TAKAHIRO YABE

ASSISTANT PROFESSOR AT NEW YORK UNIVERSITY
370 Jay St., Brooklyn, NY 11201, USA

Tel: 773-383-3510 | Email: takahiroyabe@nyu.edu | Web: www.takayabe.net

APPOINTMENTS

Assistant Professor   1/2024 – Present
New York University, Tandon School of Engineering   Brooklyn, NY
- Director of the Resilient Urban Networks Lab at the Center for Urban Science and Progress (CUSP) and the Department of Technology Management and Innovation.

Postdoctoral Associate   9/2021 – 12/2023
MIT Institute for Data, Systems, and Society and Media Lab   Boston, MA
- Mentored by Alex 'Sandy' Pentland. Leading research on urban sociotechnical systems resilience, including 1) urban segregation dynamics during the pandemic, 2) modeling the resilience of local economic networks to urban shocks, published in *Nature Communications*.
- Bridging research collaborations between MIT Human Dynamics Group and industry sponsors.

Doctoral Research Fellow & Graduate Research Assistant   8/2017 – 8/2021
Purdue Systems Collaboratory, Purdue University   West Lafayette, IN
- Research on the resilience of cities to disasters have resulted in over 20 publications, 2 fellowships and 10 awards, including the Doctoral "Systems" Fellowship and Best Speaker Award at Purdue University Institute of Transportation Engineers (ITE).
- Student lead in NSF funded project (CRISP Type 2; PI: Dr. Satish V. Ukkusuri) and "Resilience Modeling in Cities" Project funded by the Ford Foundation, published in *PNAS, Nature Machine Intelligence, and ACM KDD*.

EDUCATION

Doctor of Philosophy (PhD), Purdue University   2021
Dissertation: *Resilience of Coupled Urban Socio-Physical Systems to Disasters*
Advisors: Satish V. Ukkusuri, Seungyoon Lee, P. Suresh C. Rao, David R. Johnson

Master's Degree in Civil Engineering, University of Tokyo   2017
Dissertation: *Modelling Evacuation Behavior after Disasters using Mobile Phone Data*
Advisors: Yoshihide Sekimoto, Muneo Hori

Bachelor of Engineering, University of Tokyo   2015
Dissertation: *Real-Time Urban Mobility Predictions via Particle Filter Approach*
Advisor: Yoshihide Sekimoto

GRANTS AND FELLOWSHIPS

Quick Response Research Grant   2022
Natural Hazards Center, for analysis of wildfire response in California (seed grant of $5,000)

MIT Sloan Latin America Office Seed Grant   2021
MIT Sloan School of Management, for research on economic resilience during pandemic, $20,000

NSF Innovation Corps Grant   2019
Midwest I-Corps Industry Connect, for customer research on ride-sharing industry, $1,000

Doctoral "Systems" Fellowship   2018 – 2020
Purdue Systems Collaboratory, full PhD funding & stipend for 2 years

Ford-Purdue University Alliance Project Grant (PI: Dr. Satish Ukkusuri)   2018
Ford Motor Company, for research in transportation resilience, $130,000

Research Fellowship for Young Scientists (JSPS DC1)   2017
Japan Society for the Promotion of Science, full PhD stipend for 3 years *(declined)*

Doctoral Student Research Fellowship   2016
Department of Engineering, University of Tokyo, for doctoral research preparation, $3,000

Student Travel Grant for Overseas Study   2016
Department of Engineering, University of Tokyo, for visiting top US universities, $4,000

HONORS AND AWARDS

Vice Presidential Unit Award   2022
World Bank, for data-driven humanitarian response efforts in Ukraine

Top 10% Citation Award   2021
PloS ONE, for paper on *cross-comparative analysis of evacuation behavior after earthquakes*

Top Paper Award   2021
National Communication Association, for interdisciplinary study on community resilience

STV Civil Engineering Graduate Assistantship Endowment Award   2020
Purdue University, for PhD dissertation

ACM KDD 2020 Conference Student Registration Award   2020

UJA Best Presenter Award   2020
Japan XR Science Forum 2020, for best presentation in conference

EISG Student Merit Award Finalist   2019
Engineering and Infrastructure Specialty Group, Society for Risk Analysis

Society for Risk Analysis 2019 Annual Meeting Travel Award   2019

ACM SIGSPATIAL Conference 2019 Student Travel Award   2019

Poster Competition 2nd Prize   2019
The main conference on the scientific analysis of mobile phone datasets (NetMob 2019)

Outstanding Speaker Award   2019
Purdue Institute of Transportation Engineers (ITE), for best presented in graduate school program

Best Presentation Award   2016
Annual Conference of GIS Association of Japan, for best talk in national conference

♯ equal contribution
† Master and PhD students I mentored

Articles in Peer Reviewed Journals:

[J25] **Yabe, T.**, Bueno, B.G.B., Dong, X., Pentland, A. S., Moro, E. Behavioral changes during the pandemic worsened income diversity of urban encounters. ***Nature Communications****,* 14 (1), 2310 (2023)

[J24] Ubaldi, E.♯, **Yabe, T.**♯, Jones, N.K., Khan, M.F., Feliciotti, A., Di Clemente, R., Ukkusuri, S. V., & Strano, E. Mobilkit: A Python Toolkit for Resilient Urban Planning and Disaster Risk Management Analytics using Human Mobility Data. Accepted in ***Journal of Open Source Software*** *(2023)*

[J23] **Yabe, T.**, Rao, P. S. C., Ukkusuri, S. V., & Cutter, S. L. Towards Data-Driven, Dynamical Complex Systems Approaches to Disaster Resilience. ***Proceedings of the National Academy of Sciences***, 119(8), e2111997119. (2022)

[J22] **Yabe, T.**, Jones, N. K., Rao, P. S. C., Gonzalez, M. C., & Ukkusuri, S. V. Mobile Phone Location Data for Disasters: A Review from Natural Hazards and Epidemics. ***Computers, Environment, and Urban Systems***, 94, 101777. (2022)

[J21] **Yabe, T.**, Tsubouchi, K., Sekimoto, Y., & Ukkusuri, S. V. Early warning of COVID-19 hotspots using human mobility and web search query data. ***Computers, Environment and Urban Systems***, 92, 101747. (2022).

[J20] Mittal, S.†, **Yabe, T.**, Arroyo, F., & Ukkusuri, S. V. Linking Poverty-Based Inequalities with Transportation and Accessibility using Mobility Data: A Case Study of Greater Maputo. ***Transport Research Record.*** (2022)

[J19] Xue, J.†, Jiang, N., Liang, S., Pang, Q., **Yabe, T**., Ukkusuri, S. V., & Ma, J. Quantifying spatial homogeneity of urban road networks via graph neural networks. ***Nature Machine Intelligence****, 4(3)*, 246–257. (2022)

[J18] Lee, S., Siebeneck, L., Benedict, B. C., **Yabe, T.**, Jarvis, C. M. & Ukkusuri, S. V. Patterns of social support and trajectories of household recovery after Superstorm Sandy. ***Natural Hazards Review***, 23(2), 04022002. (2022)

[J17] Mittal, S.†, **Yabe, T.**, Kumar, I., & Ukkusuri, S. V. Spatial and cross-sectoral relationships in business entry dynamics around a highway corridor. ***Transportmetrica A: Transport Science***, 1-28. (2022).

[J16] **Yabe, T.**, Rao, P. S. C., & Ukkusuri, S. V. Resilience of Interdependent Urban Socio-Physical Systems using Large-Scale Mobility Data: Modeling Recovery Dynamics. ***Sustainable Cities and Society***, 75, 103237. (2021).

[J15] **Yabe, T.**, Rao, P. S. C., & Ukkusuri, S. V. Regional Differences in Resilience of Social and Physical Systems: Case Study of Hurricane Maria. ***Environment and Planning B: Urban Analytics and City Science****,* 48(5), 1042-1057. (2021)

[J14] **Yabe, T.**, Rao, P. S. C., & Ukkusuri, S. V. Modeling the Influence of Online Social Media Information on Post-Disaster Mobility Decisions. ***Sustainability***, 13(9), 5254. (2021).

[J13] Verma, R.[†], **Yabe, T.**, & Ukkusuri, S. V. Spatiotemporal contact density explains the disparity of COVID-19 spread in urban neighborhoods. ***Scientific Reports***, 11(1), 1-11. (2021).

[J12] **Yabe, T.**, Zhang, Y., & Ukkusuri, S. V. Quantifying the Economic Impact of Disasters on Businesses using Human Mobility Data: a Bayesian Causal Inference Approach. ***EPJ Data Science***, *9(36).* (2020)

[J11] **Yabe, T.**, Tsubouchi, K., Fujiwara, N., Wada, T., Sekimoto, Y., & Ukkusuri, S. V. Non-compulsory measures sufficiently reduced human mobility in Tokyo during the COVID-19 epidemic. ***Scientific Reports***, *10(1), 1-9.* (2020)

[J10] Ukkusuri, S. V., **Yabe, T.**, Seetharam, K. E. Non-Pharmaceutical Interventions for COVID-19: Evidence from Large-Scale Mobility Data in Tokyo. ***Asian Development Bank Policy Brief***, *10(6).* (2020)

[J9] **Yabe, T.**, Tsubouchi, K., Fujiwara, N., Sekimoto, Y., Ukkusuri, S. V. Understanding post-disaster population recovery patterns. ***Journal of the Royal Society Interface***, *Vol. 17, Issue 163.* (2020)

[J8] **Yabe, T.**, Ukkusuri, S. V. Effects of Income Inequality on Evacuation, Reentry and Segregation after Disasters. ***Transportation Research Part D: Transport and Environment***, *102260.* (2020)

[J7] Pang, Y., Kashiyama, T., **Yabe, T.**, Sekimoto, Y., Tsubouchi, K. Development of a people mass movement simulation framework based on reinforcement learning. ***Transportation Research Part C: Emerging Technologies***, *117, 102260.* (2020)

[J6] **Yabe, T.**, Ukkusuri, S. V., Rao, P. S. C. Mobile Phone Data Reveals the Importance of Inter-City Social Connectivity for Recovery after Hurricane Maria. ***Applied Network Science***, *Vol. 4, Issue 1, 98.* (2019)

[J5] **Yabe, T.**, Ukkusuri, S. V. Integrating Information from Heterogeneous Networks on Social Media to Predict Post-Disaster Returning Behavior. ***Journal of Computational Science***, *Vol. 32, pp. 12-20.* (2019)

[J4] **Yabe, T.**, Sekimoto, Y., Tsubouchi, K., Ikemoto, S. Cross-comparative analysis of evacuation behavior after earthquakes using mobile phone data. ***PLoS ONE***, *Vol. 14, Issue 2, e0211375* (2019)

[J3] **Yabe, T.**, Tsubouchi, K., Sekimoto, Y. CityFlowFragility: Measuring the Fragility of People Flow in Cities to Disasters using GPS Data Collected from Smartphones. ***ACM Interactive, Mobile, Wearable and Ubiquitous Technologies***, *1(3), 117.* (2017)

[J2] **Yabe, T.**, Tsubouchi, K., Sudo, A., Sekimoto, Y. Predicting Delay of Commuting Activities Following Frequently Occurring Disasters Using Location Data from Smartphones. ***Journal of Disaster Research***, *Vol. 12, No.2, pp. 287-295.* (2017)

[J1] **Yabe, T.**, Sekimoto, Y., Kashiyama, T., Kanasugi, H., Sudo, A. Real time movement prediction after natural disasters using data assimilation. (in Japanese). ***Journal of the Japanese Society for Transportation Engineering***, *Vol. 2 No. 2, pp. 19-27.* (2016)

Articles in Peer Reviewed Computer Science Conference Proceedings:

Acceptance rate shown in brackets

KDD = ACM SIGKDD International Conference on Knowledge Discovery & Data Mining

SIGSPATIAL = ACM SIGSPATIAL Int'l Conference on Advances in Geographic Information Systems

[C18]   South, T., Lothian, N., **Yabe, T.**, & Pentland, A. S. Building a healthier feed: Private location trace intersection driven feed recommendations. In ***International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation*** (pp. 54-63). Cham: Springer Nature Switzerland. (2023).

[C17]   Xue, J.[†], **Yabe, T**., Tsubouchi, K., Ma, J., & Ukkusuri, S. V. Multiwave COVID-19 Prediction from Social Awareness using Web Search and Mobility Data. ***KDD '22.*** pp. 4279-4289. (2022). *(14%)*

[C16]   Gaikwad, S., Iyer, S., Lunga, D., **Yabe, T**., Liang, X., Ananthabhotla, B., Behari, N., Guggilam, S., & Chi, G. Data-driven Humanitarian Mapping and Policymaking: Toward Planetary-Scale Resilience, Equity, and Sustainability. ***KDD '22,*** pp 4872-4873 (2022) (invited paper for workshop)

[C15]   Shimizu, T., Tsubouchi, K., & **Yabe, T**. GEO-BLEU: Similarity Measure for Geospatial Sequences. ***SIGSPATIAL '22***. (2022)

[C14]   Shimizu, T., **Yabe, T.**, & Tsubouchi, K. Improving Land Use Classification using Human Mobility-based Hierarchical Place Embeddings. ***2021 IEEE International Conference on Pervasive Computing and Communications Workshops*** pp. 305-311. (2021). *(15%)*

[C13]   **Yabe, T.**, Tsubouchi, K., Shimizu, T., Sekimoto, Y., Ukkusuri, S. V. Unsupervised Translation via Hierarchical Anchoring: Functional Mapping of Places across Cities. ***KDD '20*** (2020) *(14%)*

[C12]   Shimizu, T., **Yabe, T.**, Tsubouchi, K. Enabling Finer Grained Place Embeddings using Spatial Hierachy from Human Mobility Trajectories. ***SIGSPATIAL '20*** (2020) *(20%)*

[C11]   Pang, Y., Tsubouchi, K., **Yabe, T.**, & Sekimoto, Y. Intercity Simulation of Human Mobility at Rare Events via Reinforcement Learning. ***SIGSPATIAL '20*** (2020). *(20%)*

[C10]   **Yabe, T.**, Tsubouchi, K., Shimizu, T., Sekimoto, Y., Ukkusuri, S. V. City2City: Translating Place Representations across Cities. ***SIGSPATIAL '19*** (2019) *(21%)*

[C9]   **Yabe, T.**, Tsubouchi, K., Shimizu, T., Sekimoto, Y., Ukkusuri, S. V. Predicting Evacuation Decisions using Representations of Individuals' Pre-Disaster Web Search Behavior. ***KDD '19*** (2019) *(17%)*

[C8]   **Yabe, T.**, Tsubouchi, K., Sekimoto, Y. Fusion of Terrain Information and Mobile Phone Location Data for Flood Area Detection in Rural Areas. ***2018 IEEE Conference on Big Data.*** (2018) *(20%)*

[C7]   Kumar, D., **Yabe, T.**, Ukkusuri, S.V. Social-Media aided Hyperlocal Help-Network Matching & Routing during Emergencies. ***2018 IEEE Conference on Big Data.*** (2018) *(20%)*

[C6]   Pang, Y., Tsubouchi, K., **Yabe, T.**, Sekimoto, Y. Replicating Urban Dynamics by Generating Human-like Agents from Smartphone GPS Data**. *SIGSPATIAL '18**.* (2018) *(20%)*

[C5]   Pang, Y., Tsubouchi, K., **Yabe, T.**, Sekimoto, Y. Modeling and reproducing human daily travel behavior from GPS data: A Markov Decision Process approach. ***PredictGIS Workshop at SIGSPATIAL*** (2017)

[C4]   **Yabe, T.**, Tsubouchi, K., Sudo, A., Sekimoto, Y. Predicting Irregular Individual Movement following Frequent Mid-Level Disasters using Location Data from Smartphones. ***SIGSPATIAL '16.*** (2016) *(19%)*

[C3]   **Yabe, T.**, Tsubouchi, K., Sudo, A., Sekimoto, Y. A Framework for Evacuation Hotspot Detection after Large Scale Disasters using Location Data from Smartphones: Case Study of Kumamoto Earthquake. *SIGSPATIAL '16* (2016) *(19%)*

[C2]   Sudo, A., Kashiyama, T., **Yabe, T.**, Kanasugi, H., Song, X., Higuchi, T., Nakano, S., Saito, M., Sekimoto, Y. Particle Filter for Real-time Human Mobility Prediction following Unprecedented Disaster. *SIGSPATIAL '16.* (2016) *(19%)*

[C1]   **Yabe, T.**, Sekimoto, Y., Kanasugi, Y., Kashiyama, T. Making Real-Time Predictions of People's Irregular Movement in a Metropolitan Scale under Disaster Situations. *14th International Conference on Computers in Urban Planning and Urban Management (CUPUM).* (2015)

Articles under review:

[R7]   **Yabe, T.**, Bueno, B.G.B., Frank, M., Pentland, A. S., Moro, E. Behavior-based dependency networks between places shape urban economic resilience. (under review in *Nature Human Behavior*)

[R6]   Liu, T., Fan, C., & **Yabe, T.** Quantifying Complex Urban Spillover Effects via Physics-based Deep Learning. (under review in *Nature Communications*)

[R5]   Fraser, T.$^\sharp$, **Yabe, T.**$^\sharp$, Aldrich, D., & Moro, E. The Great Equalizer? Mixed Effects of Social Infrastructure on Diverse Encounters in Cities. (under review in *Computers, Environment, and Urban Systems*)

[R4]   **Yabe, T.**, Tsubouchi, K., Shimizu, T., Sekimoto, Y., Sezaki, K., Moro, E., & Pentland, A. Metropolitan scale and longitudinal dataset of anonymized human mobility trajectories. (under review in *Nature Scientific Data*)

[R3]   Park, S.†, **Yabe, T.**, & Ukkusuri, S. V. Post-disaster recovery policy assessment of urban socio-physical systems (under review in *Computers, Environment, and Urban Systems*).

[R2]   Wang, S., Zhang, Y., Wang, G., **Yabe, T.**, Moro, E., & Pentland, A. Infrequent activities predict economic outcomes (under review in *Nature Cities*).

[R1]   Kashiyama, T., Pang, Y., Sekimoto, Y., & **Yabe, T.** Pseudo-PFLOW: Development of nationwide synthetic open dataset for people movement based on limited travel survey and open statistical data. (under review in *Computer-Aided Civil and Infrastructure Engineering*).

Invited Talks and Seminars:

- Network Science talk series at the University of Oxford (online). November 2023
- UC Irvine Civil and Environmental Engineering seminar series. November 2023
- Keynote speech at the Penske Annual Meeting. October 2023
- KAIST Urban-X seminar series (online). October 2023
- Global Teamwork Lab seminar at MIT System Design and Management. October 2023
- Center for Advanced Spatial Analysis (CASA), University College London. October 2023
- Data Science Institute, London School of Economics. October 2023
- Lecture at the Summer Institute of Computational Social Science Tokyo (online) August 2023
- RIMS workshop at Kyoto University (online). June 2023
- NYU-KAIST workshop. May 2023

- ANET Lab seminar series (online). May 2023
- Built Environment talk series at Texas A&M University. May 2023
- University of Tokyo, Sezaki Laboratory (online). April 2023
- Boston Japanese Researchers Association. April 2023
- Center for Urban Science and Progress, New York University. February 2023
- Harvard Chan School of Public Health, Kawachi Lab. January 2023.
- Civil & Environmental Engineering, Rice University. January 2023.
- Department of Information Network Science, University of Pittsburgh. November 2022.
- Center for Urban Science and Progress, New York University. October 2022.
- StatPhys4Cities Seminar at Universitat Rovira i Virgili. September 2022
- Lecture at One Concern Inc. March 2022
- Resilience Lab Seminar at Northeastern University. February 2022
- Yahoo Japan Corporation Seminar Series. December 2021
- MIT Connection Science Research Initiative Annual Sponsors Meeting. November 2021
- Nethope Summit 2021 (with Andrew Schroeder, Alex Pompe, Jennifer Chan). November 2021
- Tohoku University Regional Science Workshop. November 2021
- Disaster Mobility Data Network, hosted by CrisisReady. August 2021
- Media Lab Human Dynamics Group, Massachusetts Institute of Technology. April 2021
- School of Information Science and Technology, George Mason University. April 2021
- Senseable City Lab, Department of Urban Studies and Planning, MIT. March 2021
- The World Bank Resilient Society Clinic. March 2021
- Safegraph Inc. (virtual). February 2021.
- Dept. of Civil and Environmental Engineering at Northeastern University. January 2021.
- "scienc-ome" Online Science Forum, Keio University (virtual). November 2020.
- COVID-19 Mobility Data Network (virtual). November 2020.
- Purdue Systems Thinkers Colloquium, West Lafayette, Indiana, USA. March 2020.

Conference Presentations (without proceedings):

[P26] Introduction and welcome to the Human Mobility Data Challenge 2023 Workshop. *ACM SIGSPATIAL HuMob Challenge Workshop.* Hamburg, Germany. November 2023.

[P25] Behavioral changes during the COVID-19 pandemic decreased income diversity of urban encounters. *Netmob 2023.* Madrid, Spain. October 2023.

[P24] Behavior-based dependency networks shape economic resilience of cities. *Netmob 2023.* Madrid, Spain. October 2023.

[P23] **"**Effects of mobility-based dependency relationships on economic resilience." *IC^{2}S^2 2023.* Copenhagen, Denmark. July 2023.

[P22] Modeling the resilience of businesses using mobility-based dependency networks. *NetSci 2023.* Vienna, Austria. July 2023

[P21] Boston's fare-free bus project reduced experienced segregation. *Boston Area Research Initiative (BARI) Conference.* Boston. April 2023.

[P20] Effects of mobility-based dependency networks on economic resilience. *NetSci-X 2023, Argentina.* February 2023

[P19]   Discussant for Go et al. "On the Use of Satellite-Based Vehicle Flows Data to Assess Local Economic Activity". *Japanese Economic Association Autumn Meeting.* October 2022.

[P18]   Long-term impacts of COVID-19 on urban income segregation. *NetSci 2022* (virtual). July 2022

[P17]   Effects of mobility-based dependency network on economic resilience. *NetSci 2022* (virtual). July 2022

[P16]   "Long-term impacts of COVID-19 on urban income segregation." *IC^{2}S^2 2022, USA.* July 2022.

[P15]   "Effects of mobility-based dependency relationships on economic resilience." *IC^{2}S^2 2022,* July 2022.

[P14]   "Location Data Reveals Disproportionate Disaster Impact Amongst the Poor: Case Study of the 2017 Puebla Earthquake Using Mobilkit." *Data-driven Humanitarian Mapping Workshop 2021.* August 2021.

[P13]   "Mobilkit: A Python Toolkit for Urban Resilience and Disaster Risk Management Analytics using High Frequency Human Mobility Data." *Data-driven Humanitarian Mapping Workshop 2021.* August 2021.

[P12]   "Regional Differences in Resilience of Social and Physical Systems: Case Study of Hurricane Maria", *Workshop on Resilience of Cities to External Shocks (virtual).* October 2020.

[P11]   "The relationship between social contact reduction and COVID-19 spread using mobility data", *Bridging Transportation Researchers Online Conference (virtual).* August 2020.

[P10]   "Modeling the Dynamics of Spatial Segregation after Disasters using Mobile Phone Data", *Transportation Research Board Annual Meeting, Washington D.C., USA.* January 2020.

[P9]   "Modeling the Influence of Online Social Media Information on Post-Disaster Mobility Decisions" (poster), *Transportation Research Board Annual Meeting, Washington D.C., USA.* January 2020.

[P8]   "Understanding Population Recovery Patterns after Disasters from Mobile Phone Data", *Society for Risk Analysis Annual Meeting 2019, Arlington, Virginia, USA.* December 2019.

[P7]   "Critical Transitions in the Resilience and Recovery of Interdependent Social and Physical Networks", *44th Annual Natural Hazards Workshop, Denver, Colorado, USA.* July 2019. **(Plenary talk)**

[P6]   "Understanding Post-Disaster Population Recovery Patterns" (poster presentation), *The main conference on the scientific analysis of mobile phone datasets (NetMob), Oxford, UK.* July 2019.

[P5]   "Mobile phone data reveals the importance of inter-city social connectivity for recovery after Hurricane Maria" (poster), *Complex Systems Conference, Purdue University, Indiana, USA.* May 2019.

[P4]   "Population Recovery Modeling with Mobile Phones", *National Science Foundation CRISP Grantees Meeting, George Mason University, Virginia, USA.* December 2018.

[P2]   "A Framework for Evacuation Hotspot Detection after Large Scale Disasters using Mobile Phone Location Data", *NetMob 2017, Milan, Italy.* April 2017.

[P1]   "Estimating Evacuation Hotspots using GPS data: What happened after large earthquakes in Kumamoto, Japan?", *International Workshop on Urban Computing, San Francisco, USA.* August 2016.

TEACHING EXPERIENCE

Guest Expert: "Big Data for Cities", Northeastern University   2022
- Guest expert invited by Professor Dan O'Brien at Northeastern University.
- Led interactive discussion session with 22 Master students majoring in Political Science on the use of data for public policy, mainly for combatting urban economic segregation.

Course Development: "Computational Methods for Urban Resilience", Purdue   2021
- Designed lectures and preparation of course material including problem sets and lecture slides.
- Could not teach course due to graduation, but gained course design and development experience.
- Covers i) resilience concepts, ii) big data analytics, and iii) system dynamics modeling.

Guest Lecturer: "Ecological Sciences and Engineering Colloquium", Purdue CE597   2020
- Gave a lecture on human mobility analysis during and after natural hazards for Master and PhD students in ecological sciences, invited by Professor P. Suresh C. Rao.
- Created and assigned hands-on quantitative exercise on understanding and fitting probability density functions to empirical data using Python and R programming.

Guest Lecturer: "Disaster Resilience", Purdue HONR 399   2019
- Gave a lecture on methods and techniques to model human mobility and behavior using large scale location datasets to undergraduate honors students, invited by Dr. Satish V. Ukkusuri.
- Interactive Q&A and consultation session with students for deciding course projects.

Guest Lecturer: "Disaster Resilience and Society", Purdue CE497   2019
- Gave a lecture on evacuation modeling and analysis using household survey data and big data sources to undergraduate and graduate students, invited by Dr. Seungyoon Lee.

Main Instructor: "Python Programming and Spatial Analysis", University of Tokyo   2016
- Created and taught a full semester course on the basics of Python programming and its applications in analysis of geospatial data. Developed all course material including python tutorials, lecture presentations, and hands-on exercises with examples.

Teacher: English Courses, Sundai Preparatory School   2011 – 2015
- Taught junior high school students English, Math, and Physics to prepare for their college entrance exams. Typical class sizes were 5~15. Designed lectures using the course material given by the school.

MENTORSHIP

Graduate Students
- Callie Clark, New York University (2023 –)
- Vaidehi Raipat, New York University (2023 –)
- Ruoxi Wang, Tsinghua University, Northeastern University (2022 –)
- Yan Asadchy, MIT (2022 –)
- Agnese Sacchi, MIT (2022 –)
- Jiawei Xue, Purdue University (2020 –)
- Sangung Park, Purdue University (2020 – 2021)

- Rajat Verma, Purdue University (2020 – 2021)
- Shagun Mittal, Purdue University (2019 – 2021)
- 'Mobility Data for COVID-19 Pandemic' Team at Purdue University; 8 students (4 PhD, 2 MS, 2 BS) working on problems in behavior modeling, and social inequality.

Undergraduate Students
- Alison Wang, MIT (2023)
- Eva Then, MIT (2022 – 2023)
- Chengyuan Yang, Purdue University (now at Cornell University) (2020 – 2021)
- Daniel Hooks, Purdue University (2018 – 2021)

SERVICE

Workshop Organization:
- **Human Mobility Prediction Challenge 2023** at ACM SIGSPATIAL
  - Lead organizer of the competition that attracted 87 teams and 200 participants from 22 countries.
- **International Workshop on Data-Driven Humanitarian Mapping** at ACM KDD
  - Co-organizer and Digital Participation and Diversity Chair: 2021, 2022 (Washington D.C.)
- **International Workshop on Prediction of Human Mobility** at ACM SIGSPATIAL
  - Steering Committee Member: 2017 (LA), 2018 (Seattle), 2019 (Chicago)
- **Purdue – ABDI – UTokyo Virtual Workshop on Resilience of Cities**
  - Assistant Organizer managing >100 attendees and 15 talks; virtual (October 2020);

Professional Organizations:
- Transportation Research Board AMR20 Disaster Response, Emergency Evacuation
- Association for Computing Machinery (ACM) Special Interest Group on Spatial Information
- ACM Special Interest Group on Knowledge Discovery and Data Mining (SIGKDD)

Student Organizations:
- **Event Coordinator** of *Purdue Institute of Transportation Engineers (ITE) Student Chapter* (2018 – 2019)
- **Student Member** of *Indy Tomorrow*, a network of Japanese researchers in the Midwest. (2019 – 2021)

Reviewer for Journals / Conferences:
- **Interdisciplinary:** Nature Human Behavior, Nature Scientific Data, Scientific Reports; PloS ONE; Humanities and Social Sciences Communications
- **Computer Science & Data Science:** AAAI; ACM SIGSPATIAL; ACM KDD; The Webconf
- **Transportation Engineering and Civil Engineering:** Transportation Research Parts C, D, and E; Transportation Research Record; Frontiers in Future Transportation; Journal of Infrastructure Systems
- **Urban Planning and GIScience:** Sustainable Cities and Society; Computers, Environment, and Urban Systems; International Journal of Disaster Risk Reduction; Environment and Planning B: Urban Analytics and City Science; Frontiers in Built Environment; Geospatial Information Science
- **Public Health:** Lancet Public Health; BMC Public Health; Journal of Health Policy and Management

- "Americans Have Become Less Willing to Explore Their Own Cities", Bloomberg CityLab, 05/18/2023
- "Study: Covid-19 has reduced diverse urban interactions", MIT News, 04/28/2023
- "Analysis of human mobility patterns during COVID-19 using smartphone location data", Kodomo no Kagaku (Japanese science magazine for children), February 2021.
- "Self-restraint proves effective, while income inequality affects contact rates", Diamond Online, 11/9/2020.
- "Tokyo's Voluntary Standstill May Have Stopped COVID-19 in its Tracks", in multiple outlets including BioNews Central, ScienceDaily, Medical Xpress, LatinAmerican Post. November 5th, 2020.
- "Mobile phone data shows how Japan averted large-scale outbreaks of COVID-19", News Medical, 11/6/2020.
- "Life-saving information technology: Predicting disasters using IoT", Nikkei Newspaper (Industrial). 8/25/2016.