ASSIGNMENT-1

DEEP EIGEN ‖ COURSE: RL-1.0Y: Reinforcement Learning │ YEAR: 2022 │ INSTRUCTOR: SANJEEV SHARMA

1   Introduction Quiz

1.1   Which area of Machine Learning focuses on sequential decision making process?

(a) Unsupervised Learning

(b) Supervised Learning

(c) Reinforcement Learning

(d) Need more information

1.2   Which of the following are the elements of Reinforcement Learning?

(a) States

(b) Actions

(c) Reinforcement Signal

(d) Model of Environment

1.3   Which of the following is true about Reinforcement Learning?

(a) Maximize rewards obtained in the whole process

(b) Feedback from environment helps agent in learning to do a specific task or multiple tasks

(c) Ground truth data points or true actions are required for each observation/state for agent to learn about a process

(d) Underlying pattern of observations from environment is necessary part of learning

1.4   Which of the following examples would not be considered in Reinforcement Learning?

(a) Training robot to navigate in a room with feedback from sensors deployed on it

(b) Build up strategies for playing board games, e.g. chess, video games

(c) Estimating impact of wind patterns on temperature of oceanic regions

(d) Develop an approach to maximize profits in trading

(e) Detecting obstacles in standalone images

1.5   Consider a trading platform where people buy and sell stocks to increase income on a regular basis. Platform provides daily HIGH stock price and daily LOW stock price information with their past trajectory also to end users.

Select the applicable set of attributes mentioned below for model of reinforcement learning agent that may be designed for regular profits of users. Consider this model executes on a daily basis.

(a) State: Daily HIGH price, Daily LOW price of stocks; Action: Buy, Sell; Rewards: Profit Incurred

(b) States: Daily HIGH price, Daily LOW price of stocks, Trajectory of prices for stocks of 1 week; Action: Buy, Sell; Rewards: Profit/Loss incurred

(c) States: Daily HIGH price, Daily LOW price of stocks, Trajectory of prices for stocks of 1 week; Action: Buy, Sell; Rewards: Profit incurred

(d) State: Daily HIGH price, Daily LOW price of stocks; Action: Buy, Sell; Rewards: Profit/Loss Incurred

1.6   A mobile robot decides whether it should enter a new room in search of more trash to collect or start trying to find its way back to its battery recharging station. It makes its decision based on the current charge level of its battery and how quickly and easily it has been able to find the recharger in the past.

Considering this, select the set of attributes for an agent-model interaction which fits into this problem.

(a) State: Battery Level, ; Action: Collect Trash; Rewards: Negative Distance from Recharger;

(b) State: Battery Level, Distance from recharger ; Action: Collect Trash; Rewards: Amount of Trash collected;

(c) State: Battery Level, Distance from recharger ; Action: Collect Trash, Return to Recharger; Rewards: Amount of Trash collected and negative distance from recharger;

(d) State: Battery Level, Distance from recharger ; Action: Collect Trash, Return to Recharger; Rewards: Amount of Trash collected

2   To Submit

2.1   "rl10yassgn1.txt"

- text file containing correct option to all the quiz questions (use comma(',') as delimiter).

You should share with us:
Put the text file in a folder named "username", where "username" is your username with which you signed up in Deep Eigen.

- Submit **username_assignment_rl10y_1.zip** file