

Ran Tu, Ph.D.

Transportation System Modeler, North Central Texas Council of Government, TX, USA

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Research interests: Traffic-Related Environment & Health, Sustainable Transportation

Education

- **PhD** in Transportation, 2016 – 2020
Dept. of Civil and Mineral Engineering, University of Toronto
Supervisor: Marianne Hatzopoulou (marianne.hatzopoulou@utoronto.ca)
Dissertation: Traffic Emission Modelling for Robust Policy Design in Connected and Electric Transportation
- **Master of Science** in Transportation, 2014 – 2016
Dept. of Civil and Environmental Engineering, Virginia Polytechnic Institute and State University
Supervisor: Hesham Rakha (hrakha@vt.edu)
Thesis: Network-wide Assessment of Eco-Cooperative Adaptive Cruise Control Systems on Freeway and Arterial Facilities
- **Bachelor of Engineering** in Transportation, 2010 - 2014
School of Transportation Engineering, Tongji University
Advisor: Chao Yang (tongjiyc@tongji.edu.cn)

Working Experiences

- **Transportation System Modeler**
2025.05-current, Transportation Department, North Central Texas Council of Government, USA
- **Visiting Professor**
2024.09-2025.01, Dept. Chemical Engineering & Applied Chemistry, University of Toronto, Canada
- **Associate Professor**
2020.11-2025.05, School of Transportation, Southeast University, China
- **Postdoctoral Fellow**
2020.04-2020.09, Dept. of Civil and Mineral Engineering, University of Toronto, Canada
- **Research Assistant**
2016.09-2020.04, Dept. of Civil and Mineral Engineering, University of Toronto, Canada

Academic/Industry Services

- **Handling Editor**
2026-current, Transportation Research Record
- **Guest Editor**
2025-current, Transportation Research Part D
- **Editorial Board Member**
2023-current, Transportation Research Part D
- **Standing Member**
2025-current, Transportation Research Board Transportation Energy Data and Technology
2023-2025, Transportation Research Board Air Quality and Greenhouse Gas Mitigation Committee
- **Chief Scientist**
2023-2025, Green Distributor, Suzhou

Awards and Scholarships

1. Best Paper Award, Transportation Research Board Annual Meeting 2025, Air Quality and Greenhouse Gas Mitigation Committee
2. Young Member Spotlight, Transportation Research Board Young Members Council Sustainability and Resilience (2024)
3. Excellent Reviewer of the China Journal of Highway and Transport (2024)
4. Outstanding Reviewer of Transportation Research Part D (2021, 2022, 2023)
5. Young Talent, China Association for Science and Technology (2022)
6. Innovation and Entrepreneurship Talent of Jiangsu Province (2021)
7. Best Dissertation Award 2020, Chinese Overseas Transportation Association (COTA)

Selected Projects

1. Travel Demand Modeling for Residents' Non-Motorized Travel, Texas Department of Transportation (TxDOT)-Supported Project, 2025–2026. **Principal Investigator**
2. Methods for Monitoring and Evaluating Passenger Volumes in Intercity Multimodal Travel under Typical Travel Scenarios, Open Research Project, Key Laboratory of Integrated Transportation Theory, Ministry of Transport, 2023–2024. **Principal Investigator**
3. Decision-Making Model for Eco-Driving Guidance Considering Drivers' Dynamic Cognitive and Behavioral Mechanisms, National Natural Science Foundation of China (NSFC) Young Scientists Fund, 2022–2024. **Principal Investigator**
4. Decision-Making Model for Eco-Driving Guidance Considering Heterogeneity in Drivers' Cognitive and Behavioral Characteristics, Jiangsu Provincial Basic Research Program (Natural Science Foundation) – Young Scientists Fund, 2021–2024. **Principal Investigator**
5. Optimization and Decision-Making for Urban Electric Bus Services Considering Trip and Energy Consumption Uncertainty, China Association for Science and Technology (CAST) Young Think Tank Talent Program, 2022–2023. **Principal Investigator**

6. FAW-Volkswagen–China Environmental Protection Association Automotive Innovation Leadership Program, 2022–2023. **Principal Investigator**
7. Passenger Flow Simulation, Analysis, and Evaluation for Urban Rail Transit Stations, China Power Construction Group East China Investigation and Design Institute Co., Ltd., 2021–2022. **Principal Investigator**
8. Key Technologies for Modifying Driver Behavior toward Low-Emission Driving, Key Project of the Intergovernmental International Science and Technology Innovation Cooperation Program, National Key Research and Development Program of China, 2021–2024. **Co-Investigator**
9. Air Pollution Modeling for the Dallas–Fort Worth Metropolitan Area, Texas Commission on Environmental Quality (TCEQ) Rider 7 Project, 2026–Present. **Co-Investigator**
10. Regional Travel Demand Model for the Dallas–Fort Worth Metropolitan Area, Surface Transportation Block Grant (STBG) Program, 2025–2026. **Co-Investigator**
11. Time-Based Regional Transportation Network Study, Surface Transportation Block Grant (STBG) Program, 2025–2026. **Co-Investigator**
12. Standards Research for Information and Service Systems for the Integration of Urban and Rural Public Transportation, Jiangsu Provincial Department of Transport, 2021–2022. **Co-Investigator**, in collaboration with Jiangsu Nanda Soft Transportation Technology Co., Ltd.
13. Eco-Score: Environmental Evaluation of Driving Operations, Natural Sciences and Engineering Research Council of Canada (NSERC), 2019–2020. **Co-Investigator**, in collaboration with TD Insurance.

Teaching Experiences

- **Transport Management (English, Lecturer)**, Southeast University (Undergrad): course design, material preparations, class involvements, and assessment.
- **Academic Writing (Lecturer)**, Southeast University (Undergrad): course design, material preparations, class involvements, and assessment.
- **Decision Making for Decarbonized Transportation (Lecturer)**, Southeast University (Grad): course design, material preparations, class involvements, and assessment.

Selected Talks

1. “Re-thinking electric bus operation through fleet optimization, scheduling, and passenger incentives” Seminar at North Central Texas Council of Governments, Arlington, Texas, US, Apr 9th, 2025
2. “Insights of Electric Bus Planning, Scheduling, and Operation based on a Suburban case in China” Seminar at Lawrence National Berkeley Lab, Berkeley, California, US, Dec 12th, 2024. Seminar at University of Calgary, Calgary, AB, Canada, Jan 10th, 2025
3. “Influencing Factors, Spatial Distribution, and Mitigation of Light-Duty Vehicle Brake Wear Particle Emissions in the Urban Area” Committee Meeting at the 104th Transportation Research Board Annual Meeting, Washington D.C., US, Jan 8th, 2025

4. “Light-Duty Vehicle Brake Wear Particle Emission Modeling and Spatiotemporal Distribution” Seminar at the SOCAAR (Southern Ontario Center for Atmospheric Aerosol Research), University of Toronto, Toronto, Canada, Dec 4th, 2024.
5. “Re-thinking Electric Bus Operation through Planning, Scheduling, and Passenger Incentives” Seminar at the UT-ITE (The University of Toronto Institute of Transportation Engineers), University of Toronto, Toronto, Canada, Oct 11th, 2024.
6. “Decarbonizing daily traveling from a behavior perspective: building up people’s attitude towards low-carbon traveling recommendations” Lecture at University of Illinois, Chicago, Feb 2nd, 2024.
7. “Elevating the Efficiency of Public Transit – from the Perspectives of Operational Optimization and Carbon Incentives” Lecture at the National Transportation Conference for Young Scholars, Xiamen, Oct 28th, 2023.
8. “Green Road Transportation for Cleaner Air” Lecture at The Hongkong University of Science and Technology, Guangzhou, Apr 14th, 2023.
9. “Low-Emission Transport Strategies with the Trend of Electrification and Automation” Lecture at School of Transportation, Southeast University, November 12th, 2020.
10. “What Happens to On-Road Emissions when Travel Time on a Road Network is Improved Through End-to-End Dynamic Routing for Connected Autonomous Vehicles?” in ADC10 lecture session at 98th Transportation Research Board Annual Meeting, Washington DC, USA, 2019

Selected Publications (Citation 1822, only first/corresponding author papers are listed)

1. Xu, Y., **Tu, R.***, Wu, C., Cheng, L., Wang, X. (2026). Managing regional airports through flight management: Effects on network efficiency and emission reduction. *Research in Transportation Business & Management* (IF 4.8)
2. Xue, S., Pu, Z., & **Tu, R.*** (2026). Reassessing the impact of eco-driving guidance considering the heterogeneity of driver acceptance. *Transportmetrica B: Transport Dynamics*, 14(1), 2623183. (IF 4.2)
3. Qin, T., **Tu, R.***, Wang, A., Wang, J., Li, T., Xu, S., ... & Wang, S. (2026). A citywide spatiotemporal perspective of particulate matter concentration on underground subway platforms. *npj Sustainable Mobility and Transport*, 3(1), 2.
4. Xu, Y., Kang, M., Chen, D., Wu, C., Wang, X., **Tu, R.***, & Yu, W. (2025). Flight departure optimization reduces airport CO2 emissions proved by Beijing-Tianjin-Hebei multiple-airport-region. *Transportation Research Part D: Transport and Environment*, 147, 104920. (IF 7.7)
5. 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. (IF 7.7)
6. Niu, C., Chen, Q., **Tu, R.***, Huang, D., & Ye, Y. (2024). Co-optimizing electric bus dispatching and charging considering limited resources and battery degradation. *Multimodal Transportation*, 3(4), 100165. (IF 5.1)
7. Wang, S., Qin, T., **Tu, R.***, Li, T., Chen, G. I., Green, D. C., ... & Fu, Q. (2024). Indoor air quality in subway microenvironments: Pollutant characteristics, adverse health impacts, and population inequity. *Environment International*, 190, 108873. (IF 9.7)

8. Tu, H., Zhao, L., **Tu, R.***, & Li, H. (2024). The energy-saving effect of early-stage autonomous vehicles: A case study and recommendations in a metropolitan area. *Energy*, 297, 131274. (IF 9.4)
9. Zhang, L., Wei, J., & **Tu, R.***. (2024). Temporal-spatial analysis of transportation CO2 emissions in China: Clustering and policy recommendations. *Heliyon*, 10(2). (IF 3.6)
10. Chen, R., Xu, S., Du, Y., Wu, Y., Zhao, S., **Tu, R.***, & Wu, C. (2024). Carbon Generalized System of Preferences (CGSP) programs: Key design dimensions and attitudes of potential participants. *Case Studies on Transport Policy*, 16, 101205. (IF 3.3)
11. Chen, Q., Niu, C., **Tu, R.***, Li, T., Wang, A., & He, D. (2023). Cost-effective electric bus resource assignment based on optimized charging and decision robustness. *Transportation Research Part D: Transport and Environment*, 118, 103724. (IF 7.7)
12. Xu, H., **Tu, R.***, Li, T., & Chen, H. (2023). Interpretable bus energy consumption model with minimal input variables considering powertrain types. *Transportation Research Part D: Transport and Environment*, 119, 103742. (IF 7.7)
13. Nan, S., **Tu, R.***, Li, T., Sun, J., & Chen, H. (2022). From driving behavior to energy consumption: A novel method to predict the energy consumption of electric bus. *Energy*, 261, 125188. (IF 9.4)
14. **Tu, R.**, Xue, L., Meng, C., Xu, L., Li, T., & Chen, H. (2022). Identifying specifications of in-use vehicles failing the inspection/maintenance emission test. *Transportation Research Part D: Transport and Environment*, 108, 103327. (IF 7.7)
15. **Tu, R.**, Xu, J., Li, T., & Chen, H. (2022). Effective and acceptable eco-driving guidance for human-driving vehicles: A review. *International journal of environmental research and public health*, 19(12), 7310. (IF 3.13)
16. **Tu, R.**, Xu, J., Wang, A., Zhang, M., Zhai, Z., & Hatzopoulou, M. (2022). Real-world emissions and fuel consumption of gasoline and hybrid light duty vehicles under local and regulatory drive cycles. *Science of The Total Environment*, 805, 150407. (IF 8.0)
17. **Tu, R.**, Li, T., Meng, C., Chen, J., Sheng, Z., Xie, Y., ... & Liu, Y. (2021). Real-world emissions of construction mobile machines and comparison to a non-road emission model. *Science of The Total Environment*, 771, 145365. (IF 8.0)
18. **Tu, R.**, Xu, J., Wang, A., Zhai, Z., & Hatzopoulou, M. (2021). Effects of ambient temperature and cold starts on excess NOx emissions in a gasoline direct injection vehicle. *Science of the Total Environment*, 760, 143402. (IF 8.0)
19. **Tu, R.**, Gai, Y. (Jessie), Farooq, B., Posen, D., Hatzopoulou, M. (2020). Electric vehicle charging optimization to minimize marginal greenhouse gas emissions from power generation. *Appl. Energy* 277, 115517. (IF 11)
20. **Tu, R.**, Wang, A., & Hatzopoulou, M. (2019). Improving the accuracy of emission inventories with a machine-learning approach and investigating transferability across cities. *Journal of the Air & Waste Management Association*, 69(11), 1377-1390. (IF 2.52)
21. **Tu, R.**, Alfaseeh, L., Djavadian, S., Farooq, B., & Hatzopoulou, M. (2019). Quantifying the impacts of dynamic control in connected and automated vehicles on greenhouse gas emissions and urban NO2 concentrations. *Transportation Research Part D: Transport and Environment*, 73, 142-151. (IF 7.7)
22. **Tu, R.**, Kamel, I., Abdulhai, B., & Hatzopoulou, M. (2018). Reducing transportation greenhouse gas emissions through the development of policies targeting high-emitting trips. *Transportation Research Record*, 2672(25), 11-20. (IF 2.1)

23. **Tu, R.**, Kamel, I., Wang, A., Abdulhai, B., & Hatzopoulou, M. (2018). Development of a hybrid modelling approach for the generation of an urban on-road transportation emission inventory. *Transportation Research Part D: Transport and Environment*, 62, 604-618. (IF 7.7).

Patents & Software copyrights

1. A method for instantaneous energy consumption estimation of electric buses based on energy recovery status. Invention Patent, Certificate No: 6857118. Inventors: Ran Tu, Hao Xu. Grant date: 2024.04.02
2. Robust Evaluation Method for the Economic Efficiency of Resource Allocation in Urban Pure Electric Bus Systems. Innovation Patent, Certificate No: 7060676. Inventors: Ran Tu, Qiuzi Chen. Grant date: 2024.06.04
3. A method for eco-driving evaluation considering different traffic scenarios. Innovation Patent, Certificate No: 6778072. Inventors: Ran Tu; Xiaofeng Li; Nanfang Zheng; Wenhua Zhang; Shenlingrui Yang; Xuotong Wang; Siyu Jiang. Grant date: 2024.03.12
4. Eco-Driving Behavior Guidance Software Considering Traffic Scenarios. Computer Software Copyright Registration. Certificate No: 14431117. Copyright owner: Southeast University. Applicants: Ran Tu, Shan Xue, Xiaofeng Li

Student Supervision

- **Student award**

First Prize at the 2022 “Fangtian Cup” 2nd Jiangsu Province University Students Energy Conservation and Emission Reduction Social Practice and Technology Competition

- **Graduation & Thesis defense committee**

1. PhD applicant evaluation committee, 2024
2. Master thesis defense committee, 2020, 2024
3. Undergraduate thesis defense committee, 2021-2024

- **Student supervision**

1. Yanfeng Xu, from 2023, Ph.D. Student
2. Suyang Xu, from 2024, Master Student

- **Alumni**

1. Shan Xue, Master of Engineering (graduate in 2026), accepted by the Ph.D. program at Northwestern University, USA
2. Qiuzi Chen, Master of Engineering (graduate in 2025), accepted by the Ph.D. program at the EPFL
3. Yiming Wu, Bachelor of Engineering (graduate in 2024), accepted by the Master’s program at the National University of Singapore

4. Yihe Chen, Bachelor of Engineering (graduate in 2024), accepted by the Master's program at the National University of Singapore
5. Yaofeng Yu, Bachelor of Engineer (graduate in 2024), accepted by the Master's program at Southeast University
6. Chenming Niu, Bachelor of Engineering (graduate in 2023), accepted by the Master's program at the University of California, Berkeley
7. Shan Xue, Bachelor of Engineer (graduate in 2023), accepted by the Master's program at Southeast University
8. Shiyu Zhao, Bachelor of Engineering (graduate in 2023), accepted by the Master's program at the University of British Columbia
9. Haoran Chen, Bachelor of Engineer (graduate in 2022)
10. Qiuzi Chen, Bachelor of Engineer (graduate in 2022), accepted by the Master's program at Southeast University
11. Yifei Su, Bachelor of Engineering (graduate in 2021), accepted by the Master's program at the University of Hong Kong