Learning Type	Supervised Learning	Unsupervised Learning	Reinforcement Learning
Training Data	Labeled data (input & output pairs)	Unlabeled data (only input)	Feedback from environment
Learning Objective	To learn a mapping function from input to output	To discover patterns and relationships in data	To maximize cumulative reward
Example Use Cases	Image classification, Regression, Speech recognition	Clustering, Dimensionality reduction	Game playing, Robotics
Teacher/Guide	Provided with correct answers or labels	No explicit teacher or guide	Reward signal from environment
Model Output	Predictions based on learned patterns	Cluster/group data, Dimension-reduced representation	Actions to take in an environment
Evaluation Metric	Typically uses metrics like accuracy, loss	Quality of clustering, Reconstruction error	Cumulative reward, Success rate
Approach Complexity	Often simpler as it has labeled data for direct comparison	More complex as it requires finding patterns in data	Complex due to the interaction with the environment
Key Challenges	Requires labeled data, may suffer from overfitting	Difficulty in identifying the correct clustering or patterns	Balancing exploration and exploitation

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