Overview

In this assignment, you will apply the concepts you learned about in the previous few modules – neural networks, reinforcement learning, and Q-algorithms – to design the code for a pathfinding intelligent agent. Specifically, you will be designing code for a pirate non-player character (NPC) that is part of a larger treasure hunt video game. The pirate will need to navigate the game world, which consists of different pathways and obstacles, in order to find the treasure. The pirate agent's goal is to find the treasure before the human player.

You have been provided with some starter code and a sample environment where your pirate agent will be placed. You will need to create a deep Q-learning algorithm to train your pirate agent. In this milestone, you will be turning in the code for your pirate intelligent agent so that you can receive feedback from your instructor before turning in your final code (along with your design defense) when submitting Project Two.

Prompt

1. Before creating your pirate intelligent agent, be sure to review the Pirate Intelligent Agent Specifications document. This document provides details about the code that you have been given and what aspects you will need to create.
2. Download the zipped folder containing your starter code and Project Two Jupyter Notebook. Upload the zipped folder into the Virtual Lab (Apporto), unzip the folder, and upload the files into Jupyter Notebook. Use the Virtual Lab Student Guide and Jupyter Notebook in Apporto (Virtual Lab) Tutorial to help you with these tasks.
3. Be sure to review the starter code that you have been given. Watch the Project Two Walkthrough video to help you understand this code in more detail. A video transcript is available: Transcript for Project Two Walkthrough video.

   IMPORTANT: Do *not* modify any of the PY files that you have been given.

   Use the following link for help: Treasure Maze

4. Complete the code for the **Q-Training Algorithm** section in your Jupyter Notebook. In order to successfully complete the code, you must do the following:
    1. **Develop code that meets the given specifications:**
        1. Complete the program for the intelligent agent so that it achieves its goal: The pirate should get the treasure.
        2. Apply a deep Q-learning algorithm to solve a pathfinding problem.
    2. **Create functional code that runs without error**.
    3. **Use industry-standard best practices** such as in-line comments to enhance readability and maintainability.

5. After you have finished creating the code for your notebook, save your work. Make sure that your notebook contains your name in the filename (such as, “Doe_Jane_ProjectTwoMilestone.ipynb”). This will help your instructor access and grade your work easily. Be sure to download a copy of your notebook (IPYNB file) for your submission.

   IMPORTANT: Submit the code that you have completed, even if you were not able to completely finish all of the elements. If you have questions, be sure to email your instructor. Be as specific as possible about the issue you are encountering.

Guidelines for Submission

Your submission should be your completed Jupyter Notebook (IPYNB) file containing the code for your pirate intelligent agent. For this assignment, it is especially important to submit the work that you have completed, even if you were not able to complete the whole assignment. This will allow you to get feedback from your instructor before you submit the full Project Two, which is due in Module Seven.