RL Project Report

Alon Ressler, alonress@gmail.com, 201547510.
Eliran Shabat, shabat.eliran@gmail.com, 201602877.

We implemented the code template given in the file 'dqn_learn.py' to train a network for the task of playing Atari games.

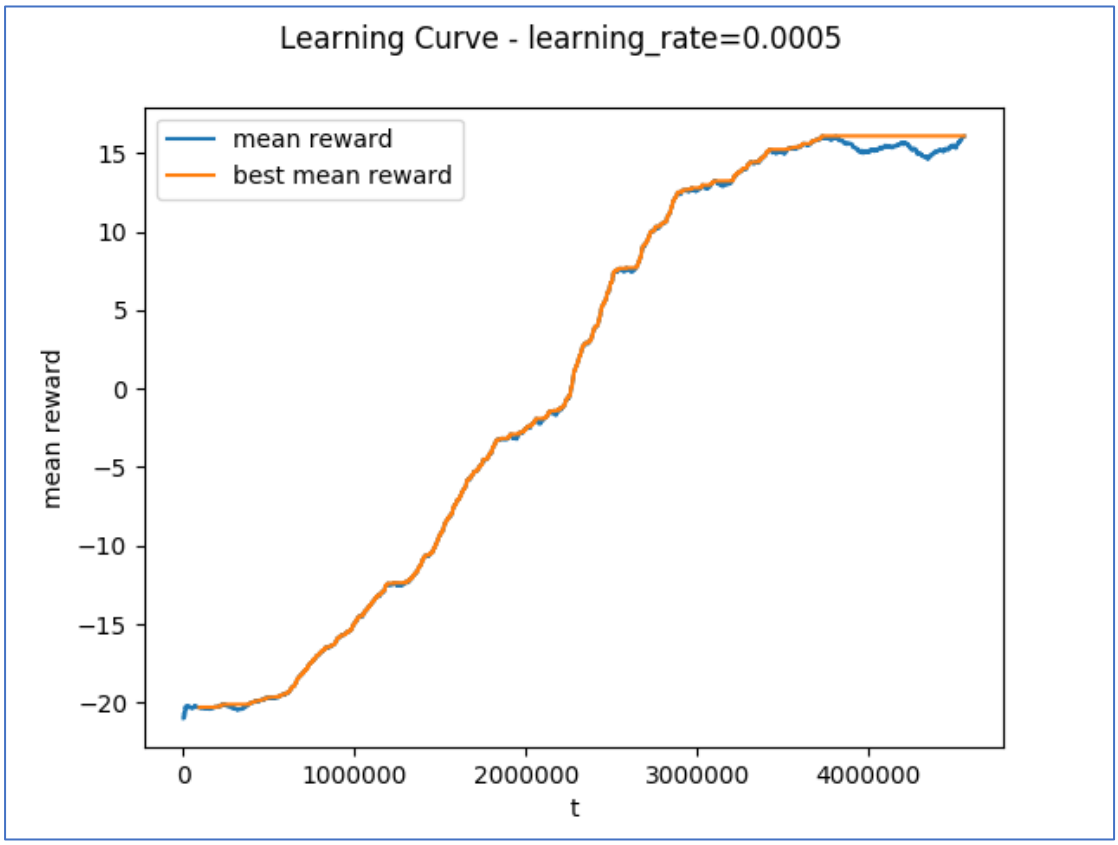
We wanted to test few hyperparameters and focused on one that improve the testing significantly. Due to limitations when working with google colab (it collapse all the time) we couldn't do so many tests so we decide to focused on the leaning rate. In leaning rate what you want is to choose one that is not too small so it converge in reasonable time and not too high so its still converges. We hope that maybe by small increase we can improve the leaning time.

In addition to changing the learning rate we tried to change the batch-size and the discount factor. Nevertheless, we were unable to run many experiments due to computation resources limitation as we already mentioned.

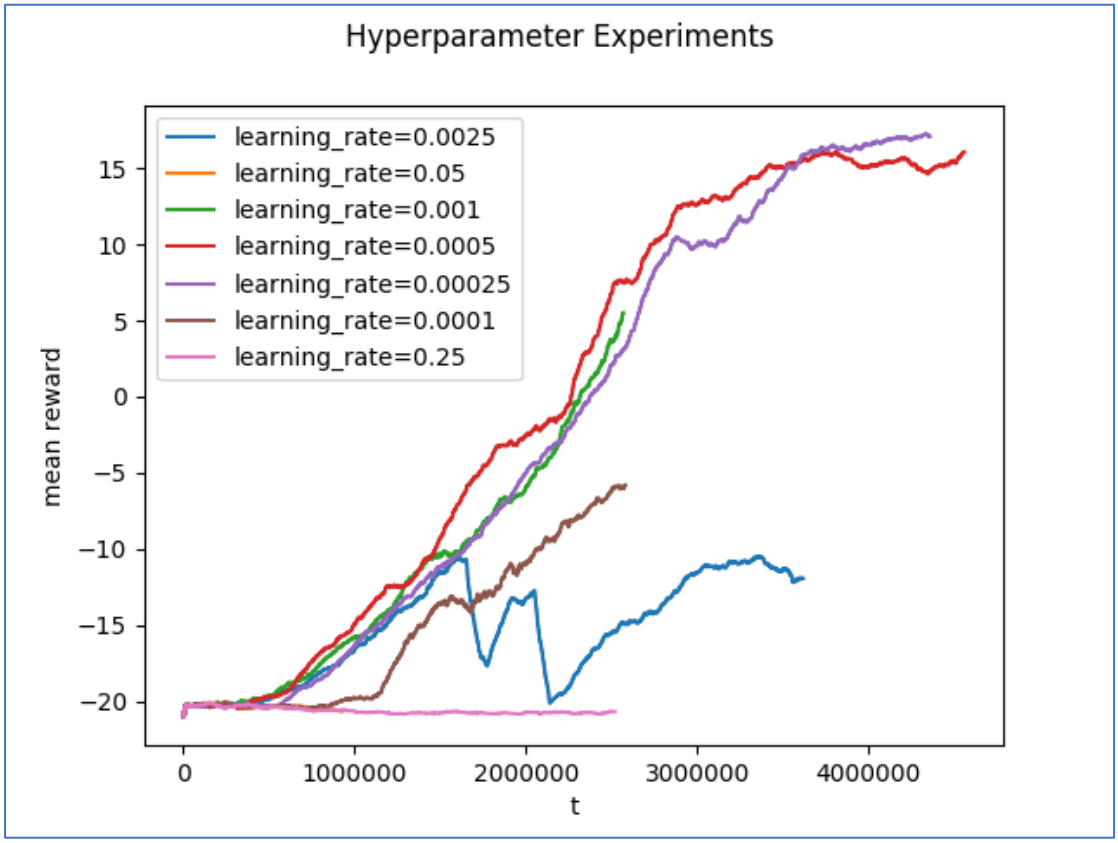
The results of the experiments are shown using learning curves of the rewards.

The best result was obtained by changing the value of the learning rate from 0.00025 to 0.0005.

The following figure shows the learning curve across episodes by averaging the last 100 episodes on every time step and by tracking the best overall average value.



We got the following learning curves on the different experiments.



The next figure shows the experiments we made with other parameters.