RGPV PYQ

Reinforcement learning (RL) is a type of machine learning that allows an agent to learn by interacting with its environment.

The agent receives feedback in the form of rewards and penalties, and it tries to maximize its cumulative reward over time.

Reinforcement learning is a powerful tool that can be used to solve a wide variety of problems, including robotics, game playing, and resource management.

Key Components of Reinforcement Learning

1. Agent: The agent is the entity that learns through reinforcement learning. It can be a physical robot, a software program, or even a human.

2. Environment: The environment is the world that the agent interacts with. It can be a physical environment, a simulation, or even a game.

3. Actions: The actions are the things that the agent can do in the environment.

4. Rewards: Rewards are the positive feedback that the agent receives when it takes a good action.

How Reinforcement Learning Works

1. The agent starts by exploring the environment and taking actions randomly.
2. As it interacts with the environment, it receives feedback in the form of rewards and penalties.

3. The agent then updates its policy so that it is more likely to take actions that lead to rewards and less likely to take actions that lead to penalties.
4. Over time, the agent learns to take the actions that maximize its cumulative reward.

Example

Playing Pac-Man

Pac-Man is a classic video game that can be used to illustrate the concept of reinforcement learning. The agent in this case is Pac-Man, and the environment is the maze. The actions that Pac-Man can take are moving up, down, left, and right. The goal of Pac-Man is to eat all of the dots in the maze while avoiding the ghosts.

Pac-Man receives a reward for eating a dot and a penalty for getting caught by a ghost. Over time, Pac-Man learns to take the actions that maximize its cumulative reward, which is to eat all of the dots in the maze while avoiding the ghosts.

Explain Reinformcement learning with an appropriate exaple

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