講演会のご案内

Apply Reinforcement Learning in Autonomous Vehicle Design

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ABSTRACT: Unlike general intelligence for computer games, self-driving vehicles are faced with several problems such as high complexity of road structure, strong randomness of traffic conditions and participants, and hard safety constraints. Current mainstream decision and control methods either suffer high computing complexity or poor interpretability on real-world autonomous driving tasks. This report will focus on an interpretable and computationally efficient autonomous driving method on the basis of newly proposed integrated decision and control (IDC) framework, which decomposes a driving task into static path planning and dynamic optimal tracking that are structured hierarchically. The IDC framework can utilize an actor-critic RL algorithm to solve the constrained optimal control problem, in which its parametrized value and policy functions become path selector and path tracker, respectively. It also explores the demand of high-level intelligent vehicles for the next generation of artificial intelligence, and provide suggestions for core technology development and industrial implementation.

BIOGRAPHY OF SHENGBO EBEN LI

Shengbo Eben Li is the full professor at Tsinghua University. He is now leading Intelligent Driving Laboratory (iDLab) at School of Vehicle and Mobility. His active research interests include intelligent vehicles and driver assistance, reinforcement learning, optimal control and estimation, etc. He is the author of over 130 peer-reviewed journal/conference papers, and the co-inventor of over 30 patents. Dr. Li is the recipient of best paper (student) awards of IEEE ITSC 2020/2021, ICCAS 2020 IEEE ICUS 2020, CCCC 2018/2019 ITSAPF 2015, IEEE ITSC 2014, etc. His academic services include Member of Board of Governors of IEEE ITS Society, AEs of IEEE ITSM, IEEE Trans ITS, JICV, and Automotive Innovation, etc.

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