

# PROJECT PROPOSAL CS-559B

## Team:

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## Introduction:

Learning to play flappy bird with Deep Reinforcement Learning (Q-learning).

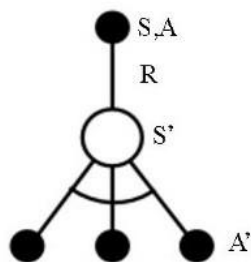
## Background:

With the advent of deep learning, complex structural representations have become easier to represent and solve.

Reinforcement learning is an area of growing interest as it tries to mimic human behaviour by following a continuous process of receiving awards and punishments on every action taken, such that it is able to learn very complex models and take action on unknown situations.

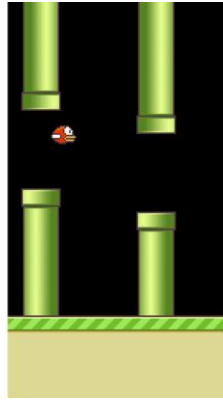
Deep Q learning is a breakthrough algorithm introduced by the Google deepmind in their paper on atari games.

The graph for deep q learning can be understood as follows.



## Data:

We will use screenshots from the flappybird game as our input to the convolutional neural network.



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## **Methods:**

Here we use the concept of Deep-Q-Learning, which is a model free and off policy deep reinforcement learning, here we use screenshots from the data and pass it to the CNN and choose the action with the highest Q values, here we have two actions, either going up or down. The rewards are as follows, Living=0.1, Crossing = +1, Death= -1.

## **Evaluation:**

We will train the model on itself on a gpu for 3 lakh iterations for 15 hours. There is no particular metric as such to evaluate the model, we just use the trained model to see real time how well it does.