

# Navigation using Deep Q-learning

## Introduction

The aim of the project is understanding the deep Q-networks and its implementation. We solve the problem of optimizing the collection of yellow bananas in a environment. The agent has to understand that blue bananas need to be avoided. The agent also has to collect yellow bananas with least movement as episode size is limited to 300 steps. Therefore, we proposed a deep reinforcement learning approach of q-learning. But as the state space is continuous of 37 state space. A 2-layer neural network is used to approximate the state space and get the Q values for each state.

## Methodology

Deep Q-Network was used to solve the environment. We estimate the Q-value of each state, and the policy is based on a greedy selection of the best action.

## Result

The algorithm was solved when the average reward was above 13. I set the limit at 15. Each of the layers consists of 32 neurons. The solution was reached by episode 700.

