PROJECT REPORT

Banana world navigation project

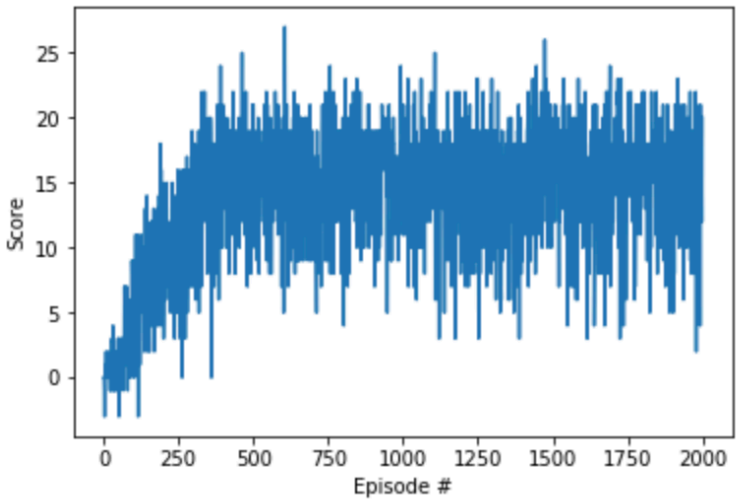
Summary of implementation –

The implementation uses Fixed Q scores and Replay buffer techniques to achieve Deep Q learning. The code has been structured in 2 parts

1. Train-Test code:
   This part includes the actual training/testing functions. This python notebook is the primary code to train the model and check model performance. Apart from primary train-test functions, the code has functions to save model weights, plot the scores

2. Classes declaration:
   This project uses 3 primary classes
   QAgent, QNetwork, ReplayBuffer
   QAgent contains the agent's functions related to learning, performing steps, etc. This class interfaces directly with the other 2 classes.
   QNetwork contains the declaration of Neural network layers
   ReplayBuffer is the class that stores all action-state-reward-nextState tuples to be sampled randomly during training

Scores achieved by the model



The above plot shows the performance of the model. The model achieves >13 average score within first 500 learning steps. The average score at end of 2000 epochs is ~17

Next steps

The next steps for this project involve trying different network architectures to get better (higher) average scores for the model.
Next steps also involve using different techniques mentioned in Deep Q networks paper (DeepMind) to experiment with agent performance and learning.