PERSONAL INFORMATION

Dr. Bingyu Zhao

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https://www.tuwien.at/cee/transport/planning
Publikationen (Google Scholar)

Year of birth 1993 | Nationality Chinese

WORK EXPERIENCE

03/2023 - Present — Assistant Professor

Research Unit of Transport Planning and Traffic Engineering, Institute of Transportation, Faculty of Civil and Environmental Engineering, TU Wien (Austria)

- Research: analysis, modelling, and assessment of road and public transport systems and complex socio-technical networks; applications of digital and data analytic techniques in system interaction studies; transport planning and model-informed policymaking
- Teaching:
  - 231.028: Methods and models in settlement and transport planning
  - 230.053: System analysis, strategic planning and policy modelling with system dynamics
  - 230.056: Applied system dynamics modelling in transport
  - 230.042: National and European Transport Policies
- Academic services

03/2022 - 02/2023 — University Assistant

Research Unit of Transport Planning and Traffic Engineering, Institute of Transportation, Faculty of Civil and Environmental Engineering (until 08/2022 Faculty of Civil Engineering), TU Wien (Austria)

09/2019 – 02/2022 — Postdoc

Department of Civil and Environmental Engineering, University of California, Berkeley (USA)

- Eco-friendly vehicle routing and road paving techniques: case study of the Greater Tokyo Area
- Wildfire evacuation planning for small communities in California
- Regional post-earthquake infrastructure resilience analysis: case study of the San Francisco Bay Area

EDUCATION AND TRAINING

10/2014 – 08/2019 — Doctor of Philosophy

Department of Engineering, University of Cambridge (UK)

- Full scholarship from the Cambridge Trust
- Thesis title: City-scale eco-routing and pavement eco-maintenance scheduling for CO_2 mitigation

09/2010 – 07/2014 — Bachelor of Engineering

College of Civil Engineering, Tongji University (China)

- GPA ranks 1st out of 517

03/2019 — Visiting researcher

RIKEN Center for Computational Science (Japan)

10/2016 – 09/2017

Enrichment student

Alan Turning Institute (UK)

08/2012 – 12/2012

Visiting student

National University of Singapore (Singapore)

PERSONAL SKILLS

Mother tongue(s): Chinese

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
German	A1	A2	A1	A1	A1

Digital skills

- Python for traffic simulations and data analytics
- GIS for spatial data analysis and visualization
- Cloud computing, High-Performance Computing (HPC) clusters for deploying large-scale simulations

ADDITIONAL INFORMATION

Honours and awards

- **University of California Institute of Transport Studies (UC-ITS), USA**: Collaborator. “Ridership interaction of metro and road transportation systems during disruptions by disasters and emergencies,” July 2022 – June 2023
- **Pacific Earthquake Research Center (PEER), USA**: Postdoc collaborator. “Prioritizing Regional Needs for Recovery Bridges through Post-earthquake Corridor Identification and System Fragility Assessment of the SF Region,” June 2021 – May 2023
- **AWS Activate Credits**: Awardee. Cloud computing credits for startups, October 2021
- **PostX, University of California, Berkeley, USA**: Awardee. Startup mentorship, September 2021
- **International Association for Fire Safety Science (IAFSS), Canada**: Best poster. May 2021
- **University of California Institute of Transport Studies (UC-ITS), USA**: Postdoc Co-Investigator. “Testing wildfire evacuation strategies and coordination plans for WUI communities in California,” July 2021 – June 2022
- **University of California Institute of Transport Studies (UC-ITS), USA**: Postdoc Co-Investigator. “Resilient Road Network during Wildfire Event by Integrating Traffic Network Analysis and Communication Network Analysis at a Regional Scale,” July 2019 - June 2021
- **Lawrence Hall of Science, Berkeley, USA**: Volunteer. “Outstanding and Professional Presentation,” August 2018
- **The Alan Turing Institute, London, UK**: Enrichment scholarship. October 2016 – October 2017
- **Cambridge International Students Scholarship, UK**: Awardee. October 2014 – September 2017
- **Chinese National Scholarship for Undergraduate Students, China**: Awardee. 2011, 2012, 2013

Research record - activities

- Research specialization: city/regional-scale traffic simulations and urban data analytics.
- Teaching experience: traffic simulations, evacuation modelling.
  - Co-instructor. University of California, Berkeley, CE170: “Infrastructure Sensing and Construction”. Undergraduate & postgraduate level. Course website:
    Academic year 2020: https://github.com/UCB-CE170a/Fall2020
    Academic year 2021: https://github.com/UCB-CE170a/Fall2021
- Mentoring and supervision: experienced in research mentoring for students at different levels.
  - Mentored over 10 students from high school to PhD level.

Publications - books and book chapters

- Zhao, B. (2018) *Underground Engineering: Planning, Design, Construction and Operation of the Underground Space*. Chapter 2: planning the use of subsurface space, and Chapter 3: design of underground structures. Edited by Bai, Y. Academic Press. ISBN: 978-0128127025.

Publications – professional reports

- Huang, A. et al. (2022) *Where are Private "Smart City" Transportation Technologies Concentrated in California? University of California Institute of Transportation Studies*. Available at: https://doi.org/10.7922/G2W37TM2.
- Soga, K., Wu, R., et al. (2021) 'City-Scale Multi-Infrastructure Network Resilience Simulation Tool'. Available at: https://peer.berkeley.edu/sites/default/files/peer-multi-infrastructure-simulation-tool-soga-20190408.pdf
- Post, A. et al. (2021) *Benchmarking "Smart City" Technology Adoption in California: An Innovative Web Platform for Exploring New Data and Tracking Adoption*. University of California Institute of Transportation Studies. Available at: https://doi.org/10.7922/G26M355T.
- Soga, K., Comfort, L., et al. (2021) *Integrating Traffic Network Analysis and Communication Network Analysis at a Regional Scale to Support More Efficient Evacuation in Response to a Wildfire Event*. Available at: https://escholarship.org/uc/item/1z913878 (Accessed: 26 May 2021).
- Soga, K., Comfort, L., et al. (2021) *Wildfire Evacuation Planning Can Be Greatly Enhanced by Considering Fire Progression, Communication Systems, and Other Dynamic Factors*. University of California Institute of Transportation Studies. Available at: https://doi.org/10.7922/G23T9FJG.

Publications - journals

- Perera, S.D., Wang, Z., & Zhao, B. (2022) 'Optimal design of microgrids to improve wildfire resilience for vulnerable communities at the wildland-urban interface', *Applied Energy special issue on Enhancing Energy Flexibility and Climate Resilience of Urban Energy Systems*.
- Zhao, B., Tang, Y., Wang, C., Zhang, S., & Soga, K. (2022). Evaluating the flooding level impacts on urban metro networks and travel demand: behavioral analyses, agent-based simulation, and large-scale case study. *Resilient Cities and Structures*, *1*(3), 12-23. https://doi.org/10.1016/j.rcns.2022.10.004
- Zhao, B. and Wong, S.D. (2021) 'Developing Transportation Response Strategies for Wildfire Evacuations via an Empirically Supported Traffic Simulation of Berkeley, California', *Transportation Research Record: Journal of the Transportation Research Board*, 2675(12), pp. 557–582. doi:10.1177/03611981211030271
- Comfort, L.K. et al. (2021) 'Collective Action in Communities Exposed to Recurring Hazards: The Camp Fire, Butte County, California, November 8, 2018', *International Journal on Advanced Science, Engineering and Information Technology*, 11(4), p. 1678. doi:10.18517/ijaseit.11.4.14845.
- Chan, C. et al. (2021) 'Quasi-Dynamic Traffic Assignment using High Performance Computing'. Available at: https://arxiv.org/abs/2104.12911.
- Casey, G. et al. (2020) 'Context-specific volume–delay curves by combining crowd-sourced traffic data with automated traffic counters: A case study for London', *Data-Centric Engineering*, 1. doi:10.1017/dce.2020.18.
- Salganik, M.J. et al. (2020) 'Measuring the predictability of life outcomes with a scientific mass collaboration', Proceedings of the National Academy of Sciences, 117(15), pp. 8398–8403. doi:10.1073/pnas.1915006117
- Zhao, B., Silva, E. and Soga, K. (2018) 'Pavement degradation: a city-scale model for San Francisco, USA', *Proceedings of the Institution of Civil Engineers - Smart Infrastructure and Construction*, 171(3), pp. 93–109. doi:10.1680/jsmic.18.00001.
- Soga, K. et al. (2017) 'Briefing: High-performance computing for city-scale modelling and simulations', *Proceedings of the Institution of Civil Engineers - Smart Infrastructure and Construction*, 170(4), pp. 80–85. doi:10.1680/jsmic.17.00026.
- Li, S., Zhao, B. and Huang, D. (2016) 'Experimental and numerical investigation on temperature measurement of BOTDA due to drop leakage in soil', *Journal of Loss Prevention in the Process Industries*, 41, pp. 1–7. doi:10.1016/j.jlp.2016.02.019

Publications – conference proceedings and presentations

- Zhang, L., Wang, Y., Zhao, B., & Wang, Y. (2023). Exploring the effects of monthly pass in reducing peak-hour congestion using combined survey-modeling approaches: A case study of Beijing

subway. *The 16th World Conference on Transport Research.*

- Zhao, B., Tang, Y., Soga, K., Zhou, X., Yang, H., Wang, B., & Huang, J. (2022). 'An integrated data-driven agent-based simulation (AAAM) for dynamic operations and individual behavior in urban rail transit systems', in *Transport Research Board Annual Meeting*, Washington, D.C.
- Wang, C., Antos, S. E., Gosling-Goldsmith, J. G., Triveno, L. M., & Zhao, B. (2023). 'Vision-based Two-phase Framework for Urban Road Safety Evaluation: Data and Algorithms', in *Transport Research Board Annual Meeting*, Washington, D.C.
- Tang, Y., & Zhao, B*. (2022) 'Evaluation of Dynamic Pricing for Congestion Management in Transit System: An Agent-Based Simulation', in *Proceedings of the Canadian Society of Civil Engineering Annual Conference*.
- Li, P., Zhao, B*., Jiang, M., Soga, K., & Zhang, Y. (2021) 'Assessing the effectiveness of phased evacuation strategies under slow and fast fire scenarios with a real case study in Paradise, California', in *The 22nd COTA International Conference of Transportation Professionals*.
- Lin, G., Zhao, B., Zhang, Y., & Zhang, Y. (2021) 'Analysis on Effects of Speed and Acceleration on Mesoscopic Fuel Consumption Prediction Based on Vehicle Energy Dataset', in *CICTP 2021*, pp. 43–53.
- McElwee, M., Zhao, B. and Soga, K. (2019) 'Real-time Analysis of City Scale Transportation Networks in New Orleans Metropolitan Area using an Agent Based Model Approach', in *MATEC Web of Conferences*. EDP Sciences, p. 06007.
- Zhao, B. et al. (2019) 'Agent-Based Model (ABM) for City-Scale Traffic Simulation: A Case Study on San Francisco', in *International Conference on Smart Infrastructure and Construction 2019 (ICSIC). International Conference on Smart Infrastructure and Construction 2019 (ICSIC)*, Cambridge, UK: ICE Publishing, pp. 203–212. doi:10.1680/icsic.64669.203.
- Zhao, B., Soga, K. and Silva, E. (2016) 'Simulating the degradation and maintenance effects on an integrated urban transport infrastructure system', in *Transforming the Future of Infrastructure through Smarter Information: Proceedings of the International Conference on Smart Infrastructure and Construction, 27–29 June 2016*. ICE Publishing, pp. 609–614.