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CS-370

Project Two

* **Analyze the differences between human and machine approaches to solving problems.**
  + Describe the steps a human being would take to solve this maze.

A human being would solve this maze by first analyzing the maze and its layout and use this information to make a path. The human would also record its actions so that they are able too understand where they are within the maze so that they can adjust their plan if it does not work out.

* + Describe the steps your intelligent agent is taking to solve this pathfinding problem.

The intelligent agent would solve the maze by going through random paths until it is able too solve the puzzle. The IA is doing this because since it cannot do what the human would do and calculate the best path it will go down each path until it works out.

* + What are the similarities and differences between these two approaches?

The similarities between the two approaches are that they are both trying to solve the maze as efficiently as possible. The AI does this by going through every path too get the best result. The human is doing this by using the information they are given about the maze and using this information to take the best approach to solve it. Differences between the two approaches are that the IA is just going down every path until it finds the best possible solution while the human calculates its best possible solution. Another difference is that the IA will be learning from its mistakes faster than the human.

* **Assess the purpose of the intelligent agent in pathfinding.**
  + What is the difference between exploitation and exploration? What is the ideal proportion of exploitation and exploration for this pathfinding problem? Explain your reasoning.

Exploitation is where you benefit from unfairly using someone/something to benefit from their work. The ideal proportion of exploitation and exploration in this pathfinding problem is 50/50. Both exploitation and exploration are useful when it comes to solving a maze but it is not necessary since it could be solved with either just exploitation or exploration. The IA does not use any exploration but is able to solve the maze.

* + How can reinforcement learning help to determine the path to the goal (the treasure) by the agent (the pirate)?

Reinforcement learning is a great way for an agent to determine the path to the goal because it allows for the IA to learn from its mistakes and use this information to make decisions that allow it to achieve the best outcome by using the trial and error process which is an extremely effective way to solve any problem.

* **Evaluate the use of algorithms to solve complex problems.**
  + How did you implement deep Q-learning using neural networks for this game?

I implemented deep Q-learning using neural networks in the game by importing libraries then using this to set up training for the IA where it has a goal that it tries to achieve and by using the learning algorithm from its libraries is able to get deep Q-learning