlations in time and space).
2. **INRIX Hackathon, 2023**: Application of INRIX data sources and API to create a business product. Our project provided a more efficient method to place targeted advertisements based on the travel patterns of individuals over time.
3. **Short Course on Advanced Choice Modeling Methods, 2023**: Led by Professor Chandra Bhat (UT Austin), this workshop explored advanced methods in choice modeling, for use in survey-based datasets.
4. **Chevron Safety Day Make-a-Thon, 2018**: Designed and prototyped a portable safety net apparatus for the personal use of construction workers in accident-prone sites.

Honors, Awards & Scholarships

1. **Early Career Faculty Academy Fellow, Human Factors and Ergonomics Society (2026)**: Invited to this prestigious workshop for early career faculty at the HFES Aspire Annual Meeting in Reno, Nevada.
2. **Zephyr Foundation Technical Achievement Award (2026)**: COVID & telecommuting-induced changes in individual activity and travel patterns: Evidence from the Puget Sound Region (Link to Paper)
3. **PacTrans UTC Michael Kyte Region 10 Outstanding Student of the Year (2024)**: Selected for recognition award among all PhD students in UTC Region 10 based on research, teaching, and service. Covered trip to TRB in January 2025.
4. **UW CEE Valle Fellowship (2024–2025)**: Awarded a fully-covered five-month fellowship to pursue a research proposal at the Technical University of Denmark (DTU), under the supervision of Professor Filipe Rodrigues, PhD.
5. **UW College of Engineering Dean's Fellowship (2023-2024)**: Received one-year of standard graduate research funding based on past research experience and future potential.
6. **UT Austin Endowed Presidential Scholar (2019), (2020)**: Two-time recipient of this prestigious scholarship at UT Austin given to outstanding juniors and seniors.
7. **UT Austin CAEE Canning Scholarship (2019)**: Received this department-wide award to pursue undergraduate research with Professor Christian Claudel, PhD.
8. **Capital Area Section-ITE Scholarship (2019)**: Scholarships offered annually to a select number of civil engineering students who bring exemplary scholarship and innovation to the field of transportation engineering.

Languages

English (native)

Turkish (native)

Spanish (conversational)

Hindi (intermediate)

Seattle, WA, November 2, 2026