Deep reinforcement learning for game AIs and others

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Abstract:

Deep reinforcement learning (DRL) plays more and more important role as a major artificial intelligence (AI) algorithm, by combining the merits of the decision ability of reinforcement learning and the perception ability of deep learning. This research hotspot laid several milestones in AI by Google DeepMind, such as the DQN algorithm to conquer the Atari video games, AlphaGo for Go, AlphaZero for a more general board games, and AlhpaStar for real-time strategy game Starcraft II, together with several papers in Nature and Science. Other teams in OpenAI and Microsoft also had great achievements in Dota2 video game and Mahjong separately with the strong support of DRL algorithm. This talk will briefly introduce these major achievements and corresponding typical DRL algorithms, and present some efforts on fighting game and other game AIs, and other interesting robotic applications from the speaker's group.

Dongbin Zhao is a professor at Institute of Automation, Chinese Academy of Sciences since 2002, and also a professor with the University of Chinese Academy of Sciences, China. From 2007 to 2008, he was also a visiting scholar at the University of Arizona. He has published 6 books, and over 90 international journal papers. He received the Outstanding Paper Reward of IEEE Transactions on Cognitive and Developmental Systems, etc. He won 3 championships of 2020 Robomaster AI Challenge, and the Championship of 2020 Fighting AI Competition, etc. His current research interests are in the area of deep reinforcement learning, computational intelligence, autonomous driving, game artificial intelligence, robotics, etc. 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, etc. He is the chair of Distinguished Lecture Program of IEEE Computational Intelligence Society. He is involved in organizing many international conferences. He is an IEEE Fellow.