Project README

The goal of this project is to use reinforcement learning to build a game bot. OpenAI's Gym library is used to interface with the game.

Links

Youtube Link

Github Link

Game

The game used in this project is called `CartPole`. In this game, the player has to balance a rotating pole on a cart - by moving the cart left (`action=0`) or right (`action=1`)

For each time unit, that the pole stands upright, we get 1 point. Maximum points possible are 200. If the pole tips over then the game ends and the gym environment returns "done" as a value.

The game environment provides us with four observations which we can use to make our decision :

1. Cart's position
2. Cart' velocity
3. Pole's angle with the cart
4. Pole's angular velocity

Algorithms

1. **Random** - choose the action randomly
2. **Random Weighted -** use a linear weighted combination of the four observations using random weights
3. **Noisy Weighted -** improve the weights in the second algorithm by inducing noise every time
4. **Hardcoded -** a set of weights calculated by taking mean of ten thousand successful games

Run the project

- Install `python3`
- Install the dependencies using pip - `gym` and `numpy`
- open a terminal and run the command `python gamebot_cartpole.py x` where x=1,2,3,4 for running one of the four algorithms