

# Yongqi Dong

<https://yongqidong.github.io/>

Ph.D. Researcher | Delft University of Technology

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## EDUCATIONAL BACKGROUND

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Ph.D. Researcher, Department of Transport and Planning, **Delft University of Technology, TU Delft** Dec.2019-Present

**Thesis:** Data-Driven Research for Expanding Automated Vehicles Operational Design Domain in Mixed Traffic  
(*Safe, Efficient, and Socially Compliant Autonomous Driving*)

Master of Control Science and Engineering, Department of Automation, **Tsinghua University** Sep.2014-Jul.2017

**Minor:** Master Project For Improving Ability in *Big Data*

**Thesis:** Data-Driven Analysis on Group Behaviors of Taxi Drivers and Ridesourcing Drivers  
*Nominated for Tsinghua University Outstanding Master Thesis Dissertation*

Bachelor of Telecommunication Engineering Sep.2010-Jul.2014

School of Electronic and Information Engineering, **Beijing Jiaotong University**

**GPA: 91.5/100 | Rank: 1/202** | Postgraduate Recommendation to Tsinghua University without examination

**Thesis:** Design of vehicle-mounted data acquisition and communication unit for the WMN based locomotive remote control  
*Outstanding Undergraduate Thesis*

## PUBLICATIONS & PATENTS

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- **Dong, Y.**, Patil, S., van Arem, B., & Farah, H. (2022). A Hybrid Spatial-temporal Deep Learning Architecture for Lane Detection. *Computer-Aided Civil and Infrastructure Engineering*, 1–20. <https://doi.org/10.1111/mice.12829> [Q1, IF:11.775, SJR:2.773]
- **Dong, Y.**, Farah, H., & van Arem, B. (2022). Towards Developing Socially-Compliant Automated Vehicles: State of the Practice, Experts Expectations, and a Conceptual Framework (**Accepted** by the 4th Symposium on Management of Future Motorway and Urban Traffic Systems 2022 (MFTS2022), to be submitted to *Journal of Transport Reviews*).
- Li, R.<sup>#</sup>, **Dong, Y.**<sup>\*,</sup> Robust Lane Detection through Self Pre-training with Masked Sequential Autoencoders and Fine-tuning with Customized PolyLoss (Joint first author and corresponding author, *Journal of IEEE Transactions on Intelligent Transportation Systems*, **Under Review**).
- Patil, S.<sup>#</sup>, **Dong, Y.**<sup>\*,</sup> Farah, H., & Hellendoorn, J. Sequential Neural Network Model with Spatial-Temporal Attention Mechanism for Robust Lane Detection Using Multi Continuous Image Frames (Joint first author and corresponding author, **Submitted** to *Journal of Transportation Research Part C: Emerging Technologies*)  
<http://dx.doi.org/10.2139/ssrn.4273506>.
- **Dong, Y.**, van Arem, B., Farah, H. (2023). Safe, Efficient, and Social Compliant Autonomous Driving based on Deep Reinforcement Learning (In preparation to be submitted to *Journal of IEEE Transactions on Vehicular Technology*)
- Lingam, N., de Winter, J., **Dong, Y.**, Tsapi, A., van Arem, B., Farah, H. (2022). eHMI on the vehicle or just a traffic light? A driving simulator study (*Journal of Applied Ergonomics*, **Under Review**).  
<https://doi.org/10.13140/RG.2.2.12469.35042>

- **Dong, Y.\***, Chen, K., Peng, Y., Ma, Z. (2022). Comparative Study on Supervised versus Semi-supervised Machine Learning for Anomaly Detection of In-vehicle CAN Network. 2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC), 2022, pp. 2914-2919 <https://doi.org/10.1109/ITSC55140.2022.9922235>
- Lu, X. #, **Dong, Y.#,\***, Li, R., Song, W. (2023). Intelligent Anomaly Detection for Lane Rendering Using Transformer with Self-Supervised Pre-Training and Customized Fine-Tuning (**Accepted** by the 23<sup>rd</sup> COTA International Conference of Transportation Professionals, CICTP 2023).
- Chen, K. #, **Dong, Y. #,\*** (2023). Hierarchical Extreme Learning Machine based Semi-supervised Learning for Fault Detection in Hydraulic Condition Monitoring System (Joint first author and corresponding author, to be submitted to *Journal of Information Sciences*)
- Zhang, L.#, **Dong, Y. #,\***. (2023). Social-aware Planning and Control for Automated Vehicles Driving through Roundabout Based on Driving Risk Field and Model Predictive Contouring Control (Co-first author, Corresponding author, to be submitted for IEEE Intelligent Vehicles Symposium 2023, IV'23)
- Yang, C., **Dong, Y.\***, Farah, H. (2023). Robust Lane Detection using Image Sequential Attention Based Transformer Model with Elaborated Positional Encoding (Corresponding author, in preparation for *Journal of IEEE Transactions on Intelligent Transportation Systems*)
- **Dong, Y.#,\***, Li, R.#, Farah, H. (2023). Robust Lane Detection through Self Pre-training with Masked Sequential Autoencoders and Fine-tuning with Customized PolyLoss (**Accepted** by the Transportation Research Board (TRB) 102<sup>nd</sup> annual meeting TRB 2023).
- Zhang, Y., **Dong, Y.\***, (2023). Optimization of coordinated flow restriction and skip-stopping schemes for urban rail stations considering platform carrying capacity (**Accepted** by the Transportation Research Board (TRB) 102<sup>nd</sup> annual meeting TRB 2023, **Under Review** by IEEE Open Journal of Intelligent Transportation Systems).  
<https://doi.org/10.36227/techrxiv.21779894.v1>
- **Dong, Y.#,\***, Patil, S.#, Farah, H, & Hellendoorn, J. (2023). Sequential Neural Network Model with Spatial-Temporal Attention Mechanism for Robust Lane Detection Using Multi Continuous Image Frames (**Accepted** by the Transportation Research Board (TRB) 102<sup>nd</sup> annual meeting TRB 2023).
- Liu, W., Zhang, X., **Dong, Y.**, Xu, L. (2022). A Unified Model Predictive Control Method of Automated Vehicles for Lane Changing and Lane Keeping Maneuvers (**Submitted** to *Journal of Vehicle System Dynamics*)
- Farah, H., Postigo, I., Reddy, N., **Dong, Y.**, Rydergren, C., Raju, N. and Olstam, J. (2022). Aspects to Consider for Modeling Automated Driving in Microscopic Traffic Simulations: State of the Practice and Research Needs. *IEEE Transactions on Intelligent Transportation Systems*, 2022, <https://doi.org/10.1109/TITS.2022.3200176>
- Raju, N., Schakel, W., Reddy, N., **Dong, Y.**, Farah, H. (2022). Car-Following Properties of a Commercial Adaptive Cruise Control System- A Pilot Field Test. *Transportation Research Record: Journal of the Transportation Research Board*. <https://doi.org/10.1177/03611981221077085>
- van der Kooij, E., **Dong, Y.**, van Arem, B., Tsap, A., Farah, H. (2021). Assessment of Lane Detection Performance based on Different Lane Marking Properties under Optimal and Adverse Weather and Lighting (Work paper).
- **Dong, Y.**, Wang, Sh., Li, L., Zhang, Z. (2018). An Empirical Study on Travel Patterns of Internet Based Ride-Sharing, *Transportation Research Part C: Emerging Technologies* 86: 1-22. <https://doi.org/10.1016/j.trc.2017.10.022>  
[Highly cited; Q1, IF:9.022, SJR:3.211]
- **Dong, Y.**, Yang, Z., Yue, Y., Pei, X., & Zhang, Z. (2018). Revealing Travel Patterns of Sharing-bikes in a Spatial-temporal Manner using Non-negative Matrix Factorization Method. In *CICTP 2018: Intelligence,*

*Connectivity, and Mobility* (pp. 1665-1674). Reston, VA: American Society of Civil Engineers.

<https://doi.org/10.1061/9780784481523.165>

- Yue, Y., Pei, X., Yang, Z., **Dong, Y.**, & Yao, D. (2018). A Trip Building and Chaining Methodology Using Traffic Surveillance Data. In *CICTP 2018: Intelligence, Connectivity, and Mobility* (pp. 2254-2262). Reston, VA: American Society of Civil Engineers. <https://doi.org/10.1061/9780784481523.224>
- **Dong, Y.**, Zhang, Z., Fu, R., Xie, N. (2016) Revealing New York Taxi Drivers' Operation Patterns Focusing on the Revenue Aspect. (2016) In *12th World Congress on Intelligent Control and Automation (WCICA)*, (pp. 1052-1057). IEEE. <https://doi.org/10.1109/WCICA.2016.7578771>
- **Dong, Y.**, Wang, Sh., Li, L., (2017) Uncovering Influence of On-Demand Ride Service on Emission Reduction and Energy Conservation through PHEM Model. [work paper].
- **Dong, Y.**, Ruan, H., Cai, T., Peng, J., and Wang, W. (2013). Using LED to Demonstrate the Composition of Simple Harmonic Motions and Five Polarization States of Light. *Physics Experimentation* 11:45-48.
- [The Age of Smart Integrated Transportation: Huawei's Practice in the Digital Transformation of Transportation Industry](#) [M]. *Publishing House of Electronics Industry*. [Involved as Reviewer, and Expert Editor for Preface, Chapter 1 & 13]
- **Chinese Invention Patent:** Intelligent Demonstration Instrument of Simple Harmonic Oscillation Composition and Five Polarization States of Light, Application ID: 201310123700.5, Date: 2013.08.07, Publication Patent Number CN103236211B, Publication Patent Date: 2016.07.06
- **European Patent:** Automated lane detection through self pre-training with masked sequential auto-encoders, fine-tuning with customised PolyLoss, and post-processing with clustering and curve fitting (IDF OCT-22-060, submitted & **filed**)
- **Software copyright:** Spatial-Temporal Attention Integrated Sequential Neural Network Model for Vision-based Robust Lane Detection Using Multi Continuous Image Frames (to be submitted)

## RESEARCH EXPERIENCE

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### 1. Traffic and Transportation Safety Lab | Department of Transport and Planning | TU Delft Dec.2019-Present

- **Data-driven research for expanding Automated Vehicles' Operational Design Domain in mixed traffic** (part of [SAMEN](#) project)
  - Developed a hybrid sequence-to-one model for lane detection in extremely-hard driving scenes
  - Incorporated spatio-temporal attention for automated vehicles' perception
  - Reliable data-driven algorithms are being developed for peculiarities identification, recognition, and prediction
  - State-of-the-art Deep Reinforcement Learning (DRL) models are being explored to develop reliable models for AVs' driving policies under selected manoeuvres involving both longitudinal and lateral control
  - Gaze behaviour of road users when interacting with an automated vehicle at an intersection
  - **Research outputs:**
    - A Hybrid Spatial-temporal Deep Learning Architecture for Lane Detection (Published on [CACIE](#))
    - Aspects to Consider for Modeling Automated Driving in Microscopic Traffic Simulations: State of the Practice and Research Needs. (Published on [IEEE Transactions on ITS](#))
    - Car-Following Properties of a Commercial Adaptive Cruise Control System- A Pilot Field Test. (Published on [Transportation Research Record: Journal of the Transportation Research Board](#))

- Robust Lane Detection through Self Pre-training with Masked Sequential Autoencoders and Fine-tuning with Customized PolyLoss (Under review by *IEEE Transactions on ITS*, Accepted by TRB 2023 for presentation)
- Sequential Neural Network Model with Spatial-Temporal Attention Mechanism for Robust Lane Detection Using Multi Continuous Image Frames (Under review, Accepted by TRB 2023 for presentation)
- Towards Developing Socially-Compliant Automated Vehicles: State of the Practice, Experts Expectations, and a Conceptual Framework (Accepted by MFTS 2022, to be submitted to Journal of Transport Reviews)
- Intelligent Anomaly Detection for Lane Rendering Using Transformer with Self-Supervised Pre-Training and Customized Fine-Tuning (Submitted to the *Journal of Intelligent and Connected Vehicles*, and accepted by CICTP 2023).
- Robust Lane Detection using Image Sequential Attention Based Transformer Model with Elaborated Positional Encoding (In preparation)
- Safe, Efficient, and Social Compliant Autonomous Driving based on Deep Reinforcement Learning (In preparation)
- European Patent: Robust lane detection method through self pre-training with masked sequential auto-encoders and fine-tuning with customised PolyLoss (IDF OCT-22-060, submitted & filed, 11 Nov 2022)

## 2. Waterloo Artificial Intelligence Institute | Faculty of Engineering | University of Waterloo May.2018-Sep.2019

### ➤ Applied Machine Learning, Artificial Intelligence, and Big Data Research

- The 2018 Railroad Problem Solving Contest: Use CNN-LSTM-Dense Concatenated model to forecast train delays
- A Deep Learning Framework for Traffic Forecasting: Exploring GCN joint with LSTM to predict traffic flow
- Data-driven anomaly/fraud detection (Unsupervised): Auto-Encoder, Hierarchical Extreme Learning Machines
- Kaggle Competition: Employ LSTM, LightGBM and XGBoost models to predict stock movements with news data
- Deep reinforcement learning in traffic control: DQN, A3C, and PPO methods
- Real-time Road Surface Condition Monitoring: Adopt Convolutional Neural Network to RSC image classification
- Optimized dynamic dispatching and operation algorithm for on-demand shared mobility by deep learning

## 3. Singapore-MIT Alliance for Research and Technology (SMART) Aug.2016-Sep.2016

### Future Urban Mobility (FM) IRG | Project: *SimMobility* | Topic: Taxi Roaming

Advisor: Professor [Moshe BEN-AKIVA](#), Postdoctoral Associate Bat-hen NAHMIAS-BIRAN

### ➤ Constructing model tackling taxi roaming (taxi service) problem, to be embedded into *SimMobility* platform

- Proposed one advisable solution of cruising along hotspots through a cell-based logit-opportunity model improved by data-driven method
- Participated in building the architecture of the final model embedded in *SimMobility*

## 4. Intelligent Transportation Laboratory, Tsinghua National Laboratory for Information Science and Technology (TNList) | Advisor: Professor Zuo Zhang and Li Li (*IEEE Fellow*) Sep.2014-May.2018

*Transportation Research based on machine learning and data-driven methods*

### ➤ Revealing New York taxi drivers' operation patterns focusing on revenue

- Developed a method for classifying drivers into 3 groups based on their revenue: top, ordinary, low earner
- Excavated the population operation patterns of different taxi driver groups through big data analytics

- **Influence of on-demand ridesourcing versus traditional taxi based on machine learning and big data analytics**
    - Uncovered the differences between taxi service and ridesourcing using big data analyzing and clustering methods
    - Applied non-negative matrix factorization (NMF) to obtain basis patterns of Taxi, Hitch and Express service
  - **Influence of on-demand ridesourcing on vehicle emissions**
    - Applied big data analytics and *PHEM* model to demonstrate how ridesourcing reduced total vehicle emissions
  - **Fundamental research on intelligent parking guidance and recommendations based on machine learning**
    - Forecast models of travel time to parking lots (*Random Forest*); Guidance and optimization models for parking
    - Personalized recommendation research on parking (Collaborative Filtering and Content-based algorithm)
  - **Study on key technology in Intelligent Vehicle Infrastructure Cooperative Systems (IVICS) (863 Program)**
    - Contributed to the design report of basic technical framework and the overall demonstration of IVICS in China
- 5. Design of vehicle-mounted data acquisition and communication unit for the WMN-based locomotive remote control system** Jun.2013-Jun.2014
- Designed basic hardware circuits, software, and algorithms to accomplish analog and digital signal acquisition
  - Applied PID control algorithm to control the locomotive's movement
  - Commissioned and implemented the CAN bus protocol and Wireless Mesh Network communication
- 6. The Freescale Cup College Students Intelligent Car Race: Intelligent car that can follow specific trajectories based on image acquisition and processing, pattern recognition, and PID controller** Jun.2012-Jun.2013
- **Hardware Aspect:** Designed the signal acquisition circuit as well as the core control circuit based on MC9S12XS256
  - **Software Aspect:** Designed a specific control strategy and algorithm for the intelligent car to follow a given trajectory
  - **Actuator:** Designed specific steering linkage and applied two different PID algorithms to control diversion and speed
- 7. National Innovation Project for College Student: Design of a system to demonstrate the composition of the simple harmonic motions and five polarization states of light by using LEDs** May.2012- May.2013
- Designed a system, including the circuits hardware (*Altium Designer*) and control software (C), for the demonstration
  - Participated in the "Challenge Cup" Entrepreneurship Design Contest in Beijing and won the Bronze award

## HONORS & AWARDS

Erasmus + mobility Grants (Twice)	National Scholarship (Top 1%)	Excellent League member
IEEE ITSS Young Professionals Travelling Fellowship	Second-Class Merit Scholarship for Masters Tsinghua University	
Outstanding College Graduates of Beijing (Top 1%)	First-Class Academic Fellowship (Top 1%, Twice)	
First Class Tsinghua University RONG Scholarship	Second-Class Academic Fellowship (Top 3%, Once)	
School-level Merit Student (Four times)	Second prize of Innovation Awards by School of Science	
➤ <b>Selected Contest Awards (More than 10 awards are provincial level or above)</b>		
Honourable Mention in 2013 Interdisciplinary Contest in Modeling		
Second Prize in the 2013 Undergraduate Electronic Design Contest in Beijing		
Second Prize in the 2012 Undergraduate Electronic Design Contest in Beijing		
Second Prize in the Physical Experiment Competition in Beijing		
Bronze award in "Challenge Cup" Entrepreneurship Design Contest in Beijing		
First Prize in Beijing Jiaotong University "Challenge Cup" Entrepreneurship Design Contest		
First Prize in Freescale Cup University Students Intelligent Car Race (Rank 2 <sup>nd</sup> )		

## THESIS SUPERVISION

<b>Lanxin Zhang</b>   Master of Science in Civil Engineering–Transport and Planning	Oct.2022- <i>Ongoing</i>
Thesis title: Semi-supervised Machine Learning for Abnormal Driving Behaviour Detection	
<b>Henan Yuan</b>   Bachelor in Traffic and Transportation, BJTU&TUDelft TTE	Oct.2022- <i>Ongoing</i>
Thesis title: Deep Reinforcement Learning for Driving through Roundabouts	
<b>Mathijs den Otter</b>   Master of Science in Civil Engineering–Transport and Planning	Sep.2022- <i>Ongoing</i>
Thesis title: Effects of improved lane markings on Lane Keeping Assistance systems and human detection	
<b>Shiva Nischal Lingam</b>   Master of Science in Civil Engineering–Transport and Planning	Jan.2021-Nov.2021
Thesis title: Effects of External Human Machine Interfaces on Automated Vehicles' Communicative Interactions With Human Drivers (Cum Laude)   Won 2 <sup>nd</sup> <a href="#">Cuperusprijs prieze of KIVI</a>	
<b>Sandeep Patil</b>   Master of Science in Mechanical Engineering (Vehicular Engineering)	Oct.2020-Aug.2021
Thesis title: Lane Detection using SpatioTemporal Attention	
<b>Eline van der Kooij</b>   Master of Science in Transport, Infrastructure & Logistics	Jul.2020-May.2021
Thesis title: Lane Detection using SpatioTemporal Attention	
<b>Sanny Toonen</b>   Bachelor of Science in Civil Engineering–Transport and Planning	Jul.2020-May.2021
Thesis title: Lane recognition for automated vehicles	

## TALKS & PRESENTATIONS

<b>AI Applications in Transportation Planning</b>   TRB 2023, Washington D.C., USA	Jan.11.2023
Presentation topics: (1) Robust Lane Detection through Self Pre-training with Masked Sequential Autoencoders and Fine-tuning with Customized PolyLoss (2) Sequential Neural Network Model with Spatial-Temporal Attention Mechanism for Robust Lane Detection Using Multi Continuous Image Frames	
<b>Research into Urban Rail Transit Operations and Design</b>   TRB 2023, Washington D.C., USA	Jan.11.2023
Presentation topic: Optimization of coordinated flow restriction and skip-stopping schemes for urban rail stations considering platform carrying capacity	
<b>Connected and Automated Vehicles</b>   MFTS 2022, Dresden, Germany	Dec.01.2022
Presentation topic: Towards Developing Socially-Compliant Automated Vehicles: State of the Practice, Experts Expectations, and a Conceptual Framework	
<b>Automated mobility</b>   IEEE ITSS Young Professionals Fellowship Symposium, Chania, Greece	Nov.25.2022
Presentation topic: Multi-goal proactive traffic management for mixed traffic of automated vehicles (AVs) and human-driven vehicles (HDVs) using explainable physics-informed Artificial Intelligence	
<b>AI, Security, Privacy and Safety Systems in ITS Applications</b>   ITSC2022, Macow, China	Oct.08.2022
Presentation topic: Comparative Study on Supervised vs Semi-supervised ML for Anomaly Detection of CAN Network	
<b>Research on AI and Advancing Computing Applications</b>   TRB 2022, Washington D.C., USA	Jan.12.2022
Presentation topic: A Hybrid Spatial-temporal Sequence-to-one Neural Network Model for Lane Detection	
<b>Challenges of Automated Vehicles and Traffic</b>   University of Győr, Hungary	May.28.2021
Talk topic: Deep learning for automated vehicles' operational design domain: problems, challenges, and case studies	
<b>SAMEN User Committee Annual Meeting</b>   Dutch Research Council (NWO), Delft, Netherlands	Jan.28.2021
Talk topic: Data-driven research for automated vehicles' operational design domain: case study on perception	



**Intelligence, Connectivity, and Mobility** | COTA CICTP 2018, Tsinghua University, China Jul.07.2018  
 Presentation topic: Revealing travel patterns of sharing-bikes in a spatial-temporal manner using the NFM method

**World Congress on Intelligent Control and Automation** | IEEE WCICA 2016, Guilin, China Jun.12.2016  
 Presentation topic: Revealing New York Taxi Drivers' Operation Patterns Focusing on the Revenue Aspect

## TEACHING ACTIVITIES

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**Project supervisor, Instructor** | EEMCS, TU Delft Nov.2022-Apr.2023  
 Course: [Capstone Applied AI Project 2022-2023 T13150TU](#)

**Taching Assistant, Instructor** | TU Delft and BJTU joint bachelor program Mar.2022  
 Course: Advanced Lecture "Trends in Transportation" 2022

**Lecturer** | DakeOffer online Platform Mar.2020-Jun.2020 & Nov.2020-Jan.2021  
 Course: Introduction to Big Data and Artificial Intelligence: Fundamental and Practice

**Teaching Assistant** | Transport and Planning, TU Delft Apr.2020-Aug.2020 & Apr.2021-Aug.2021  
 Course: CIE5805 – Intelligent Vehicles for Safe and Efficient Traffic

**Teaching Assistant** | Department of Automation, Tsinghua University Sep.2016-Jan.2017  
 Course: Data Ethics

**Teaching and Lab Assistant** | Electrical and Electronic Lab Center, Tsinghua University Mar.2016-Jul.2016  
 Course: Advanced Labs in Electronic Technology

**Teaching and Lab Assistant** | Electrical and Electronic Lab Center, Tsinghua University Mar.2015-Jul.2015  
 Course: Fundamentals of Electronics Power Technology

**RSI Tutor | Center for Excellence in Education, USA** Jul.2017-Aug.2017  
 Research writing and presentation tutor for 2017 Research Science Institute Program at Tsinghua University

**Undergraduate Counselor** (Class 2012) | School of EIE, Beijing Jiaotong University Jul.2012- Jul.2014

## PROFESSIONAL SERVICES & EXPERIENCE

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**Workshop Organizer (Main)** | IEEE Intelligent Vehicles Symposium (IV 2023), Anchorage, USA Jun.04.2023  
 Workshop title: Development of socially-compliant driving behaviour for automated vehicles to enhance safety and efficiency in mixed traffic vehicles symposium

### Ad-hoc Reviewer Services

#### *Journals*

- ✦ IEEE Transactions on Intelligent Transportation Systems
- ✦ Journal of Advanced Transportation
- ✦ IEEE Open Journal of Intelligent Transportation Systems
- ✦ International Journal of Human-Computer Interaction
- ✦ Transportation Letters: the International Journal of Transportation Research
- ✦ Journal of Transportation Research Record: Journal of the Transportation Research Board

#### *Conferences and Proceedings*

- ✦ IEEE Intelligent Transportation Systems Conference (ITSC)
- ✦ IEEE Intelligent Vehicles Symposium (IV)

- ✦ Transportation Research Board (TRB) Annual Meeting
- ✦ World Congress on Intelligent Control and Automation (WCICA)
- ✦ COTA International Conference of Transportation Professionals (CICTP)

**Research Assistant** | Transport Big Data Analytics | **ITS Lab, TNList@Tsinghua University** Aug.2017- May.2018

- ✦ Cross-domain data fusion for full-time trip chain reconstruction and anomalies detection;
- ✦ City Computing: Applying NMF methods to evaluate indicators describing urban function, land use, mobility, etc.
- ✦ Revealing collective travel patterns of *Shared Mobility* in a spatial-temporal manner

**Carryout service data analysis Project Manager** | Beijing Gooagoo Technical Service Co., Ltd. Jul.2016-Aug.2016

- ✦ Integral process of Big Data Analytics: Crawled carryout service data using Python crawler; executed data storage, data analysis, and data processing in relational database (MySQL); visualization, clustering and application (web)

**System architect for control of shuttle machine** | Beijing IBOSST for Logistics Co., Ltd. May.2016-Aug.2017

**Data Analyst** | Beijing Municipal Commission of Transport: TOCC Jun.2016- Jul.2016

**Data Analysis Engineer** | DiDi Chuxing Company May.2016-Jun.2016

- ✦ Determined the approximate trajectory of ride-sharing by transfer learning from private car trajectories
- ✦ Calculated the daily total vehicle emissions reductions by using the PHEM model

**Commentator** | China International Congress on Intelligent & Connected Vehicles (CICV) Oct.2015-Oct.2015

- ✦ Introduced the i-VICS systems to audiences; received executives from automobile manufacturers BMW, Volvo, VW

**Test Engineer Assistant** | China Unicom southern district IPv6 renovation project, MIIT CTTL Nov.2013-Dec.2013

- ✦ Tested all kinds of typical applications on the Internet under the IPv6 environment

**Research Intern** | Broadband Network & Digital Media: Qionghai Dai's Lab, Tsinghua University Jul.2013-Aug.2013

- ✦ Review of technical investigation for controlling waves in space and time for imaging and focusing, in complex media

## LEADERSHIP & VOLUNTEER EXPERIENCE

**Project Leader** | **Asian Youth Center: Leadership Development Training Program for Masters** Jul.2015-Aug.2016

- ✦ Responsible for activities and competitions between overseas and Chinese students in the Asian Youth Center project
- ✦ **Volunteer Leader** in the 5<sup>th</sup> Joint School Symposium for the Asian Youth Center Project

**iTalk Group Leader** | International Department, Tsinghua University Postgraduate Association Oct.2014-Oct.2015

- ✦ Committed to speech in English given by students or alumni star, held a special performance for overseas students

**Volunteer** | National Doctor Forum on Traffic and Transportation Engineering, Beijing Jiaotong University Jun.2011

## SKILLS & MISCELLANEOUS

- ✦ Programming Languages: Python (Tensorflow, Pytorch, Keras), Matlab, R, C/C++, Java & VHDL | Database: MySQL
- ✦ [Deep Learning and Deep Reinforcement Learning](#)
- ✦ Hardware circuit design: Altium Designer
- ✦ Proficient in software development on Linux and Windows
- ✦ Big data analytics and visualization methods | Cross-domain Data Fusion | Data-driven anomaly/fraud detection
- ✦ Hobbies: **Tai Chi, Meditation, Kung Fu**, Chess, Yoga, Reading, Mountain climbing