Types of Machine Learning

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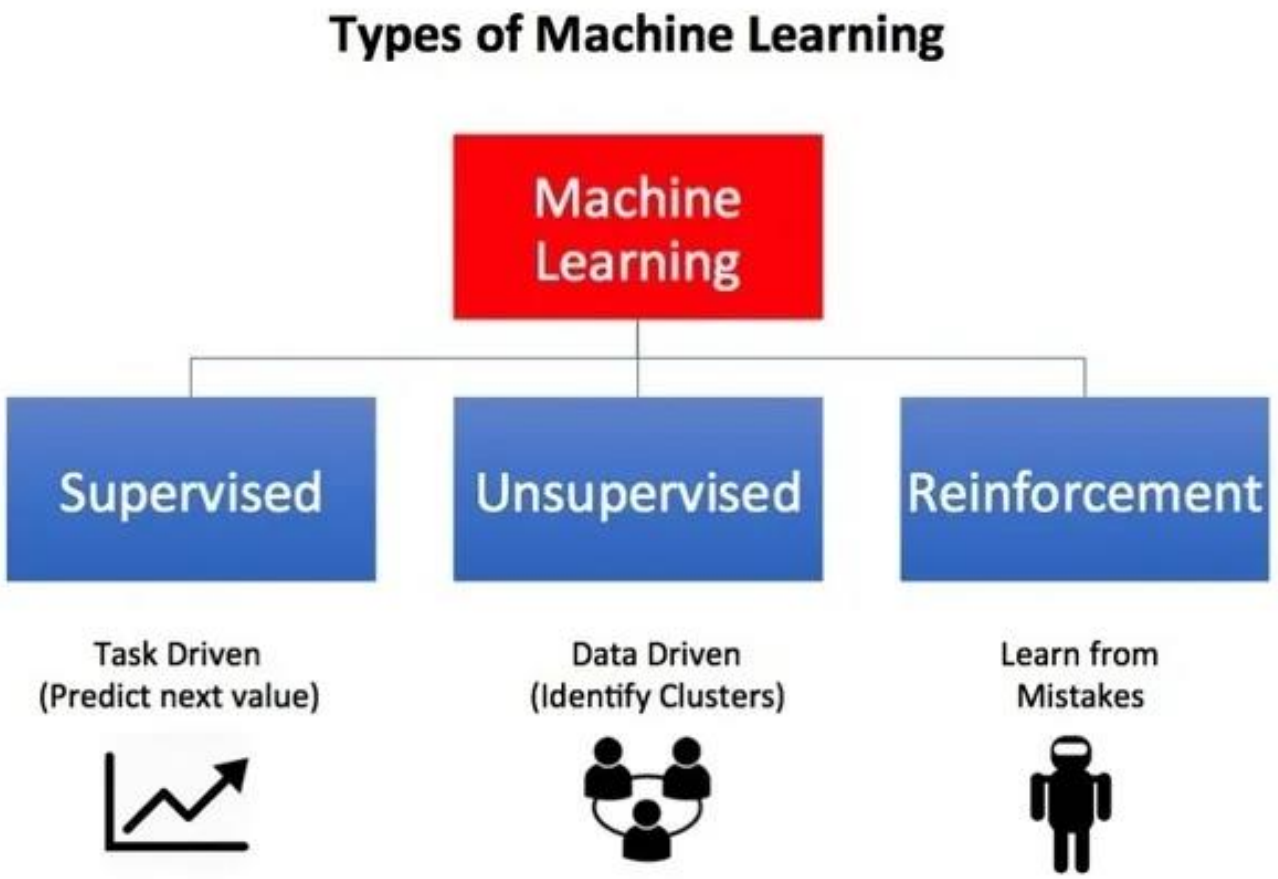
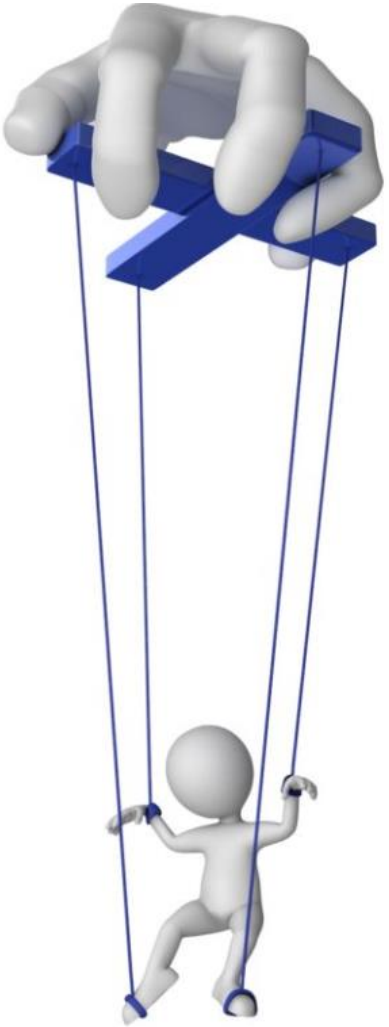
Three broad categories of Learning



Supervised Learning

- Supervise how the machine learns by providing it with example input data along with corresponding example outputs.
- Used when you have examples that contain target values.
- Supervised Learning can be of two types:
  - Classification (Output is a class)
  - Regression (Output is a real number)



Types of Supervised Learning

Classification

- Classification problems have finite discrete-valued target function.
- Examples:
  - Digit recognition
  - Coin classification
  - Credit approval (yes/no)

Regression

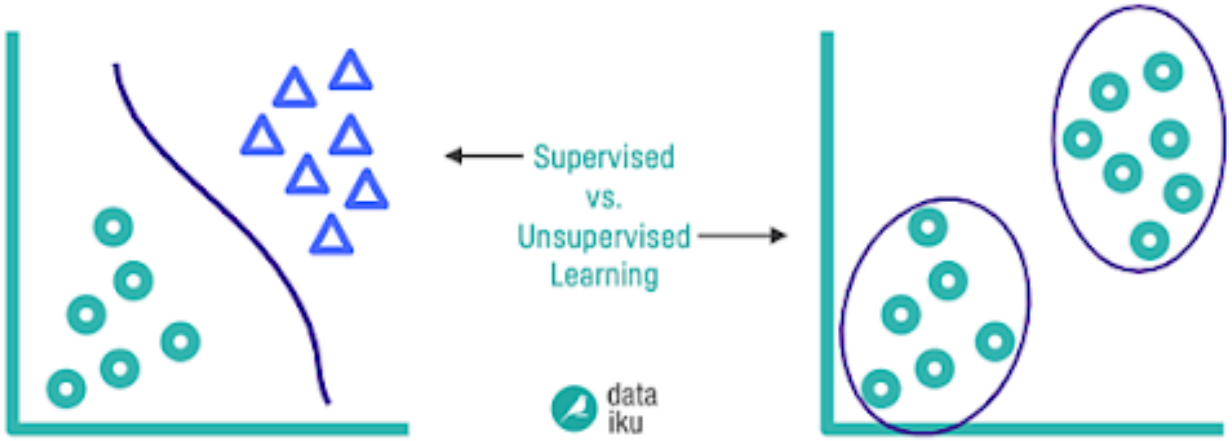
- Regression problems have continuous-values target functions.
- Examples:
  - Temperature Prediction
  - Credit Limit determination
  - Housing/Car price prediction

Unsupervised Learning

- Don’t supervise how the machine learns.
- Instead, search through the data to try to identify patterns.
- Used when you cannot provide examples to learn from data.

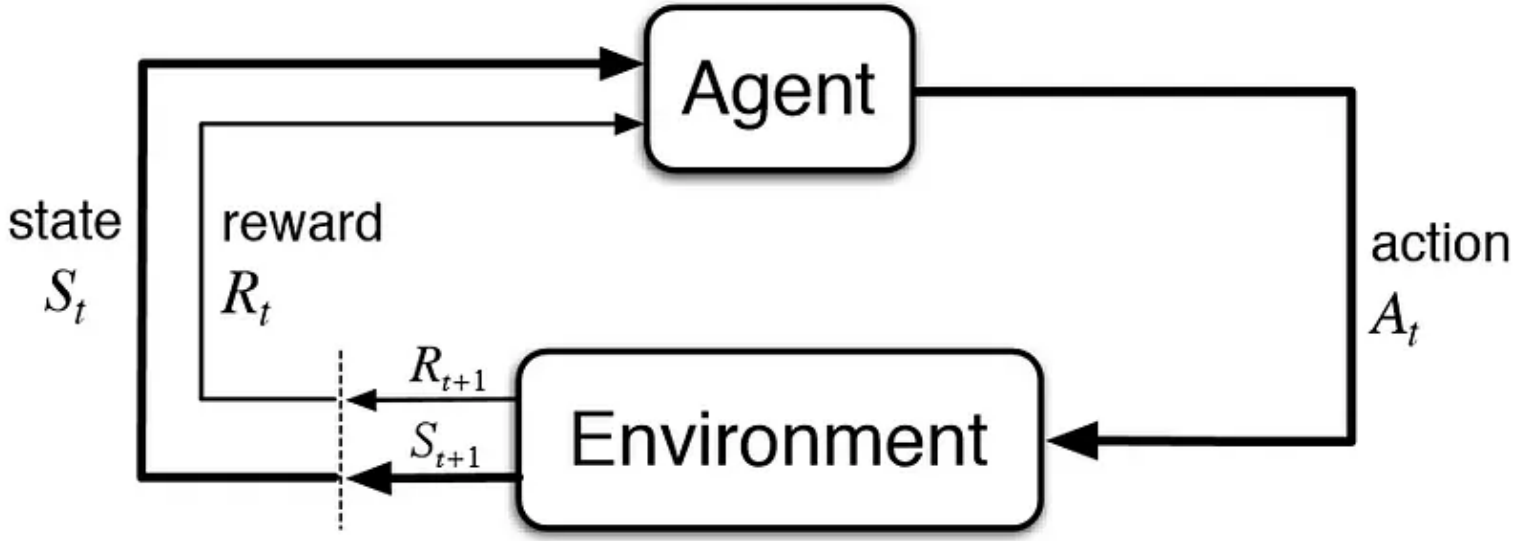
Examples of Unsupervised Learning – Clustering

- Assume that the coin denominations are unknown
- They can be clustered based on their mass and size, however, the label of each cluster will remain unknown.



Reinforcement Learning (RL)

- The goal of RL is to find a suitable action model that would maximize the **total cumulative reward** of the agent.



Reinforcement Learning Example