

Deep Q networks

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Abstract: Reinforcement learning algorithms become more popular since DeepMind achieved super human performance on Atari Games [1]. Deep Q networks (DQN) extends original Q-learning [2] and solve the curse of dimensionality problem in huge state space. Algorithms are based on Q-function approximation, using deep neural networks - Q networks. Those networks are capable to learn control agent in Markov decision process [3] to maximize resulted score. We presents some experiments using DQN and their variations, such prioritized DQN and dueling DQN. Our experiments are focused to compare different approaches, such network architectures, hyperparameters and state space modifications. Our long term goal, is to solve Go Game [4] using end-to-end learning.

References

- [1] Google DeepMind : Playing Atari with Deep Reinforcement Learning
- [2] CHRISTOPHER J.C.H. WATKINS : Q-learning
- [3] Richard S. Sutton : Reinforcement Learning: An Introduction
- [4] Google DeepMind :Mastering the Game of Go without Human Knowledge