Project 2

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As we navigate this exciting era of technological advancement, it is indeed crucial to recognize the unique strengths that both humans and machines. While machines excel in processing vast amounts of data at remarkable speeds, it is the human touch of our ability to empathize, think critically, and make ethical decisions that ultimately guides the application of these technologies. The Treasure Hunt game used in this project was to ensure that the pirate is able to make through the maze and receive points as reward to in the game. When comparing Human and Ai on how they would solve the game it would be different between the two.

Human approaches would be different, because our approach to solve this maze would be trial and error. In the trial-and-error a human would navigate the selected route, remaining vigilant for any signs of progress or dead ends. If the chosen path leads to a blockage, the individual will then mentally note this outcome, effectively eliminating it from the future. This will require multiple turns and adjustments that a person may discover the correct route through the maze. Each wrong turn is not merely a setback and would either receive negative points or end the game. When it comes to AI it would take a different approach such as analyzing the data. The intelligent agent would create algorithms and use the Q-learning steps to make it way through the maze. The intelligent agent initiates the process by defining the environment, which includes mapping out the states, analyzing the data and actions available. Next, it initializes the Q-table, assigning arbitrary values to each state-action pair. The agent then explores the environment, taking actions based on a balance of exploration and exploitation, while updating the Q-values using the reward received after each action.

The difference between Human and agent approach is how affected their process is. Humans often rely on trial-and-error intuition and experience to explore various paths, which can lead to creative problem-solving but may also result in inefficiencies. An intelligent agent employs algorithms, such as Q-learning, to systematically evaluate potential routes and optimize its decision-making process, ultimately enhancing its ability to reach the destination more efficiently. The difference between exploitation and exploration is the steps that it takes to find the solution. Exploration solves by using testing, finding and searching just as the intelligent agent does in the game. It finds ways to beat the game without in errors and causing the game to be over. Exploitation solves by using a combination of input and output.

Reinforcement learning can help guide an agent, such as a pirate, towards a treasure by employing a trial-and-error approach to decision-making. Through this method, the agent learns to navigate its environment by receiving feedback in the form of rewards or penalties based on its actions. Over time, the agent optimizes its strategy to maximize rewards, effectively determining the most efficient path to the goal. This way of solving the maze is compared to the human way of thinking. In order to use Q-Learning in the game import the libraries and setting the code up for example, the agent had to gain or lose points that was determined in which way the agent went. The more point that the agent got the closer he was to winning the game. The neural network to approximate the Q-value function, enabling the agent to learn optimal action selections based on the game's state representations.

References

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