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

RESEARCH 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

SKILLS

Python, C++, Matlab, TOEFL score 105

ACADEMIC SERVICES

Reviewer of CVPR, ICRA, IROS, IEEE RAL, IEEE Transactions on Neural Networks and Learning Systems

TEACHING ASSISTANT

COMP2121 Discrete Mathematics in 2020-2023 at The University of Hong Kong

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.