Udacity Deep Reinforcement Learning

# Project: Navigation

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**Abstract -** Project Navigation: In this project, we have to train an agent to navigate (and collect bananas!) in a large, square world. This environment is provided by [Unity Machine Learning agents] (<https://github.com/Unity-Technologies/ml-agents>).

**Environment** **-**

A reward of +1 is provided for collecting a yellow banana, and a reward of -1 is provided for collecting a blue banana. Thus, the goal of our agent is to collect as many yellow bananas as possible while avoiding blue bananas.

The state space has 37 dimensions and contains the agent's velocity, along with ray-based perception of objects around agent's forward direction. Given this information, the agent has to learn how to best select actions. Four discrete actions are available, corresponding to:

- 0 - move forward.

- 1 - move backward.

- 2 - turn left.

- 3 - turn right.

The task is episodic, and in order to solve the environment, our agent must get an average score of +13 over 100 consecutive episodes.

**Methods –**

There are 2 methods to solve this problem:

1. Vanilla DQN with experience replay and Fixed – Q targets :