ZHAO, ZHAN

CONTACT
INFORMATION

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The University of Hong Kong
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RESEARCH
INTERESTS

- 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

Massachusetts Institute of Technology, Cambridge, MA, USA
   Ph.D. Transportation, July 2018
   Department of Civil and Environmental Engineering
   Thesis: *"Uncovering Individual Mobility Patterns from Transit Smart Card Data: Trip Prediction, Activity Inference, and Change Detection"*
   Committee: Jinhua Zhao, Haris Koutsopoulos, Nigel Wilson, Tamara Broderick

University of British Columbia, Vancouver, BC, Canada
   M.S. Civil Engineering, August 2013
   Department of Civil Engineering

Tongji University, Shanghai, China
   B.E. Transportation Engineering, July 2011
   College of Transportation Engineering

PROFESSIONAL
EXPERIENCE

The University of Hong Kong, Hong Kong, China
Assistant Professor   07/2020-Present
Department of Urban Planning & Design
Faculty of Architecture

Via Transportation, Inc., New York, NY, USA
Senior Data Scientist   08/2018-06/2020

SMART, Singapore, Singapore
Visiting Researcher   06/2017-08/2017

IBM Research, Dublin, Ireland
Research Intern   06/2016-09/2016

Transport for London, London, UK
Research Intern   06/2015-08/2015

Translink, Vancouver, BC, Canada
Research Intern   09/2012-11/2012

JOURNAL
PUBLICATIONS

(* refers to the corresponding author)
- 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

- **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

- 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.

- 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.* Submitted in May, 2021.
- Li, J., and **Zhao, Z.*** (2021). 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.* Submitted in September, 2021.
- Bi, W., Lu, W.*, **Zhao, Z.**, and Webster, C. (2021). Combinatorial optimization of construction waste collection and transportation: A case study of Hong Kong. *Resources, Conservation & Recycling.* Submitted in August, 2021.

INVITED TALKS
- 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

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

Member/fellow for
- HKU Insititue of Transport Studies, 2021-Present

Organizer/co-organizer for
- University of Glasgow-University of Hong Kong 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