Curriculum Vitae

Ran Tu

Affiliation: Department of Civil Engineering, University of Toronto

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Personal Webpage: individual.utoronto.ca/turansocool

• Education

– ***PhD Candidate in Transportation (GPA: 3.95/4)*** 2016 – Current

Dept. of Civil and Mineral Engineering, University of Toronto
Supervisor: Marianne Hatzopoulou (marianne.hatzopoulou@utoronto.ca)

– ***Master of Science in Transportation (GPA: 3.8/4)*** 2014 – 2016

Dept. of Civil and Environmental Engineering, Virginia Polytechnic Institute and State University
Supervisor: Hesham Rakha (hrakha@vt.edu)

– ***Exchange Student in Civil Engineering*** 2013 – 2014

Dept. of Civil Engineering, École polytechnique fédérale de Lausanne
Advisor: Geroliminis Nikolaos (nikolas.geroliminis@epfl.ch)

– ***Bachelor of Engineering in Transportation (GPA: 86/100)*** 2010 - 2014

School of Transportation Engineering, Tongji University
Advisor: Chao Yang (tongjiyc@tongji.edu.cn)

• Awards and Scholarships

2018: Dr. Mazen Hassounah Graduate Scholarship in Mass Events Transportation And Crowd Management

2017: Dr. Mazen Hassounah Graduate Scholarship in Mass Events Transportation And Crowd Management

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2015: 2nd prize for Pavement Management Challenge at ICMPA9 (9th International Conference on Managing Pavement Assets)

2013: National Scholarship (CSC) for exchange student

2013: 3rd prize, Mathematical Modelling Competition of Tongji University

2013: 1st prize, National Transportation Technology Competition for University Student

2011: Scholarship of Tongji University

• Work Experiences

– ***Teaching Assistant***

- Urban Activity, Air Pollution and Health, University of Toronto (2018 – 2019 Winter)
- Engineering Mathematics I, University of Toronto (2018 – 2019 Fall)
- Modelling Transport Emissions, University of Toronto (2017 – 2018 Winter)
- Engineering Mathematics I, University of Toronto (2017 – 2018 Fall)
- Transport Planning, University of Toronto (2016 – 2017 Fall)
- Introduction to Transportation Engineering, Virginia Tech (2014 – 2015 Spring)

- ***Research Assistant***
  - 2016-current, Dept. of Civil and Mineral Engineering, University of Toronto
  - Oct 2014-May 2016, Dept. of Civil and Environmental Engineering, Virginia Tech
- ***Executive Committee***
  - 2017-current: Institute of Transportation Engineering (ITE) University of Toronto Student Chapter (UT-ITE) executive member and webmaster
- ***Internship***
  - Jul 2013-Aug 2013, Mar 2014-May 2014: Architecture Design & Research Institute of Tongji University Group
    Responsibility: Traffic impact evaluation; Traffic data collection; Signal design

• Selected Projects

- ***Active Projects***
  - Evaluation and Validation of the Impacts of Driving Assistant System on Traffic Emissions using Portable Emission Measurement System (2019 – Current)
  - Machine Learning based Marginal Influence of Eco-Routing Algorithm on Urban Air Quality (2019 – Current)
  - Time-based Battery Electric Vehicle (BEV) Charging Plan Optimization for Life-Cycle GHG emissions minimization (2018 – Current)
  - Air Quality Assessment for the Distributed Routing Control and Connected and Automated Vehicles in Urban Network (2018 – Current)
- ***Completed Projects***
  - Investigation of Emission Uncertainties for On-Road Light-Duty Vehicles (2017 – 2018)
  - Improving Accuracy of Traffic GHG emissions Modelling in Meso Scale: CLustEr-based Validated Emission Re-Calculation (CLEVER) (2016 – 2018)
  - Toronto 2030 Platform: GHG and Energy Consumption Estimation for Toronto 2030 District (2017 – 2018)
  - Zonal-based Urban Traffic Emission Classification and Policy Exploration for GHG reduction (2016 – 2017)
  - Network-wide Traffic Emission Evaluation of Eco-Cooperative Adaptive Cruise Control in a Congested Suburban Network (2014 – 2016)
  - Developing Household Survey App Based on Android (2012 – 2013)
  - Analysis of Relationship Between Cross-Sea Bridge and Shipment in Zhoushan, Zhejiang Province (2012 – 2013)

• Journal Publications

Tu, Ran, An Wang, and Marianne Hatzopoulou. 2019. "*Improving the Accuracy of Regional Emission Inventories Through a Machine-Learning Based Emission Modelling Approach and Investigating Its Transferability across Cities*" Under Review of Transportation Research Part D: Transport and Environment.

Tu Ran, Lama Alfaseeh, Shadi Djavadian, Bilal Farooq, Marianne Hatzopoulou. 2019. "*Quantifying the Impacts of Dynamic Control in Connected and Automated Vehicles on Greenhouse Gas Emissions and Urban Air Quality*". Under Review of Transportation Research Part D: Transport and Environment.

Tu, Ran, Islam Kamel, Baher Abdulhai, and Marianne Hatzopoulou. "*Reducing Transportation Greenhouse Gas Emissions Through the Development of Policies Targeting High-Emitting Trips*." Transportation Research Record, no. April (2018). doi:10.1177/0361198118755714.

Xu, Junshi, Marc Saleh, An Wang, **Ran Tu**, Marianne Hatzopoulou. 2019. "*Embedding local driving behaviour in regional emission models to increase the robustness of on-road emission inventories*." Under Review of Transportation Research Part D: Transport and Environment.

Tu, Ran, Islam Kamel, An Wang, Baher Abdulhai, and Marianne Hatzopoulou. 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. Elsevier: 604–18. doi:10.1016/j.trd.2018.04.011.

Xu, Junshi, Jonathan Wang, Nathan Hilker, Masoud Fallah-Shorshani, Marc Saleh, **Ran Tu**, An Wang et al. 2018. "*Comparing emission rates derived from a model with a plume-based approach and quantifying the contribution of vehicle classes to on-road emissions and air quality*." Journal of the Air & Waste Management Association. 68 (11): 1159-1174. https://doi.org/10.1080/10962247.2018.1484395.

Xu Junshi, Nathan Hilker, Matheus Turchet, Mohamad-Kenan Al-Rijleh, **Ran Tu**, An Wang, Masoud Fallahshorshani, Greg Evans, and Marianne Hatzopoulou. "*Contrasting the direct use of data from traffic radars and video-cameras with traffic simulation in the estimation of road emissions and PM hotspot analysis.*" Transportation Research Part D: Transport and Environment 62 (2018): 90-101.

• Conference Papers

Tu Ran, Lama Alfaseeh, Shadi Djavadian, Bilal Farooq, Marianne Hatzopoulou. "*Quantifying the Air Quality and Energy Consumption Impacts of Connected and Autonomous Vehicles in an Urban Network*". Abstract accepted by the Air and Waste Management Association's the 112th Annual Conference & Exhibition (ACE), Quebec City, QC, Canada, 2019

Tu Ran, Lama Alfaseeh, Shadi Djavadian, Marc Saleh, Bilal Farooq, Marianne Hatzopoulou. (2018). "*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?".* Paper presented in 98th Transportation Research Board Annual Meeting, Washington DC, USA, 2019

Tu Ran, An Wang, Marianne Hatzopoulou. (2018). "*Improving the Spatial Accuracy of Regional Emission Inventories and Investigating the Transferability of Emission Modeling Approaches across Different Cities"*. Paper presented in 98th Transportation Research Board Annual Meeting, Washington DC, USA, 2019

Wang An, **Ran Tu**, Yijun (Jessie) Gai, I. Daniel Posen, Marianne Hatzopoulou. (2018) "*Capturing the Uncertainties in Regional Emission Estimates Related to Vehicle Electrification Can Improve the Robustness of Decision-making"*. Paper presented in the 98th Transportation Research Board Annual Meeting, Washington DC, USA, 2019

Xu Junshi., Marc Saleh, An Wang, **Ran Tu**, Marianne Hatzopoulou. 2019. "*Towards a Canadian Version of the MOVES Model: Capturing Driving Behaviours in Greater Toronto and Comparison against US Defaults*". Paper presented in the 98th Transportation Research Board Annual Meeting, Washington DC, USA, 2019

Tu Ran, Marianne Hatzopoulou. (2018). "*Reconstructing Urban Built Environments for Greener Transportation Implementing Superblocks in Downtown Toronto*". Abstract accepted by 65th Annual North American Meetings of the Regional Science Association International. San Antonio, USA. November 7-10, 2018

Xu Junshi, **Ran Tu**, An Wang, Laura Minet, Christos Stogios, Marc Saleh, Nathan Hilker, Jonathan Wang, Greg Evans, and Marianne Hatzopoulou. "*Quantifying the Contribution of Diesel Vehicles to Traffic Emissions Along an Urban Corridor: Implications for Cleaner Public Transit*". Paper presented in the 97th TRB Annual Meeting. Washington DC, USA, Jan 7-11, 2018

Stogios Christos, Marc Saleh, Arman Ganji, **Ran Tu**, Junshi Xu, Matthew Roorda, Marianne Hatzopoulou. (2018). "*Determining the Effects of Automated Vehicle Driving Behavior on Vehicle Emissions and Performance of an Urban Corridor"*. Paper presented in the 97th TRB Annual Meeting. Washington DC, USA, Jan 7-11, 2018

Xu Junshi, Jonathan Wang, Nathan Hilker, Masoud Fallah Shorshani, **Ran Tu**, An Wang, Laura Minet, Christos Stogios, Greg Evans, Marianne Hatzopoulou. (2018). "*Evaluation of MOVES Emission Factors Against Data from On-Road Measurements in a Large Canadian City"*. Paper presented in the 97th TRB Annual Meeting. Washington DC, USA, Jan 7-11, 2018

Tu Ran, Jianhe Du, Hesham Rakha. (2017). "*Network-wide Assessment of Eco-Cooperative Adaptive Cruise Control Systems on Freeway and Arterial Facilities"*. Paper presented in the 96th TRB Annual Meeting. Washington DC, USA, Jan 8-12, 2017

Ahmed Istiak, Shivesh Shrestha, **Ran Tu**, Qichao Wang, Nazana Weeks. (2015). "*Analysis and Visualization of Pavement Management Data"*. Paper presented in the 9th International Conference on Managing Pavement Asset. Washington DC, USA, May 18-21, 2015

Zhu Rongrong, Chao Yang, **Ran Tu**. (2015). "*Traveler Behavior Analysis Based on Smartphone Survey Data"*. Paper presented in the 11th National Young Academic Conference for Transportation Field. Lanzhou, Gansu, China, Sep 17-20, 2015

• Supervision and Training

Christos Stogios, for his Master of Applied Science research "Investigating the Effects of Automated Vehicle Driving Operations on Road Emissions and Traffic Performance", University of Toronto, 2016 – 2018

Samuel Abiola, for his Master of Engineering research on the Air Quality Impact of King Street Pilot Project in Downtown Toronto, University of Toronto, 2018 – 2019

May Lim, for her Master of Science research "Considerations for a Low Emission Zone in Toronto's Financial District to Reduce Transportation Greenhouse Gas Emissions", University of Toronto, 2019

• Skills

Programming and Data Analysis: MATLAB, Python, SQL, R, SPSS, JMP

Simulation: AIMSUN, VISSIM, EMME, VISUM, Synchro, INTEGRATION

Others: ArcGIS, AutoCAD