

Name: WANG, An

Email: an.wang@polyu.edu.hk

Academic qualifications:

Ph.D. (Transportation Engineering), University of Toronto, Canada (2020)

M.A.Sc. (Transportation Engineering), McGill University, Canada (2016)

B.Eng. (Transportation Engineering), Chang'an University, China (2014)

Previous academic positions held (with dates):

Post-Doc Associate, Senseable City Lab, M.I.T. (2021-2023)

Mitacs Accelerate Research Intern, HDR, Inc. (2020-2021)

Post-Doc Fellow, Department of Civil and Mineral Engineering, University of Toronto (2020-2021)

Research Assistant, Department of Civil and Mineral Engineering, University of Toronto (2016–2020)

Present academic position:

Assistant professor, Civil and Environmental Engineering, The Hong Kong Polytechnic University (2023-present)

Previous relevant research work:

An Wang's interdisciplinary research focuses on the nexus of sustainable transportation systems, urban environmental sensing, and data-driven modeling techniques. He utilizes versatile research tools, including life-cycle assessment, empirical modeling, and computer vision, to explore the effective and equitable pathways for metropolitan areas' carbon-neutral transition.

His PhD thesis "Extending Boundaries of Emission and Dispersion Modelling with Uncertainty Analysis and Data-Driven Models" studied the construction of multi-air pollutant emission inventory for the transportation system in the Greater Toronto Area. He also explored the incorporation of lifecycle assessment and fuel-cycle emissions in evaluating greenhouse gas emissions from the system and its associated uncertainty. In addition to emission modeling, Dr. Wang has led multiple studies involving on-road vehicular emission tests using state-of-the-art sensing instrumentation, including roadside emission dispersion characterization and portable emissions measurements. He is proficient in emission testing/modeling study design and experiment design at the vehicle level, street level, and city level. Dr. Wang has been collaborating with research teams with interdisciplinary backgrounds in urban planning, computer science, combustion engineering, and environmental health to advance vehicular emission modeling techniques in multiple facets. His research has been featured in high-impact journals, such as *Nature Cities*, *Applied Energy*, *Environmental Science & Technology*, and *Transportation Research*, which are summarized as follows:

Section A – Five most representative publications in recent five years

- Chen, Q., **Wang, A.**, Wang, S., Liu, H., Gong, L., & Tu, R. (2025). Modeling urban brake wear particle emissions: A ride-hailing case in Chengdu, China. *Transportation Research Part D: Transport and Environment*, 139, 104541.
- Testi, I., **Wang, A.**, Paul, S., Mora, S., Walker, E., Nyhan, M., ... & Ratti, C. (2024). Big mobility data reveals hyperlocal air pollution exposure disparities in the Bronx, New York. *Nature Cities*, 1(8), 512-521. (Co-first author and corresponding author)
- **Wang, A.**, Weichenthal, S., Lloyd, M., Hong, K., Saxe, S., & Hatzopoulou, M. (2023).

Personal Mobility Choices and Disparities in Carbon Emissions. *Environmental Science & Technology*.

- **Wang, A.**, Tu, R., Xu, J., Zhai, Z., & Hatzopoulou, M. (2022). A novel modal emission modelling approach and its application with on-road emission measurements. *Applied Energy*, 306, 117967.
- **Wang, A.**, Xu, J., Tu, R., Zhang, M., Adams, M., & Hatzopoulou, M. (2021). Near-road air quality modelling that incorporates input variability and model uncertainty. *Environmental Pollution*, 284, 117145.

Section B – Five representative publications beyond the recent five-year period

- **Wang, A.**, Tu, R., Gai, Y., Pereira, L. G., Vaughan, J., Posen, I. D., ... & Hatzopoulou, M. (2020). Capturing uncertainty in emission estimates related to vehicle electrification and implications for metropolitan greenhouse gas emission inventories. *Applied Energy*, 265, 114798.
- **Wang, A.**, Xu, J., Tu, R., Saleh, M., & Hatzopoulou, M. (2020). Potential of machine learning for prediction of traffic related air pollution. *Transportation Research Part D: Transport and Environment*, 88, 102599.
- Gai, Y., **Wang, A.**, Pereira, L., Hatzopoulou, M., & Posen, I. D. (2019). Marginal greenhouse gas emissions of Ontario's electricity system and the implications of electric vehicle charging. *Environmental science & technology*, 53(13), 7903-7912.
- **Wang, A.**, Stogios, C., Gai, Y., Vaughan, J., Ozonder, G., Lee, S., ... & Hatzopoulou, M. (2018). Automated, electric, or both? Investigating the effects of transportation and technology scenarios on metropolitan greenhouse gas emissions. *Sustainable cities and society*, 40, 524-533.
- **Wang, A.**, Fallah-Shorshani, M., Xu, J., & Hatzopoulou, M. (2016). Characterizing near-road air pollution using local-scale emission and dispersion models and validation against in-situ measurements. *Atmospheric Environment*, 142, 452-464.

Honor/Awards:

Outstanding reviewer 2021 for Transportation Research Part D: Transport and Environment (2021-2022)

Mitacs Accelerate Fellowship (2020-2021)

Canadian Automobile Association Graduate Scholarship in Transportation Engineering (2019-2020)

Professor Gerald Steurt Graduate Scholarship in Transportation Engineering (2018-2019)

Community services:

Lead guest editor and editorial board for Computational Urban Science (2023)

Paper handler & member, Transportation Research Board (TRB) of the National Academies

Standing Committee for Air Quality and GHG Mitigation AMS 10 (2022-2023)

Member, The Canadian Urban Environmental Health Research Consortium (CANUE) (2016-present)