

XIANG GUO

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🎓 EDUCATION

University of Virginia (UVa) , Charlottesville, VA, USA	2017 – Present
<i>Ph.D student</i> in Systems and Information Engineering (SIE), Advisor: Arsalan Heydarian	GPA:3.88
Beihang University (BUAA) , Beijing, China	2014 – 2017
<i>M.S.</i> in Transportation Engineering, Advisor: Ying Wang and Guangquan Lu	GPA:3.50
Beihang University (BUAA) , Beijing, China	2010 – 2014
<i>B.S.</i> in Transportation Engineering	GPA:3.31

🔍 RESEARCH INTERESTS

- Human factors, Human-machine interaction, Music Emotion Study
- Traffic Safety, Driver Behavior Analysis, Driving Simulation
- Data Analysis, Machine Learning Applications in Human modeling

📖 PUBLICATIONS

1. **Xiang Guo**. Emotion Analysis in Human-centered Systems from Music Perspective: Application in Smart Buildings, *The 6th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys '19)*, ACM, New York, NY, USA, 2019 (Accepted).
2. **Xiang Guo**, Lian Cui, Brian Park, Wen Ding, Marisa Lockhart, Inki Kim, How will Humans Cut through Automated Vehicle Platoons in Mixed Traffic Environments? A Simulation Study of Drivers' Gaze Behaviors based on the Dynamic Areas-of-Interest, *Systems Engineering in Context*, Springer, Cham, 2019. 691-701.
3. **Xiang Guo**, Ying Wang, Jianqiao Zhang and Fan Zhou, Application and development of Detection Response Task (DRT) in driver cognitive workload research, *Chinese Journal of Ergonomics*,23(1), pages 73-77, 2017
4. Ying Wang, **Xiang Guo**, Yueyan Zhu, and Jianqiao Zhang. Color block task: A new surrogate secondary-task to measure the impact of drivers' incrementally increased workload. In *Proceedings of the Human-Factors and Ergonomics Society Annual Meeting, volume 60, pages 1889–1893*. SAGE Publications Sage, CA: Los Angeles, CA, 2016.
5. Yueyan Zhu, Ying Wang, Guofa Li, and **Xiang Guo**. Recognizing and releasing drivers' negative emotions by using music: Evidence from driver anger. In *Adjunct Proceedings of the 8th International Conference on Automotive User Interfaces and Interactive Vehicular Applications*, pages 173–178. ACM, 2016
6. Ying Wang, Jiaqi Zhu, TingTing Zheng, Fei Gao, and **Xiang Guo**. Comparing Three Smart Device Setups for the Use of Speech Interface in Destination Search while Driving. *Transportation Research Board 94th Annual Meeting* (No. 15-0469), 2015.
7. Ying Wang, RuiXue Liu, Zhuwei Qiang, Jiaqi Zhu, **Xiang Guo**, Using Behavior and Human Machine Interaction Safety of In-vehicle Smart Terminals, *Industrial Engineering and management* 3, page 141-146, 2014.

⚓ RESEARCH EXPERIENCES

University of Virginia, VA, USA Aug. 2017 – Present
Graduate Research Assistant Advisor: Arsalan Heydarian

Driver in the Loop

- Conduct longitudinal naturalistic driving studies to building models to predict driver behavior, and emotional changes in response to different environmental conditions. Data includes videos from both outside

and inside the car, physiological data of the driver, audio data from both music players and environment noise as well as driving behavior metrics.

Living Link Lab

- Long-term studies of occupant behavior, cognition, and interactions in a large collaborative environment while monitoring the changes in environmental factors at the University of Virginia (UVA) Cyber-Physical Systems laboratory (Link Lab), work on users' music(Spotify) and emotion data (video and questionnaire).

Driving Behavior Study in Mixed Traffic Environment

- Driving simulation research on human driving behavior(vehicle dynamics, eye tracking and physiological analysis) when cutting through automated vehicle platoons in mixed traffic environments. Deep learning application in eye tracking videos to automatically detect areas of interest (AOIs).

Gestures and Tasks Recognition for Robot Surgery Videos

- To classify the gestures and tasks in robot surgery videos, combine image features with kinematic text data into recurrent neural network (RNN) with Long short-term memory (LSTM) units to predict the gestures and tasks in the videos.

Beihang University Beijing, China

Sep. 2014 – March. 2017

Master Thesis Advisor: Ying Wang and Guangquan Lu

Safety Evaluation Model for the Transition from Automated to Manual Driving Considering the Human-vehicle-road Loop

- Research on take-over period in highly automated driving considering the human-vehicle-road loop, driver performance analysis (driving, eye-tracking, physiological). Apply machine learning models for evaluating the quality and safety of the control authority transition process of autonomous vehicles.

Human Factors Research in Transportation

- Build the driving simulation and the data collecting systems from scratch, make visual and cognitive Detection Response Task (DRT) prototype system for secondary task test in driving experiment. Design a new surrogate secondary task to measure the impact of drivers' incrementally increased workload.

Beihang University Beijing, China

Sep. 2013 – Jun. 2014

Undergraduate thesis Advisor: Ying Wang

Comparison and Analysis of Driver Behavior under Special Road Environments: Cross-sea Bridge vs. Undersea Tunnel

- Traffic Environment Simulation for Hong Kong-Zhuhai-Macao Bridge with complex road environment (oversea bridge, undersea tunnel and roundabout)

Beihang University Beijing, China

May. 2013 – May. 2014

Beihang University Student Research Training Plan (SRTP)

- Design and development of a driver Driving under the influence (DUI) state self-detection mobile application in Android mobile system - Android BAC Calc.apk program available online, [DownloadLink](#)

📖 TEACHING EXPERIENCES

University of Virginia Charlottesville, VA, USA

Aug. 2019 – Dec. 2019

Teaching Assistant Department of Engineering Systems and Environment

SYS 4021/6021 Linear Statistical Models/Statistical Modeling

Beihang University Beijing, China

Feb. 2016 – Jun. 2016

Lecturer School of Continuing Education

<Engineering Drawing>

Beihang University Beijing, China

Feb. 2015 – Jun. 2015

Teaching Assistant Department of Transportation Science and Engineering

<Transportation Planning>

WORKING EXPERIENCES

Engineer in *SAIC Motor, Shanghai, China* Apr. 2017 – Jul. 2017

- SAIC Motor Corporation Limited (SAIC Motor) is the largest auto company on China's A-share market.
- Responsible for Data processing for autonomous vehicle test in Advanced Technology Department Competition and analysis for advanced driving assistance system

Product Intern in *Tusimple Technology Co., Ltd, Beijing, China* Feb. 2016 – Jul. 2016

- Tusimple is an Artificial Intelligence company on the cutting edge of the autonomous trucking industry
- Responsible for market research, test standard, data collecting and processing

Safety Evaluation Intern Engineer in *Research Institute of Highway(RIOH) Ministry of Transport*
Beijing, China Dec.2013 – May.2014

- RIOH is the sole national level research institute in the transportation area in China.
- Traffic Scenario Simulation for The Hong Kong–Zhuhai–Macau Bridge (HZMB) project; Traffic sign design improvement for several projects

SKILLS

- Programming Languages: Proficient in Python(Pandas/Numpy/Tensorflow/Keras/sklearn) and R, intermediate level in Matlab, C and Java
- Statistics: SPSS, Minitab
- Traffic Simulations: UC/win-road, TransCAD, Paramics, VisSim, CarSim, TransCAD
- Mechanical Engineering Tools: Solidworks, AutoCAD, Ansys, ADAMS
- Neuro Physiological measurement: SmartEye/SMI/Tobii Eye tracking system, Biopac/Biograph physiological system
- Others: Design of Experiment(DoE), Microsoft Office, Latex, Photoshop

HONORS AND AWARDS

Graduate Research Assistant scholarship from *University of Virginia* 2017 – Present
Graduation with honor: College Graduate Excellence Award of Beijing(top 3 in the department) 2017
The 2nd Prize, graduate student Scholarship from *Beihang University* 2015 – 2017
National Inspirational Scholarship for College Students from *Beihang University* 2013 – 2014
Student Research Training Plan (SRTP) from *Beihang University* 2013 – 2014

MEMBERSHIP AND COMMUNITY SERVICE

The Human Factors and Ergonomics Society(HFES) Membership 2017 – Present
HFES Student Chapter at UVa 2018 – Present
Registered member of Beijing volunteer, NO: 110114100417295 2011 – Present
Informal Asia-Pacific Economic Cooperation (APEC) Economic Leaders' Meetings 2014
The 12th China International Chorus Festival (CICF) 2014
The 9th China International Garden EXPO 2013
The 60th Anniversary of Beihang University 2012
The 11th China International Chorus Festival (CICF) 2012