Robot Learning Project 4 – Deep Q Learning

Network Architecture

I have used a fully connected Deep Neural Network with 6 layers. The network has 4 inputs and three outputs and with ReLU activation for the hidden layers. The Network is as follows:

Layer1_dim = (4, 16)

Layer2_dim = (16, 32)

Layer3_dim = (32, 64)

Layer4_dim = (64, 32)

Layer5_dim = (32, 16)

Layer6_dim = (16, 3)

The optimizer used is Adam with a learning rate of 0.001 and MSE loss function is used. The batch size is set to 150 and the network is trained for 500 episodes. The Target Network is updated every 5 episodes. The epsilon values are varied linearly from 1 to 0.01 with a step of 0.005 and gamma is set to 0.999. The buffer limit is set to 1000.

Metadata about selected model

The model parameters that I picked for the testing my model for the enjoy_dqn file are from episode 429 where the episode reward is 500.

I started solving the homework by getting an understanding on how the DQN network works from the PyTorch DQN tutorial.

https://pytorch.org/tutorials/intermediate/reinforcement_q_learning.html