

# Jiawei Zhang

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## EDUCATION

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### Tsinghua University

Department of Automation

Ph.D student in Control Science and Engineering

September 2020 - Present

### Tsinghua University

Department of Automation

B.S. of Engineering (Graduate with honor)

September 2016 - June 2020

## AREAS OF INTERESTS

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### Research Interests

Artificial Intelligence, Autonomous Driving, Complex System, Intelligent Vehicle, Intelligent Transportation System, Deep Reinforcement Learning

## RESEARCH PUBLICATION

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1. **Jiawei Zhang**, Cheng Chang, Xianlin Zeng, Li Li. (2022). Multi-agent DRL-based lane change with right-of-way collaboration awareness. *IEEE Transactions on Intelligent Transportation Systems (TITS)*.  
doi: [10.1109/TITS.2022.3216288](https://doi.org/10.1109/TITS.2022.3216288) (SCI, IF: 9.551)
2. **Jiawei Zhang**, Shen Li, Li Li. (2023). Coordinating CAV swarms at intersections with a deep learning model. *IEEE Transactions on Intelligent Transportation Systems (TITS)*.  
doi: [10.1109/TITS.2023.3250704](https://doi.org/10.1109/TITS.2023.3250704) (SCI, IF: 9.551)
3. **Jiawei Zhang**, Cheng Chang, Zimin He, Wenqin Zhong, Danya Yao, Shen Li, Li Li. (2023). CAVSim: A microscopic traffic simulator for evaluation of connected and automated vehicles. *IEEE Transactions on Intelligent Transportation Systems (TITS)*.  
doi: [10.1109/TITS.2023.3273565](https://doi.org/10.1109/TITS.2023.3273565) (SCI, IF: 9.551)
4. **Jiawei Zhang**, Qiyuan Liu, Shen Li, Li Li. (2024). Unleashing the power of connected and automated vehicles: A dedicated link strategy for efficient management of mixed traffic. *IEEE Transactions on Intelligent Transportation Systems (TITS)*.  
doi: [10.1109/TITS.2024.3367943](https://doi.org/10.1109/TITS.2024.3367943) (SCI, IF: 8.5)
5. **Jiawei Zhang**, Zhiheng Li, Li Li, Yidong Li, Hairong Dong. (2021). A bi-level cooperative operation approach for AGV based automated valet parking. *Transportation Research Part C: Emerging Technologies (TRC)*, 128, 103140. doi: [10.1016/j.trc.2021.103140](https://doi.org/10.1016/j.trc.2021.103140) (SCI, IF: 9.002)
6. **Jiawei Zhang**, Huaxin Pei, Xuegang(Jeff) Ban, Li Li. (2022). Analysis of cooperative driving strategies at road network level with macroscopic fundamental diagram. *Transportation Research Part C: Emerging Technologies (TRC)*, 135, 103503. doi: [10.1016/j.trc.2021.103503](https://doi.org/10.1016/j.trc.2021.103503) (SCI, IF: 9.002)
7. **Jiawei Zhang**, Cheng Chang, Shen Li, Xuegang(Jeff) Ban, Li Li. (2024). Unleashing the two-dimensional benefits of connected and automated vehicles via dedicated intersections in mixed traffic. *Transportation Research Part C: Emerging Technologies (TRC)*, 160, 104501. doi: [10.1016/j.trc.2024.104501](https://doi.org/10.1016/j.trc.2024.104501) (SCI, IF: 9.002)
8. **Jiawei Zhang**, Jingwei Ge, Shu Li, Shen Li, Li Li. (2023). A Bi-level Network-wide Cooperative Driving Approach Including Deep Reinforcement Learning-based Routing. *IEEE Transactions on Intelligent Vehicles (TIV)*.  
doi: [10.1109/TIV.2023.3305818](https://doi.org/10.1109/TIV.2023.3305818) (SCI, IF: 8.2)
9. **Jiawei Zhang**, Cheng Chang, Huaxin Pei, Xinyu Peng, Yuqing Guo, Renzong Lian, Zhenwu Chen, and Li Li. (2022) CAVSim: A microscope traffic simulator for connected and automated vehicles Environment. In *2022*

10. Xinyu Peng, **Jiawei Zhang**, Fei-Yue Wang, Li Li. (2021). Drill the cork of information bottleneck by inputting the most important data. *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*. pp. 6360-6372. doi: [10.1109/TNNLS.2021.3079112](https://doi.org/10.1109/TNNLS.2021.3079112) (SCI, IF: 14.255)
11. Qiyuan Liu, **Jiawei Zhang**, Wenqin Zhong, Zhiheng Li, Xuegang (Jeff) Ban, Shen Li, Li Li. (2023). Fault-Tolerant cooperative driving at highway on-ramps considering communication failure. *Transportation Research Part C: Emerging Technologies (TRC)*. doi: [10.1016/j.trc.2023.104227](https://doi.org/10.1016/j.trc.2023.104227) (SCI, IF: 9.002)
12. Jingwei Ge, **Jiawei Zhang**, Cheng Chang, Yi Zhang, Danya Yao, Li Li. (2024). Task-driven controllable scenario generation framework based on AOG. *IEEE Transactions on Intelligent Transportation Systems (TITS)*. doi: [10.1109/TITS.2023.3347535](https://doi.org/10.1109/TITS.2023.3347535) (SCI, IF: 9.551)
13. Huaxin Pei, **Jiawei Zhang**, Yi Zhang, Huile Xu, Li Li. (2023). Self-Organized Routing for Autonomous Vehicles via Deep Reinforcement Learning. *IEEE Transactions on Vehicular Technology (TVT)*. doi: [10.1109/TVT.2023.3311198](https://doi.org/10.1109/TVT.2023.3311198) (SCI, IF: 6.8)
14. Cheng Chang, **Jiawei Zhang**, Kunpeng Zhang, Wenqin Zhong, Xinyu Peng, Shen Li, Li Li. (2023). BEV-V2X: Cooperative Birds-Eye-View Fusion and Grid Occupancy Prediction via V2X-Based Data Sharing. *IEEE Transactions on Intelligent Vehicles (TIV)*. doi: [10.1109/TIV.2023.3293954](https://doi.org/10.1109/TIV.2023.3293954) (SCI, IF: 8.2)
15. Jingwei Ge, **Jiawei Zhang**, Cheng Chang, Yi Zhang, Danya Yao, Yonglin Tian, Li Li. (2024). Dynamic Testing for Autonomous Vehicles Using Random Quasi Monte Carlo. *IEEE Transactions on Intelligent Vehicles (TIV)*. doi: [10.1109/TIV.2024.3358329](https://doi.org/10.1109/TIV.2024.3358329) (SCI, IF: 8.2)
16. Cheng Chang, **Jiawei Zhang**, Kunpeng Zhang, Yichen Zheng, Mengkai Shi, Jianming Hu, Shen Li, Li Li. (2024). CAV driving safety monitoring and warning via V2X-based edge computing system. *Frontiers of Engineering Management*. doi: [10.1007/s42524-023-0293-x](https://doi.org/10.1007/s42524-023-0293-x) (SCI, IF: 8.2)
17. Shen Li, **Jiawei Zhang**, Zhenwu Chen, Li Li (2023). A Theoretical Analysis for Cooperative Driving at Idealized Non-Signalized Intersections. *Tsinghua Science and Technology*. doi: [10.26599/TST.2022.9010069](https://doi.org/10.26599/TST.2022.9010069) (SCI, IF: 6.6)
18. Huaxin Pei, **Jiawei Zhang**, Yi Zhang, Xin Pei, Shuo Feng, Li Li. (2022). Fault-tolerant cooperative driving at signal-free intersections. *IEEE Transactions on Intelligent Vehicles (TIV)*. doi: [10.1109/TIV.2022.3159088](https://doi.org/10.1109/TIV.2022.3159088) (SCI, IF: 5.009)
19. Cheng Chang, **Jiawei Zhang**, Jingwei Ge, Zuo Zhang, Junqing Wei, Li Li. (2023). Interaction-based driving scenario classification and labeling. *arXiv preprint*. [arXiv:2402.07720](https://arxiv.org/abs/2402.07720)
20. Jingwei Ge, **Jiawei Zhang**, Yi Zhang, Danya Yao, Zuo Zhang, Rui Zhou (2023). Autonomous vehicles testing considering utility-based operable tasks. *Tsinghua Science and Technology*. doi: [10.26599/TST.2022.9010037](https://doi.org/10.26599/TST.2022.9010037) (SCI, IF: 6.6)
21. Zimin He, **Jiawei Zhang**, Danya Yao, Yi Zhang, Huaxin Pei (2024) Adversarial Generation of Safety-Critical Lane-Change Scenarios for Autonomous Vehicles. In *2023 IEEE 26th International Conference on Intelligent Transportation Systems (ITSC)*. pp. 6096-6101. doi: [10.1109/ITSC57777.2023.10422684](https://doi.org/10.1109/ITSC57777.2023.10422684) (EI)
22. Cheng Chang, Kunpeng Zhang, **Jiawei Zhang**, Shen Li, Li Li (2022) Driving safety monitoring and warning for connected and automated vehicles via edge computing. In *2022 IEEE Intelligent Transportation Systems Conference (ITSC)*. pp. 3940-3947. doi: [10.1109/ITSC55140.2022.9922076](https://doi.org/10.1109/ITSC55140.2022.9922076) (EI, Best Student Paper Award)
23. Jingwei Ge, Huile Xu, **Jiawei Zhang**, Yi Zhang, Danya Yao, Li Li. (2022). Heterogeneous driver modeling and corner scenarios sampling for automated vehicles testing. *Journal of Advanced Transportation (JAT)*. doi: [10.1155/2022/8655514](https://doi.org/10.1155/2022/8655514) (SCI, IF: 2.249)

24. Renzong Lian, Zhiheng Li, Boxuan Wen, Junqing Wei, **Jiawei Zhang**, Li Li. (2022). Multiagent deep reinforcement learning for automated truck platooning control. *IEEE Intelligent Transportation Systems Magazine (ITSM)*.  
doi: [10.1109/MITS.2023.3319091](https://doi.org/10.1109/MITS.2023.3319091)(SCI, IF: 3.6)

HONORS & AWARDS

• National Scholarship (Ph.D)	2023
• Academic Excellence Award (Institute of System Engineering, THU)	2023
• Outstanding Graduate Student (BEIJING ASSOCIATION OF AUTOMATION)	2022
• Excellent Comprehensive Scholarship of Tsinghua University (Tsinghua-Xuancheng Scholarship)	2022
• Best Student Paper Award (IEEE ITSC 2022)	2022
• Excellent Comprehensive Scholarship of Tsinghua University (Tsinghua-Weihai Scholarship)	2021
• Outstanding Graduates of Dept. Automation	2020
• National Encouragement Scholarship	2019
• HAGE Encouragement Scholarship	2018
• National Encouragement Scholarship	2018
• HAGE Encouragement Scholarship	2017
• National Encouragement Scholarship	2017
• The Top Scorer of Science in Wuwei City	2016

TECHNICAL STRENGTHS

Computer Languages	C++/C, Python, MATLAB
Deep Learning Framework	Pytorch, Tensorflow, Keras

OTHERS

Reviewer Service	IEEE Transactions on Intelligent Transportation Systems, Transportation Research Part C-Emerging Technologies, IEEE Transactions on Intelligent Vehicles, IEEE Transactions on Automation Science and Engineering, IEEE Antennas and Wireless Propagation Letters, International Journal of Human-Computer Interaction, IEEE Transactions on Vehicular Technology, IEEE International Conference on Intelligent Transportation Systems 2022/2023, China Automation Conference 2022/2023, et al.
Teaching Assistant	Convex Optimization (2020-2021; 2021-2022; 2023-2024)
Blue Book	Annual Report On The Development Of Autonomous Driving Industry In China (2020)