Project 1 Report

The solution provided consists of a modified version of the Deep Q-Learning algorithm provided by Udacity. The architecture of the neural network was changed, adding a new dense layer and the number of neurons in each layer was changed, and it is now used:

state_size-> 128-> 64-> 32-> action_size

In addition to the architecture, an optimization of the algorithm hyperparameters was made, changing the batch size to 128, the learning rate to 1e-4, and the frequency with which updates are made on the network was changed, from 4 episodes to 8 episodes. All values were obtained from experimentation, taking into account which sets of parameters resulted in the best final average score, and the agent's learning speed.

Using only with the changes presented it was possible to obtain an average score of 13 in the environment, and it was not necessary to implement any of the improvements of the Deep Q-Learning algorithm presented during the course.

As a way to improve the results in the future, the implementation of Prioritized Experience Replay and Double DQN are great starting points, and given the results presented in the articles of each one, it should help the agent to learn faster and achieve a higher average score.