The Application of Data Structure in Deep Neural Network

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Abstract

This paper presents a new approach to tackle the ConnectX. Our approach achieved in the Kaggle ConnectX Challenge.

1 Introduction

2 Related Work

2.1 Q-Learning

$$Q^{new}(s_t, a_t) \leftarrow (1-\alpha)Q(s_t, a_t) + \alpha \cdot \left(r_t + \gamma \cdot \arg\max_a Q(s_{t+1}, a)\right) \tag{1}$$

Where Q is the function $Q : S \times A \rightarrow R$, r_t is the reward received when moving from the state s_t to the state s_{t+1}, α is the learning rate ($0 < \alpha < 1$), γ is the discount factor ($0 \leq \gamma \leq 1$).

2.2 Deep Q-Learning (DQN)

3 Methods

4 Experiments

5 Results

We

Method	Score
random select	446.3
heuristic select	600.0
Q-Learning	
Deep Q-Learning	

Table 1: Methods comparison

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