06

DQN 알고리즘

3. 결과분석

https://github.com/multicore-it/rl

DQN 결과분석

로그분석

```
x = (input_states)
x = Dense(self.node_num, activation='relu')(x)
out_actions = Dense(self.action_size, activation='linear', name='output')(x)
model = tf.keras.models.Model(inputs=[input_states], outputs=[out_actions])
model.compile(optimizer=Adam(lr=self.learning_rate),
              loss='mean_squared_error'
             )
model.summary()
```

모델 로그

Model: "model_2"

Layer (type)	Output Shape	Param #
input_states (InputLayer)	[(None, 1, 4)]	0
dense_2 (Dense)	(None, 1, 12)	60
output (Dense)	(None, 1, 2)	26

Total params: 86
Trainable params: 86
Non-trainable params: 0

DQN 결과분석

로그분석

학습 로그

```
episode:180, moving_avg:109.5, rewards_avg:38.28729281767956
episode:190, moving_avg:92.85, rewards_avg:40.43979057591623
episode:200, moving_avg:84.45, rewards_avg:42.78109452736319
episode:210, moving_avg:86.55, rewards_avg:44.71563981042654
episode:220, moving_avg:99.85, rewards_avg:47.8552036199095
episode:230, moving_avg:118.2, rewards_avg:50.99134199134199
episode:240, moving_avg:121.6, rewards_avg:53.892116182572614
episode:250, moving_avg:115.15, rewards_avg:56.02390438247012
episode:260, moving_avg:101.05, rewards_avg:57.42911877394636
episode:270, moving_avg:69.45, rewards_avg:56.94095940959409
episode:280, moving_avg:31.1, rewards_avg:55.48398576512456
episode:290, moving_avg:15.9, rewards_avg:54.05154639175258
episode:300, moving_avg:65.1, rewards_avg:56.056478405315616
episode:310, moving_avg:118.9, rewards_avg:58.157556270096464
episode:320, moving_avg:128.3, rewards_avg:60.495327102803735
episode:330, moving_avg:112.6, rewards_avg:61.38670694864048
episode:340, moving_avg:55.2, rewards_avg:60.12609970674487
episode:350, moving_avg:17.6, rewards_avg:58.83475783475784
episode:360, moving_avg:18.8, rewards_avg:57.78116343490305
episode:370, moving_avg:20.5, rewards_avg:56.714285714285715
episode:380, moving_avg:18.45, rewards_avg:55.664041994750654
episode:390, moving_avg:16.55, rewards_avg:54.608695652173914
episode:400, moving_avg:12.55, rewards_avg:53.46384039900249
episode:410, moving_avg:9.85, rewards_avg:52.38199513381995
episode:420, moving_avg:9.8, rewards_avg:51.342042755344416
episode:430, moving_avg:9.5, rewards_avg:50.34570765661253
episode:440, moving_avg:9.35, rewards_avg:49.39229024943311
episode:450, moving_avg:9.35, rewards_avg:48.48337028824834
episode:460, moving_avg:9.4, rewards_avg:47.613882863340564
episode:470, moving_avg:9.6, rewards_avg:46.789808917197455
episode:480, moving_avg:12.6, rewards_avg:46.11642411642411
episode:490, moving_avg:12.65, rewards_avg:45.35845213849287
```

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DQN 결과분석 시각화

https://github.com/multicore-it/rl

시각화

(1) 그림 크기 지정

(2) 데이터 그리기

(3) 범례 위치 지정

(4) 그래프 제목 지정

(5) 그래프 출력

```
import matplotlib.pyplot as plt
plt.figure(figsize=(10,5))
plt.plot(agent.reward_list, label='rewards')
plt.plot(agent.moving_avg_list, linewidth=4, label='moving average')
plt.legend(loc='upper left')
plt.title('DQN')
plt.show()
```