Three MDPs Assignment

Submitted on February 27, 2024 Shareable Link

PROMPT

Create an MDP. Remember to describe the states, actions and rewards. Make sure your three MDPs are different from each other.

Description: Grid maze where an agent needs to navigate from a starting point to a goal while avoiding obstacles (walls). The agent can move in four directions: up, down, left, and right. The goal is to find an optimal solution that guides the agent to the goal state while minimizing the number of steps taken.
States: Each cell in the grid is a state. The agent's current position in the maze determines the state.
Actions: Move up, move left, move down, or move right.
Rewards: A reward of -1 for each step taken.
Output: To find the output, we need to determine the optimal policy for navigating the maze. This can be achieved using reinforcement learning algorithms such as Q-learning or policy iteration.

For simplicity, let's assume we have already computed the optimal policy. The output would then be a sequence of actions that guide the agent from the starting point to the goal while avoiding obstacles. For example, the output might look like this:

RUBRIC

Did the learner describe an MDP, and is it different than their other submissions?

- 0 points
  No
- **1 point**
  Yes

SC
JA
AP

Are the **states** well-specified? Namely are they Markov and so can be used as MDP states.

- 0 points
  No
- **1 point**
  Yes

SC
JA
AP

Are the **actions** well-specified? Namely can they used as actions in an MDP.

- 0 points
  No
- **1 point**
  Yes

SC
JA
AP

Are the **rewards** well-specified? Namely to satisfy the requirements in the definition of an MDP with the described state and action set.

0 points
No

1 point
Yes

JA

SC

AP

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Description: Atari Breakout is a classic arcade game where the player controls a paddle at the bottom of the screen to bounce a ball upwards to break a wall of bricks.
States: Configuration of the game at any given time. This includes the position of the paddle, and the position and velocity of the ball.
Actions: Moving the paddle left, moving the paddle right, or staying in place.
Rewards: Reward +1 when the ball breaks a brick, reward -1 when misses the ball, reward +1 wg

RUBRIC

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0 points
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JA
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PROMPT

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Description: k-armed bandit problem, there are different slot machines, each with an associated reward distribution. The goal is to learn which arm to pull in order to maximize the cumulative reward over a series of pulls.
States: Current knowledge or belief about the reward distributions of each arm.
Actions: Which arm to pull.
Rewards: The reward is the random outcome obtained by pulling the chosen arm at time step.

RUBRIC

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SC
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- 0 points
  No

1 point
Yes

SC

JA

AP

Start new attempt

Comments
Comments left for the learner are visible only to that learner and the person who left the comment.

WM

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