Deep Reinforcement Nano Degree Report - Project 1

Algorithm

DQN

Reused the DQN algorith implemented in dqn/solution

Update from original

Changed the loss function to Huber loss.

```
        # Compute loss
        # loss = F.mse_loss(Q_expected, Q_targets)
        # Compute Huber loss
        loss = F.smooth_l1_loss(Q_expected, Q_targets)
```

Parameter

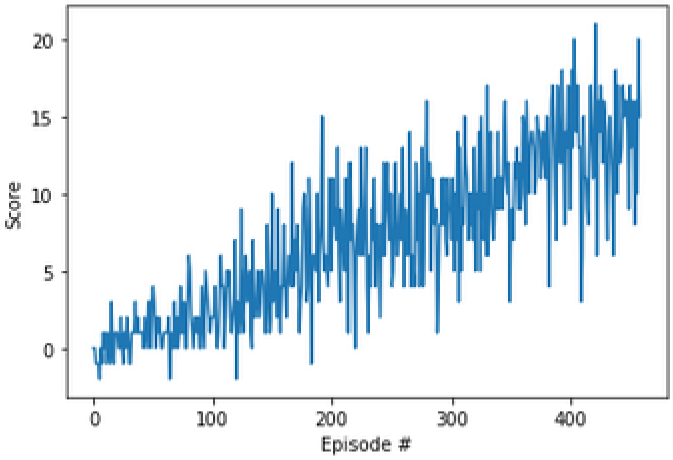
DQN Hyper Parameter	Value	Explanation
n_episodes	2000	maximum number of episodes for the training
max_t	1000	maximum number of timesteps per episode
eps_start	1.0	starting value of epsilon, for epsilon-greedy action selection
eps_end	0.01	minimum value of epsilon
eps_decay	0.995	multiplicative factor (per episode) for decreasing epsilon

DQN Agent Hyper Parameter	Value	Explanation
BUFFER_SIZE	int(1e5)	replay buffer size
BATCH_SIZE	64	minibatch size
GAMMA	0.99	discount factor
TAU	1e-3	for soft update of target parameters
LR	5e-4	learning rate
UPDATE_EVERY	4	how often to update the network

Result

Episode

Environment solved in 359 episodes! Average Score: 13.04



model

checkpoint.pth

Future Study

Find a way for more stable learning output. The variance of the study is still large after achieved the average score higher then 13.sx