

Report

Purpose of the project:

To teach a reinforcement learning algorithm how to solve a banana collection game.

Journey:

I started by trying to optimize the solution for the problem without clear direction. I ended up struggling with implementation of prioritized experience replay, dueling DQN, but still not able to optimize the solution.

Therefore, I clicked the scary button of reset data under the Udacity menu and started from scratch. I reused code from the DQN lesson which implements a Double DQN algorithm with decaying epsilon and random experience replay. I was able to solve with clear and coherent steps the problem in 248 episodes. The model weights are stored under checkpoint.pth.

Model Architecture:

The model consists of three layers of fully connected neurons. The first layer takes a state size and outputs 64 units. The second layer takes 64 units and outputs 64 units. The last layer outputs action through 4 neurons.

Hyperparameters:

Below are hyperparameters:

`BUFFER_SIZE = 10000`

`BATCH_SIZE = 64`

`GAMMA = 0.99`

`TAU = .001`

`LR = .0005`

`UPDATE_EVERY = 4`

`Eps decay = .995`

`Eps start = 1`

Conclusion:

KISS, or keep it simple stupid. I had to remove everything and start with a simplistic model to solve a problem.