

ZHAO, ZHAN

CONTACT INFORMATION	Rm 809, 8/F, Knowles Building The University of Hong Kong Pokfulam Road, Hong Kong	Tel: (852) 3917 6171 Mobile: (852) 9512 0322 Email: zhanzhao@hku.hk
RESEARCH INTERESTS	<ul style="list-style-type: none">• Urban Computing and Spatiotemporal Data Mining• Human Mobility and Travel Behavior• Public Transit and Shared Mobility on Demand Systems• Network Science and Graph Machine Learning	
EDUCATION	<p>Massachusetts Institute of Technology, Cambridge, MA, USA Ph.D. Transportation, July 2018 Department of Civil and Environmental Engineering Thesis: <i>“Uncovering Individual Mobility Patterns from Transit Smart Card Data: Trip Prediction, Activity Inference, and Change Detection”</i> Committee: Jinhua Zhao, Haris Koutsopoulos, Nigel Wilson, Tamara Broderick</p> <p>University of British Columbia, Vancouver, BC, Canada M.S. Civil Engineering, August 2013 Department of Civil Engineering</p> <p>Tongji University, Shanghai, China B.E. Transportation Engineering, July 2011 College of Transportation Engineering</p>	
PROFESSIONAL EXPERIENCE	<p>The University of Hong Kong, Hong Kong, China Assistant Professor Department of Urban Planning & Design Faculty of Architecture</p> <p>Via Transportation, Inc., New York, NY, USA Senior Data Scientist</p> <p>SMART, Singapore, Singapore Visiting Researcher</p> <p>IBM Research, Dublin, Ireland Research Intern</p> <p>Transport for London, London, UK Research Intern</p> <p>Translink, Vancouver, BC, Canada Research Intern</p>	<p>07/2020-Present</p> <p>08/2018-06/2020</p> <p>06/2017-08/2017</p> <p>06/2016-09/2016</p> <p>06/2015-08/2015</p> <p>09/2012-11/2012</p>
JOURNAL PUBLICATIONS	<p>(* refers to the corresponding author)</p> <ul style="list-style-type: none">• Bi, W., Lu, W.*, Zhao, Z., and Webster, C. (2022). Combinatorial optimization of construction waste collection and transportation: A case study of Hong Kong. <i>Resources, Conservation & Recycling</i>, 179, 106043.	

- Li, J., and **Zhao, Z.*** (2022). Impact of COVID-19 travel-restriction policies on road traffic accident patterns with emphasis on cyclists: A case study of New York City. *Accident Analysis & Prevention*, 167, 106586.
- Liang, Y., and **Zhao, Z.*** (2021). NetTraj: A network-based vehicle trajectory prediction model with directional representation and spatiotemporal attention mechanisms. *IEEE Transactions on Intelligent Transportation Systems*.
- Mo, B., **Zhao, Z.***, Koutsopoulos, H. N., and Zhao, J. (2021). Individual mobility prediction in mass transit systems using smart card data: An interpretable activity-based hidden Markov approach. *IEEE Transactions on Intelligent Transportation Systems*.
- **Zhao, Z.***, Koutsopoulos, H. N., and Zhao, J. (2020). Discovering latent activity patterns from transit smart card data: A spatiotemporal topic model. *Transportation Research Part C: Emerging Technologies*, 116, 102627.
- **Zhao, Z.**, and Zhao, J*. (2020). Car pride and its behavioral implication: An exploration in Shanghai. *Transportation*, 47(2), 793-810.
- **Zhao, Z.**, Koutsopoulos, H. N., and Zhao, J*. (2018). Detecting pattern changes in individual travel behavior: A Bayesian approach. *Transportation Research Part B: Methodological*, 112, 73-88.
- **Zhao, Z.**, Koutsopoulos, H. N., and Zhao, J*. (2018). Individual mobility prediction using transit smart card data. *Transportation Research Part C: Emerging Technologies*, 89, 19-34.
- Goulet-Langlois, G., Koutsopoulos, H. N., **Zhao, Z.**, and Zhao, J*. (2018). Measuring regularity of individual travel patterns. *IEEE Transactions on Intelligent Transportation Systems*, 19(5), 1583-1592.
- Zhao, J.*, Frumin, M., Wilson, N. H., and **Zhao, Z.** (2013). Unified estimator for excess journey time under heterogeneous passenger incidence behavior using smartcard data. *Transportation Research Part C: Emerging Technologies*, 34, 70-88.
- Frumin, M., Zhao, J.*, Wilson, N. H., and **Zhao, Z.** (2013). Automatic data for applied railway management: Case study on the London Overground. *Transportation Research Record: Journal of the Transportation Research Board*, 2353, 47-56.
- **Zhao, Z.**, Zhao, J.*, and Shen, Q. (2013). Has transportation demand of Shanghai, China, passed its peak growth? *Transportation Research Record: Journal of the Transportation Research Board*, 2394, 85-92.

CONFERENCE PAPERS

- Liang, Y., and **Zhao, Z.** (2022). Unraveling spatial, temporal and behavioral factors affecting trip-level taxi cruising time using large-scale GPS trajectories. *Transportation Research Board 101st Annual Meeting*, Washington, DC.
- Li, J., and **Zhao, Z.** (2022). Impact of COVID-19 travel-restriction policies on road traffic accident patterns with emphasis on cyclists: A case study of New York City. *Transportation Research Board 101st Annual Meeting*, Washington, DC.
- **Zhao, Z.**, Koutsopoulos, H. N., and Zhao, J. (2018). Discovering latent activity patterns from human mobility. *The 7th ACM SIGKDD International Workshop on Urban Computing (UrbComp'18)*, London, UK.
- **Zhao, Z.**, Koutsopoulos, H. N., and Zhao, J. (2018). Detecting changes in individual travel behavior patterns. *Transportation Research Board 97th Annual Meeting*, Washington, DC.
- **Zhao, Z.**, Koutsopoulos, H. N., and Zhao, J. (2017). Mobility as a language: Predicting individual mobility in public transportation using n-gram models. *Transportation Research Board 96th Annual Meeting*, Washington, DC.

- **Zhao, Z.**, Zhao, J., and Koutsopoulos, H. N. (2016). Individual-level trip detection using sparse call detail record data based on supervised statistical learning. *Transportation Research Board 95th Annual Meeting*, Washington, DC.
 - **Zhao, Z.**, and Zhao, J. (2015). Car pride: Psychological structure and behavioral implications. *Transportation Research Board 94th Annual Meeting*, Washington, DC.
 - **Zhao, Z.**, Chua G., and Zhao, J. (2012). Evolution of trip chaining patterns in London from 1991 to 2010. *Innovations in Travel Modelling Conference*, Tampa, FL.
- BOOK CHAPTERS
- **Zhao, Z.**, Koutsopoulos, H. N., and Zhao, J. (2019). Uncovering Spatiotemporal Structures from Transit Smart Card Data for Individual Mobility Modeling. Book chapter for *Demand for Emerging Transportation Systems*, 123-149.
- UNDER REVIEW
- **Zhao, Z.***, Koutsopoulos, H. N., and Zhao, J. (2022). Identifying hidden visits from sparse call detail record data. *Transactions in Urban Data, Science, and Technology*. Submitted in April, 2022.
 - Zhou, J, **Zhao, Z.***, and Zhou, J. (2022). Quantifying COVID-19 transmission risk based on human mobility data: A personalized PageRank approach to efficient contact-tracing. *Computers, Environment, and Urban Systems*. Submitted in April, 2022.
 - Hu, Y., and **Zhao, Z.*** (2022). Quantifying the impact of urban built environment on traffic congestion patterns: A network-based multi-city studies. *Journal of Transport Geography*. Submitted in April, 2022.
 - Liang, Y., Huang, G., and **Zhao, Z.*** (2022). Bike sharing demand prediction based on knowledge sharing across modes: A graph-based deep learning approach. *IEEE Intelligent Transportation Systems Conference*. Submitted in March, 2022.
 - Liang, Y., Huang, G., and **Zhao, Z.*** (2021). Joint demand prediction for multi-modal systems: A multi-task multi-relational spatiotemporal graph neural network approach. *Transportation Research Part C: Emerging Technologies*. Submitted in December, 2021.
 - Liang, Y., **Zhao, Z.***, and Zhang, X. (2021). Modeling taxi cruising time based on multi-source data: A case study in Shanghai. *Transportation*. Submitted in December, 2021.
 - Liang, Y., **Zhao, Z.***, and Sun, L. (2021). Dynamic spatiotemporal graph convolutional neural networks for traffic data imputation with complex missing patterns. *Transportation Research Part C: Emerging Technologies*. Submitted in September, 2021.
- INVITED TALKS
- Urban transport networks and trajectory data mining. *Peking University-HKU Sustainable Development and Smart Cities in the Greater Bay Area*. November 2021.
 - Trajectory Data Mining for Smart Urban Mobility. *University of Michigan-Shanghai Jiaotong University Joint Institute*. June 2021.
 - Uncovering Behavior Dynamics in Human Mobility using Transit Smart Card Data. *Hong Kong Polytechnic University*. September 2020.
- GRANTS
- PI. “A Simulation-based Analytical Framework for the Design of an Integrated Autonomous Vehicle and Public Transit System and Evaluation of its Impact on Urban Form”. *Seed Funding for Strategic Interdisciplinary Research Scheme*. 2021-2024 (HK\$ 995,160)

- PI. “Urban Embedding: Learning Spatial Representation from Urban Mobility Flows”. *Seed Fund for Basic Research for New Staff*. 2020-2022 (HK\$ 138,780)

TEACHING EXPERIENCE

The University of Hong Kong

Lecturer

- *URBA6002 Urban Big Data Analytics*, Spring 2021-Present
- *URBA6004 Spatial Mobilities Analytics*, Spring 2021-Present
- *URBS2005 Research Methods in Urban Studies*, Fall 2021-Present
- *GEOG7003 Transport Economics*, Spring 2022-Present
- *URBA6402 Smart Planning and Design Studio*, Spring 2022-Present

Massachusetts Institute of Technology

Teaching Assistant

- *11.478 Behavior and Policy*, Spring 2015

University of British Columbia

Teaching Assistant

- *CIVL 441 Transportation Planning and Analysis*, Spring 2013
- *CIVL 587 Urban Transportation Economics and Policy*, Fall 2012

HONORS AND AWARDS

- Fellow, Meeting of Minds@HKU Forum for Outstanding Young Scholars, 2019
- Mitacs-Accelerate Internship Award, 2012
- Tongji University Outstanding Graduate Award, 2011
- Second Prize, Competition of Transport Science and Technology of Tongji University, 2010
- Scholarships for Excellent Academic Performance, 2008-2010

SERVICE

Senior Program Management Team for

- HKU Master of Arts in Transport Policy and Planning (MATPP), 2022-Present
- HKU Master of Science in Urban Design and Transport (MScUDT), 2022-Present

Member/fellow for

- HKU Institute of Transport Studies, 2021-Present
- HKU Institute of Data Science, 2022-Present

Organizer/co-organizer for

- University of Glasgow-HKU Symposium on Urban Analytics, June 2021

Reviewer for

- Transportation Research Part C: Emerging Technologies
- Transportation Research Part A: Policy and Practice
- IEEE Transactions on Intelligent Transportation Systems
- Journal of Transport Geography
- Travel Behaviour and Society
- PLOS ONE