Title: Deep reinforcement learning for perception and control of autonomous vehicles

Abstract:
Deep reinforcement learning is an effective combination of the decision-making ability of reinforcement learning and the perceptual ability of deep learning, which has achieved a series of milestones in the field of artificial intelligence in recent years. This method has also obtained many beneficial attempts in the field of intelligent driving, which has strongly promoted the development and progress of key technologies of autonomous vehicles. This report briefly reviews the development of deep reinforcement learning methods and specifically introduces the research progress of my team in perception and decision making of autonomous vehicles based on deep reinforcement learning methods.

Short Bio
Dongbin Zhao is a professor with the Institute of Automation, Chinese Academy of Sciences, and the University of Chinese Academy of Sciences, China. Dr. Zhao serves as the Associate Editor of IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Cybernetics, IEEE Transactions on Artificial Intelligence, IEEE Transactions on Cognitive and Developmental Systems (TCDS), etc. He is the Chair of Distinguished Lecture Program of IEEE Computational Intelligence Society. He is involved in organizing many international conferences, including General Chair of IEEE Conference on Games 2022. He received the 2020 Outstanding Paper Reward of IEEE TCDS, etc. His group won 3 championships of 2020 Robomaster AI Challenge, and the Championship for Fighting AI Competition of 2020 IEEE Conference on Games, etc. He has published 6 books, and over 300 international journal and conference papers. His current research interests lie in deep reinforcement learning, computational intelligence, smart driving, game artificial intelligence, robotics, etc. He is an IEEE Fellow.