Summary:

Summary:

* **Reinforcement Learning (RL):** An agent learns through trial and error in an environment, receiving feedback (rewards/penalties) for its actions to achieve a long-term goal.
* **Types of RL:** Positive reinforcement (adding something positive) and negative reinforcement (removing something negative).
* **RL Elements:** Policy (agent's behavior), reward function (defines the goal), value function (long-term reward prediction).
* **Supervised Learning:** Trains a model on labeled data (input-output pairs) to predict outputs for new inputs.
* **Unsupervised Learning:** Discovers hidden patterns in unlabeled data, often through clustering or association.
* **K-Nearest Neighbors (KNN):** A supervised learning algorithm that classifies new data points based on their similarity to existing data points.

**

Flashcards:

**

Q1: What is the core principle of reinforcement learning?

A1: An agent learns by interacting with an environment, receiving feedback (rewards and penalties) for its actions to maximize long-term rewards.

Q2: What is the key difference between supervised and unsupervised learning?

A2: Supervised learning uses labeled data (input-output pairs), while unsupervised learning uses unlabeled data and aims to discover hidden patterns.

Q3: Name two types of unsupervised learning problems.

A3: Clustering (grouping similar data points) and association (finding relationships between variables).

Q4: How does the K-Nearest Neighbors algorithm classify a new data point?

A4: It assigns the new data point to the category that is most common among its K nearest neighbors based on a distance metric (e.g., Euclidean distance).

Q5: What are the main elements of a reinforcement learning system?

A5: Policy (agent's behavior), reward function (defines the goal), and value function (predicts long-term reward).