KE GUO

LG105, The University of Hong Kong, Hong Kong, China
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EDUCATION

The University of Hong Kong *2019.09 - 2023.11*
PhD in Computer Science

Zhejiang University *2015.09 - 2019.06*
Bachelor in Automation. GPA 3.82/4.0

RESEARCH FIELD

Autonomous Driving, Intelligent Transportation, Trajectory Prediction/Planning, Traffic Simulation

RESEARCH EXPERIENCE

Robust Supervised Learning Based on Tensor Network Method 2017.12 - 2018.12

· Developed a model of robust supervised learning using tensor networks
· Improved the robustness of training on residual tensor networks and enabled parallel training

Variable Responsibility Optimal Reciprocal Collision Avoidance 2019.09 - 2020.10

· Implemented a method of collision-free movement for multiple robots without information interchange
· Adjusted robot's responsibility distribution for avoiding other robots based on their surroundings

End-to-End Trajectory Distribution Prediction Based on Occupancy Grid Maps 2020.11 - 2021.11

· Developed an end-to-end method for predicting trajectory distributions for traffic participants
· Improved the accuracy of the prediction distribution by exploiting the occupancy grid maps

CCIL: Context-Conditioned Imitation Learning for Urban Driving 2021.12 - 2022.10

· Proposed a method to infer ego-vehicle's future trajectory based on only the context without its history
· Achieved state-of-the-art performance on two large-scale urban driving benchmarks: Lyft and nuPlan.

LASIL: Learner-Aware Supervised Imitation Learning For Long-term Microscopic Traffic Simulation 2022.11 - 2023.11

· Proposed a learner-aware supervised multi-agent imitation learning method to solve covariate shift issue
· Achieved better short-term and long-term simulation realism than baseline methods like SUMO

INTERNSHIP AND WORK EXPERIENCE

Autonomous Driving Lab of Alibaba 2022.03 - present

AWARDS

Scholarship of Zhejiang University

Excellent student of Zhejiang University

Research and innovation scholarship of Zhejiang University

Postgraduate Scholarship of The University of Hong Kong

ACADEMIC SERVICES

Reviewer of CVPR, IEEE RAL, ICRA, IROS

PUBLICATIONS

Y. Chen, **K. Guo**, Y. Pan. Robust supervised learning based on tensor network method[C]. In *Youth Academic Annual Conference of Chinese Association of Automation (YAC)*, pages 311-315, 2018.

K. Guo, D. Wang, T. Fan, J. Pan. VR-ORCA: Variable responsibility optimal reciprocal collision avoidance[J]. IEEE Robotics and Automation Letters, 6(3): 4520-4527, 2021. (Also accepted by ICRA 2021)

K. Guo, W. Liu, J. Pan. End-to-End Trajectory Distribution Prediction Based on Occupancy Grid Maps[C]. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 2242-2251, 2022.

K. Guo, W. Jing, J. Chen, J. Pan. CCIL: Context-conditioned imitation learning for urban driving. In *Robotics: Science and Systems (RSS)*, 2023.

W. Liu, W. Jing, L. Gao, **K. Guo**, X. Gang, Y. Liu. TraCo: Learning Virtual Traffic Coordinator for Cooperation with Multi-Agent Reinforcement Learning. In *Conference on Robot Learning (CoRL)*, 2023.

K. Guo, Z. Miao, W. Jing, W. Liu, W. Li, D. Hao, J. Pan. LASIL: Learner-Aware Supervised Imitation Learning For Long-term Microscopic Traffic Simulation. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.

T. Ye, C. Hu, S. Huang, L. Gao, F. Li, J. Wang, W. Xiao, **K. Guo**, H. Zheng, K. Li, K. Yu, W. Jing. FusionAD: Multi-modality Fusion Based Model for Prediction and Planning Tasks of Autonomous Driving. In *IEEE Robotics and Automation Letters (RAL, Under Review)*, 2024.

D. Zhang, J. Liang, Q. Wang, **K. Guo**, Z. Miao, D. Hao, R. Xiong, Y. Wang. PEP: Policy-Embeded Trajectory Planning for Autonomous Driving. In *European Conference on Computer Vision (ECCV, Under Review)*, 2024.