

PERSONAL INFORMATION

Dr. Bingyu Zhao



📍 TU Wien
 Institute of Transportation
 Research Center of Transport Planning and Traffic Engineering
 Karlsplatz 13/230-1 (3. floor), 1040 Vienna, Austria

☎ +43-1-58801-23130

✉ bingyu.zhao@tuwien.ac.at

🌐 [https://www.fv.tuwien.ac.at/home/
 Publikationen \(Google Scholar\)](https://www.fv.tuwien.ac.at/home/Publikationen)

Year of birth 1993 | **Nationality** Chinese

WORK EXPERIENCE

03/2022 - Present

University Assistant

Research Center of Transport Planning and Traffic Engineering, Institute of Transportation, Faculty of Civil 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
 - 230.056: Applied system dynamics modelling in transport
 - 230.042: National and European Transport Policies
- Academic services

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 CO₂ 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 Turing 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	A1	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

- **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

- [near submission] Virtucio, M., Cetiner, B., Zhao, B., Soga, K., & Taciroglu, E. (2022) ‘A Comprehensive Framework for Quantifying Resilience of Transportation Networks’, plan to submit to *ASCE Journal of Structural Engineering special issue on Advances in Data-Driven Risk-Based Performance Assessment of Structures and Infrastructure Systems*.
- [accepted] 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1016/j.jlp.2016.02.019)

Publications – conference proceedings and presentations

- 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](https://doi.org/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.