

TAKAHIRO YABE

POSTDOCTORAL ASSOCIATE · MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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Education

Purdue University

West Lafayette, IN

PHD, CIVIL ENGINEERING

August 2017 - July 2021

- Advisors: Dr. Satish V. Ukkusuri (Chair), Dr. Seungyoon Lee (Co-chair), Dr. P. Suresh C. Rao, Dr. David R. Johnson
- Thesis: Resilience of Coupled Urban Socio-Physical Systems to Disasters: Data-Driven Modeling Approach

University of Tokyo

Tokyo, Japan

MASTER'S DEGREE, CIVIL ENGINEERING

April 2015 - March 2017

- Advisor: Dr. Yoshihide Sekimoto (Chair) and Dr. Muneo Hori
- Thesis: Modelling Evacuation Behavior after Disasters using Mobile Phone Data

University of Tokyo

Tokyo, Japan

BACHELOR OF ENGINEERING

April 2011 - March 2015

- Advisor: Dr. Yoshihide Sekimoto
- Thesis: Real-Time Urban Mobility Predictions after Disasters using Mobility Data

Professional Experience

- 2021- **Postdoctoral Associate**, MIT Institute for Data, Systems, and Society (IDSS) & Media Lab
- 2020- **Collaborator**, CrisisReady (Harvard University based NPO for disaster response)
- 2020-2021 **Data Science Consultant**, The World Bank
- 2017-2021 **Graduate Research Assistant**, Lyles School of Civil Engineering, Purdue University
- 2018-2020 **Doctoral Research Fellow**, Purdue Systems Collaboratory, Purdue University
- 2020 **Research Consultant**, Asian Development Bank Institute
- 2013-2017 **Undergraduate & Graduate Research Assistant**, Department of Civil Engineering, The University of Tokyo
- 2011-2015 **English and Math Teacher for K-12 students (part-time)**, Sundai Preparatory School (in Japan)

Awards, Fellowships, & Grants

- 2022 **Quick Response Research Award**, Natural Hazards Center \$5,000
- Vice Presidential Unit Award**, The World Bank
- 2021 **Top 10% Citation Award**, PLoS ONE
- Top Paper Award**, National Communication Association, Applied Communication Division
- MIT Sloan Latin America Office Seed Grant**, MIT Sloan School of Management \$20,000
- 2020 **STV Civil Engineering Graduate Assistantship Endowment Award**, Purdue University
- Student Registration Award**, ACM KDD Conference
- UJA Best Presenter Award**, Japan XR Science Forum 2020
- 2019 **EISG Student Merit Award Finalist**, Society for Risk Analysis
- NSF Innovation Corps (I-Corps) Grant**, Midwest I-Corps Industry Connect \$1,000
- Travel Award**, Society for Risk Analysis Annual Meeting \$350
- Student Travel Grant**, ACM SIGSPATIAL International Conference on Advances in GIS \$415
- Poster Competition 2nd Prize**, NetMob Conference 2019
- Outstanding Speaker Award**, Purdue Institute of Transportation Engineers (ITE)
- 2018 **Systems Fellowship**, Purdue Systems Collaboratory (full tuition & stipend) 2 years
- Ford-Purdue University Alliance Project Grant (PI: Dr. Ukkusuri)**, Ford Motor Company \$130,000
- 2017 **Research Fellowship for Young Scientists (DC1)**, Japan Society for Promotion of Science \$100,000

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| 2016 | Doctoral Student Research Fellowship , Department of Engineering, University of Tokyo | \$4,000 |
| | Student Travel Grant for Overseas Study , Department of Engineering, University of Tokyo | \$5,000 |
| | Best Presentation Award , Annual Conference of GIS Association of Japan | |

Publications

PUBLISHED

- Yabe, T.**, Rao, P. S. C., Ukkusuri, S. V., & Cutter, S. L. (2022) Towards Data-Driven, Dynamical Complex Systems Approaches to Disaster Resilience. *Proceedings of the National Academy of Sciences*, 119(8), e2111997119.
- Yabe, T.**, Jones, N. K., Rao, P. S. C., Gonzalez, M. C., & Ukkusuri, S. V. (2022) Mobile Phone Location Data for Disasters: A Review from Natural Hazards and Epidemics. *Computers, Environment, and Urban Systems*, 94, 101777
- Yabe, T.**, Tsubouchi, K., Sekimoto, Y., & Ukkusuri, S. V. (2022). Early warning of COVID-19 hotspots using human mobility and web search query data. *Computers, Environment and Urban Systems*, 92, 101747.
- Xue, J., Jiang, N., Liang, S., Pang, Q., **Yabe, T.**, Ukkusuri, S. V., & Ma, J. (2022) Quantifying spatial homogeneity of urban road networks via graph neural networks. *Nature Machine Intelligence*, 4(3), 246–257.
- Lee, S., Siebeneck, L., Benedict, B. C., **Yabe, T.**, Jarvis, C. M. & Ukkusuri, S. V. (2022) Patterns of social support and trajectories of household recovery after Superstorm Sandy. *Natural Hazards Review*, 23(2), 04022002.
- Yabe, T.**, Rao, P. S. C., & Ukkusuri, S. V. (2021). Resilience of Interdependent Urban Socio-Physical Systems using Large-Scale Mobility Data: Modeling Recovery Dynamics. *Sustainable Cities and Society*, 75, 103237.
- Yabe, T.**, Rao, P. S. C., & Ukkusuri, S. V. (2021). Regional differences in resilience of social and physical systems: Case study of Puerto Rico after Hurricane Maria. *Environment and Planning B: Urban Analytics and City Science*, 48(5), 1042-1057.
- Yabe, T.**, Rao, P. S. C., & Ukkusuri, S. V. (2021). Modeling the Influence of Online Social Media Information on Post-Disaster Mobility Decisions. *Sustainability*, 13(9), 5254.
- Shimizu, T., **Yabe, T.**, & Tsubouchi, K. (2021). Improving Land Use Classification using Human Mobility-based Hierarchical Place Embeddings. *In 2021 IEEE International Conference on Pervasive Computing and Communications Workshops* (pp. 305-311). IEEE.
- Verma, R., **Yabe, T.**, & Ukkusuri, S. V. (2021). Spatiotemporal contact density explains the disparity of COVID-19 spread in urban neighborhoods. *Scientific Reports*, 11(1), 1-11.
- Yabe, T.**, Tsubouchi, K., Fujiwara, N., Wada, T., Sekimoto, Y., & Ukkusuri, S. V. (2020). Non-compulsory measures sufficiently reduced human mobility in Tokyo during the COVID-19 epidemic. *Scientific Reports*, 10(1), 1-9.
- Yabe, T.**, Tsubouchi, K., Fujiwara, N., Sekimoto, Y., & Ukkusuri, S. V. (2020). Understanding post-disaster population recovery patterns. *Journal of the Royal Society Interface*, 17(163), 20190532.
- Yabe, T.**, Zhang, Y., & Ukkusuri, S. V. (2020). Quantifying the economic impact of disasters on businesses using human mobility data: a Bayesian causal inference approach. *EPJ Data Science*, 9(1), 36.
- Yabe, T.**, & Ukkusuri, S. V. (2020). Effects of income inequality on evacuation, reentry and segregation after disasters. *Transportation Research Part D: Transport and Environment*, 82, 102260.
- Yabe, T.**, Tsubouchi, K., Shimizu, T., Sekimoto, Y., & Ukkusuri, S. V. (2020). Unsupervised Translation via Hierarchical Anchoring: Functional Mapping of Places across Cities. *In Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining* (pp. 2841-2851).
- Ukkusuri, S. V., **Yabe, T.**, & Seetharam, K. E. (2020). Non-pharmaceutical interventions for COVID-19: Evidence from large-scale mobility data in Tokyo. *Asian Development Bank Institute Policy Briefs*, 6.
- Pang, Y., Tsubouchi, K., **Yabe, T.**, & Sekimoto, Y. (2020). Intercity Simulation of Human Mobility at Rare Events via Reinforcement Learning. *In Proceedings of the 28th International Conference on Advances in Geographic Information Systems* (pp. 293-302).
- Pang, Y., Kashiyama, T., **Yabe, T.**, Tsubouchi, K., & Sekimoto, Y. (2020). Development of people mass movement simulation framework based on reinforcement learning. *Transportation Research Part C: Emerging Technologies*, 117, 102706.
- Shimizu, T., **Yabe, T.**, & Tsubouchi, K. (2020). Enabling Finer Grained Place Embeddings using Spatial Hierarchy from Human Mobility Trajectories. *In Proceedings of the 28th International Conference on Advances in Geographic Information Systems* (pp. 187-190).

- Yabe, T.**, Sekimoto, Y., Tsubouchi, K., & Ikemoto, S. (2019). Cross-comparative analysis of evacuation behavior after earthquakes using mobile phone data. *PLoS ONE*, 14(2), e0211375.
- Yabe, T.**, Ukkusuri, S. V., & Rao, P. S. C. (2019). Mobile phone data reveals the importance of pre-disaster inter-city social ties for recovery after hurricane maria. *Applied Network Science*, 4(1), 1-18.
- Yabe, T.**, & Ukkusuri, S. V. (2019). Integrating information from heterogeneous networks on social media to predict post-disaster returning behavior. *Journal of Computational Science*, 32, 12-20.
- Yabe, T.**, Tsubouchi, K., Shimizu, T., Sekimoto, Y., & Ukkusuri, S. V. (2019). Predicting Evacuation Decisions using Representations of Individuals' Pre-Disaster Web Search Behavior. *In Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (pp. 2707-2717)*.
- Yabe, T.**, Tsubouchi, K., Shimizu, T., Sekimoto, Y., & Ukkusuri, S. V. (2019). City2city: Translating place representations across cities. *In Proceedings of the 27th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems* (pp. 412-415).
- Yabe, T.**, Tsubouchi, K., & Sekimoto, Y. (2018). Fusion of terrain information and Mobile phone location data for flood area detection in rural areas. *In 2018 IEEE International Conference on Big Data (Big Data)* (pp. 881-890). IEEE.
- Kumar, D., **Yabe, T.**, & Ukkusuri, S. V. (2018). Social-Media aided Hyperlocal Help-Network Matching & Routing during Emergencies. *In 2018 IEEE International Conference on Big Data (Big Data)* (pp. 1606-1611). IEEE.
- Pang, Y., Tsubouchi, K., **Yabe, T.**, & Sekimoto, Y. (2018). Replicating urban dynamics by generating human-like agents from smartphone GPS data. *In Proceedings of the 26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems* (pp. 440-443).
- Yabe, T.**, Tsubouchi, K., & Sekimoto, Y. (2017). CityFlowFragility: Measuring the fragility of people flow in cities to disasters using GPS data collected from smartphones. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 1(3), 1-17.
- Yabe, T.**, Sekimoto, Y., Sudo, A., & Tsubouchi, K. (2017). Predicting delay of commuting activities following frequently occurring disasters using location data from smartphones. *Journal of Disaster Research*, 12(2), 287-295.
- Yabe, T.**, Tsubouchi, K., Sudo, A., & Sekimoto, Y. (2016). A framework for evacuation hotspot detection after large scale disasters using location data from smartphones: case study of Kumamoto Earthquake. *In Proceedings of the 24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems* (pp. 1-10).
- Yabe, T.**, Tsubouchi, K., Sudo, A., & Sekimoto, Y. (2016). Predicting irregular individual movement following frequent mid-level disasters using location data from smartphones. *In Proceedings of the 24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (poster paper)* (pp. 1-4).
- Sudo, A., Kashiyama, T., **Yabe, T.**, Kanasugi, H., Song, X., Higuchi, T., Nakano, S., Saito, M., & Sekimoto, Y. (2016, October). Particle filter for real-time human mobility prediction following unprecedented disaster. *In Proceedings of the 24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems* (pp. 1-10).
- Yabe, T.**, Sekimoto, Y., Kanasugi, H., & Kashiyama, T. (2015). Making Real-Time Predictions of People's Irregular Movement in a Metropolitan Scale under Disaster Situations. *In International Conference on Computers in Urban Planning and Urban Management (CUPUM 2015)*.

IN REVIEW

- Yabe, T.**, Jones, N. K., Lozano-Gracia, N., Khan, M. F., Ukkusuri, S. V., Fraiberger, S., & Montfort, A. Location Data Reveals Disproportionate Disaster Impact Amongst the Poor: A Case Study of the 2017 Puebla Earthquake Using Mobilkit. *arXiv preprint* arXiv:2107.13590. (under review in *World Bank Policy Research Working Papers*)
- Yabe, T.**, Mittal, S., & Ukkusuri, S. V. Data Driven Transport Analytics and COVID-19 Impacts in Chennai. (under review in *World Bank Policy Research Working Papers*)
- Mittal, S., **Yabe, T.**, Kumar, I., & Ukkusuri, S. V. Cross-sectoral relationships in business entry dynamics around a highway corridor. (under review in *Transportmetrica A: Transport Science*).
- 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. (under review in *Transport Research Record*).
- Xue, J., **Yabe, T.**, Tsubouchi, K., Ma, J., & Ukkusuri, S. V. Multiwave COVID-19 Prediction via Social Awareness-Based Graph Neural Networks using Mobility and Web Search Data. *arXiv preprint* arXiv:2110.11584.

Shimizu, T., Tsubouchi, K., & **Yabe, T.** GEO-BLEU: Similarity Measure for Geospatial Sequences. *arXiv preprint* arXiv:2112.07144. (under review in **AAAI 2022 Workshop on Human-Centric Self-Supervised Learning**)

Presentations

INVITED TALKS & SEMINARS

- March 2022. *Resilience of Urban Complex Systems to Disasters: From Mobility Data Analytics to Systems Modeling*. Invited Talk: Seminar Presentation at One Concern Inc.
- February 2022. *Resilience of Urban Socio-Physical Systems*. Invited Talk: Resilience Lab Seminar at Northeastern University.
- December 2021. *COVID-19 Prediction using Human Mobility and Web Search Data*. Invited Talk: Yahoo Japan Corporation (with Kota Tsubouchi and Jiawei Xue).
- November 2021. *Resilience of Socioeconomic Systems*. Invited Talk: Massachusetts Institute of Technology Connection Science Research Initiative Annual Sponsors Meeting.
- November 2021. *Human Mobility Data and Disasters*. Invited Talk: Nethope Summit 2021 (with Andrew Schroeder, Alex Pompe, and Jennifer Chan).
- November 2021. *Resilience of Urban Socioeconomic Systems: From Big Data Analytics to Dynamical Systems Modeling*. Invited Talk: Tohoku University Regional Science Workshop.
- August 2021. *Post-disaster population displacement and recovery analysis using human mobility data*. Invited Talk: Disaster Mobility Data Network.
- April 2021. *Resilience of Socioeconomic Systems: A Data-Driven Systems Dynamics Approach*. Invited Talk: Media Lab Human Dynamics Group, Massachusetts Institute of Technology.
- April 2021. *Resilience of Socioeconomic Systems: A Data-Driven Systems Dynamics Approach*. Invited Talk: School of Information Science and Technology, George Mason University.
- March 2021. *Resilience of Cities to Shocks*. Invited Talk: Senseable City Lab, Department of Urban Studies and Planning, Massachusetts Institute of Technology.
- March 2021. *Resilient Society Clinic: Informing disaster management through human mobility data: a case study and toolkit*. Invited Seminar: The World Bank.
- February 2021. *Quantifying the economic impact of disasters on businesses using human mobility data: a Bayesian causal inference approach*. Invited talk: Research Seminar Series, Safegraph Inc.
- January 2021. *Resilience of Coupled Urban Socio-Physical Systems: Data-Driven System Dynamics Approach*. Invited talk: Distinguished Research Seminar Series, Northeastern University
- November 2020. *Examining and Repairing Cities using Big Data*. Invited talk: “scienc-ome” Online Science Forum, Keio University
- March 2020. *Mobility Data and Natural Disasters in Low- and Middle-Income Countries*. Invited talk: COVID-19 Mobility Data Network. (co-presentation with Nicholas Jones and Maham Khan (World Bank))
- March 2020. *How Can Cities Become More Resilient to Natural Disasters?*. Invited talk: Purdue Systems Thinkers Colloquium.

CONFERENCE PRESENTATIONS (WITHOUT PROCEEDINGS)

* equal contribution

- Yabe, T.**, Jones, N. K., Lozano-Gracia, N., Khan, M. F., Ukkusuri, S. V., Fraiberger, S., Montfort, A. 2021. Location Data Reveals Disproportionate Disaster Impact Amongst the Poor: A Case Study of the 2017 Puebla Earthquake Using Mobilkit. *Data-driven Humanitarian Mapping Workshop, ACM KDD 2021*.
- Ubaldi, E.*, **Yabe, T.***, Jones, N. K., Khan, M. F., Ukkusuri, S. V., Strano, E. 2021. Mobilkit: A Python Toolkit for Urban Resilience and Disaster Risk Management Analytics using High Frequency Human Mobility Data. *Data-driven Humanitarian Mapping Workshop, ACM KDD 2021*.
- Yabe, T.**, Rao, P.S.C., & Ukkusuri, S.V. 2020. Regional Differences in Resilience of Social and Physical Systems: Case Study of Hurricane Maria. *ADBI – Purdue University – University of Tokyo: Virtual Workshop on Resilience of Cities to External Shocks: Analysis, Modeling and Economic Impacts*.

- Yabe, T.,** Verma, R., & Ukkusuri, S. V. 2020. The relationship between social contact reduction and COVID-19 spread using mobility data. *Bridging Transportation Researchers (BTR) Online Conference*.
- Yabe, T.,** & Ukkusuri, S. V. 2020. Modeling the Dynamics of Spatial Segregation after Disasters using Mobile Phone Data. *Transportation Research Board Annual Meeting, Washington D.C., USA*
- Yabe, T.,** Rao, P. S. C. & Ukkusuri, S. V. 2020. Modeling the Influence of Online Social Media Information on Post-Disaster Mobility Decisions. (poster presentation) *Transportation Research Board Annual Meeting, Washington D.C., USA*
- Yabe, T.,** Tsubouchi, K., Fujiwara, N., Sekimoto, Y., & Ukkusuri. 2019. Understanding Population Recovery Patterns after Disasters from Mobile Phone Data. *Society for Risk Analysis Annual Meeting 2019, Arlington, Virginia, USA (EISG Student Merit Award Finalist)*
- Yabe, T.,** Ukkusuri, S. V., Sundaram, S., Lee, S., Siebeneck, L., Gehlot, H., Yao, T., Benedict, B., Jarvis, C., & Kuenanz, B. J. 2019. Critical Transitions in the Resilience and Recovery of Interdependent Social and Physical Networks, *44th Annual Natural Hazards Workshop, Denver, Colorado, USA. (Plenary talk)*
- Yabe, T.,** Tsubouchi, K., Fujiwara, N., Sekimoto, Y., & Ukkusuri. 2019. Understanding Post-Disaster Population Recovery Patterns (poster presentation). *The main conference on the scientific analysis of mobile phone datasets (NetMob 2019), Oxford, UK. (Poster Competition 2nd Prize)*
- Yabe, T.,** Rao, P. S. C. & Ukkusuri, S. V. 2019. Mobile phone data reveals the importance of inter-city social connectivity for recovery after Hurricane Maria (poster presentation). *Complex Systems Conference, Purdue University, Indiana, USA.*
- Yabe, T.,** Ukkusuri, S. V., Sundaram, S., Lee, S., & Siebeneck, L. 2018. Population Recovery Modeling with Mobile Phones. *National Science Foundation CRISP Grantees Meeting, George Mason University, Virginia, USA.*
- Yabe, T.,** Tsubouchi, K., & Sekimoto, Y. 2017. CityFlowFragility: Measuring the Fragility of People Flow in Cities to Disasters using GPS Data Collected from Smartphones. *2017 ACM International Joint Conference on Pervasive and Ubiquitous Computing (Ubicomp 2017), Maui, Hawaii, USA.*
- Yabe, T.,** Tsubouchi, K., Sudo, A., & Sekimoto, Y. 2017. A Framework for Evacuation Hotspot Detection after Large Scale Disasters using Mobile Phone Location Data. *The main conference on the scientific analysis of mobile phone datasets (NetMob 2017), Milan, Italy.*
- Yabe, T.,** Tsubouchi, K., Sudo, A., & Sekimoto, Y. 2016. Estimating Evacuation Hotspots using GPS data: What happened after the large earthquakes in Kumamoto, Japan? *5th International Workshop on Urban Computing (UrbComp), held in conjunction with ACM KDD, San Francisco, CA, USA.*

Research Accomplishments

Massachusetts Institute of Technology - Institute for Data, Systems, and Society

Cambridge, MA

SUPERVISORS: DR. ALEX 'SANDY' PENTLAND AND DR. ESTEBAN MORO

2021 - Present

- Conducting research on urban socioeconomic systems, including 1) segregation dynamics during COVID-19 using human mobility data, 2) modeling the cascading impacts of mobility restrictions on local economic networks, and 3) collaborating with PhD students and postdoc on a variety of projects at IDSS and Media Lab.
- Leading joint research between MIT Media Lab and Yahoo Japan Corporation on understanding the interdependencies between real-world travel and online information search behavior.

The World Bank - Global Facility for Disaster Reduction and Recovery

Washington D.C.

ADVISOR: MR. NICHOLAS JONES AND MS. TATIANA PERALTA QUIROS

2020 - Present

- Advanced the use of large scale human mobility data and earth observation data for disaster risk management and transport resilience applications, through case studies in India, Mexico, Nepal, Bangladesh.
- Developed successful fund proposals and project concept notes for World bank funding, contributed to team building via consultant hiring, and prepared internal and external progress reports.
- Developed open-source analytics toolkit (<https://github.com/GFDRR/mobilkit>), WB Policy Research Working Papers, and Sustainable Cities blog pieces to democratize the use of big data for development.

Purdue University - Lyles School of Civil Engineering

West Lafayette, IN

ADVISORS: DR. SATISH V. UKKUSURI AND DR. SEUNGYOON LEE

2017-2021

- Thesis: “Resilience of Coupled Urban Socio-Physical Systems to Disasters: Data-Driven Modeling Approach”; Led interdisciplinary and international team of engineers, social scientists, and computer scientists, industry partners (e.g., Facebook), and local agency partners.
- Student lead of NSF #1638311: “CRISP Type 2/Collaborative Research: Critical Transitions in the Resilience and Recovery of Interdependent Social and Physical Networks”; resulting in >20 peer reviewed scientific publications and 9 academic awards during my PhD.
- Student lead of the “Resilience Modeling in Cities” Project funded by the Ford Foundation; studied the influence of online social media and information platforms on real-world travel behavior.

Asian Development Bank Institute

Tokyo, Japan

SUPERVISOR: DR. K. E. SEETHARAM

2020

- Authored ADB Policy Brief on economic impacts of reopening strategies during COVID-19
- Organized international workshop on Resilient Cities (>100 attendees, keynote talks by ADB Chief Economist and Facebook Data for Good Manager).

University of Tokyo - Department of Civil Engineering

Tokyo, Japan

ADVISOR: DR. YOSHIHIDE SEKIMOTO

2013-2017

- Led development of an urban transport toolkit to simulate post-disaster response policies
- Delivered developed simulation model to the Ministry of Internal Affairs and Communications of Japan.

Yahoo Japan Research

Tokyo, Japan

SUPERVISOR: DR. KOTA TSUBOUCHI

2015-2016

- Predicting Irregular Human Mobility Patterns during Disasters using Mobile Phone Location Data.
- Conducted and delivered rapid estimation & visualization of overcrowded evacuation shelters using big data to city government after Kumamoto Earthquake (2016).

Japan International Cooperation Agency

Manila, the Philippines

SUPERVISOR: MS. CHIKA WATANABE

2014

- Designed, planned, and conducted urban flood preparedness and social resilience workshops for informal settlement residents in coordination with local NPO (Center for Disaster Preparedness) and local barangay leaders in metro Manila.

Teaching Experience

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| 2021 | Computational Methods for Urban Resilience , Course Development | <i>Purdue Univ.</i> |
| 2020 | Ecological Sciences and Engineering Colloquium (CE597) , Guest Lecturer | <i>Purdue Univ.</i> |
| 2020 | Disaster Resilience (HONR399) , Guest Lecturer | <i>Purdue Univ.</i> |
| 2020 | Disaster Resilience and Society (CE497) , Guest Lecturer | <i>Purdue Univ.</i> |
| 2016 | Python Programming and Spatial Analysis (Univ. of Tokyo) , Lecturer | <i>Univ. of Tokyo</i> |
| 2011-2015 | English and Math at Sundai Preparatory School , Part-time Teacher for K-12 students | <i>Tokyo, Japan</i> |

Mentoring

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| 2020- | Jiawei Xue , Master/PhD Student, Purdue University |
| 2020-2021 | Sangung Park , PhD Student, Purdue University |
| 2020-2021 | Rajat Verma , PhD Student, Purdue University |
| 2019-2021 | Shagun Mittal , Master/PhD Student, Purdue University |
| 2018-2021 | Daniel Hooks , Undergraduate, Purdue University / now at MIT Lincoln Laboratory |
| 2020 | Chengyuan Yang , Undergraduate, Purdue University / now at Cornell University |
| 2020-2021 | Advised group of 8 students (4 PhD, 2 Master, 2 Undergraduate) on COVID-19 research , Urban Mobility, Networks and Intelligence Lab, Purdue University |

Outreach & Professional Service

SERVICE AND OUTREACH

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| 2021 | Data-driven Humanitarian Mapping Workshop at ACM KDD 2021 , Digital Participation & Diversity Chair | <i>virtual</i> |
| 2020 | Purdue – ABDI – UTokyo Virtual Workshop on Resilience of Cities , Co-Organizer | <i>virtual</i> |
| 2019-2021 | Indy Tomorrow (network of Japanese Researchers in Midwest area) , Student Member | <i>Purdue</i> |
| 2017-2019 | Workshops on Prediction of Human Mobility (PredictGIS) at ACM SIGSPATIAL (3 editions; in Los Angeles, Seattle, Chicago) , Steering Committee Member | |
| 2018 | Purdue Institute of Transportation Engineers (ITE) Student Chapter , Event Coordinator | <i>Purdue</i> |

MEDIA COVERAGE

“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*, November 9th, 2020.

“Mobile phone data shows how Japan averted large-scale outbreaks of COVID-19”, *News Medical*, November 6th, 2020.

“Tokyo’s Voluntary Standstill May Have Stopped COVID-19 in its Tracks”, in multiple outlets, including *BioNews Central*, *ScienceDaily*, *Medical Xpress*, *Scienmag*, *BIOENGINEER.ORG*, *7thSpace*, *LatinAmerican Post*. November 5th, 2020.

“Life-saving information technology: Predicting disasters using IoT”, *Nikkei Industrial Newspaper.*, August 25th, 2016.

PEER REVIEW (SELECTED JOURNALS AND CONFERENCE PROCEEDINGS)

Interdisciplinary journals: Scientific Reports (Nature Publications), PLoS ONE

Computer science, data science: AAAI Conference on Artificial Intelligence; ACM SIGSPATIAL; ACM SIGKDD; The Webconf

Transportation and infrastructure systems: Transportation Research Record; Transportation Research Part C; Transportation Research Part E; Frontiers In Future Transportation; Journal of Infrastructure Systems

Urban planning, GIS: International Journal of Disaster Risk Reduction; Environment and Planning B; Frontiers in Built Environment; Geospatial Information Science

Public health: The Lancet Public Health; BMC Public Health; International Journal of Health Policy and Management

PROFESSIONAL MEMBERSHIPS

Transportation Research Board (TRB) AMR20: Disaster Response, Emergency Evacuations, and Business Continuity

Association for Computing Machinery (ACM) Special Interest Group on Spatial Information (SIGSPATIAL)

Association for Computing Machinery (ACM) Special Interest Group on Knowledge Discovery and Data Mining (SIGKDD)