Knowledge Discovery & Data Mining
– Supervised & Unsupervised Learning –

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Outline

- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning

Supervised vs. Unsupervised vs. Reinforcement Learning

Weakly supervised learning
(semi-supervised learning, few-shot learning, zero-shot learning)

Supervised Learning

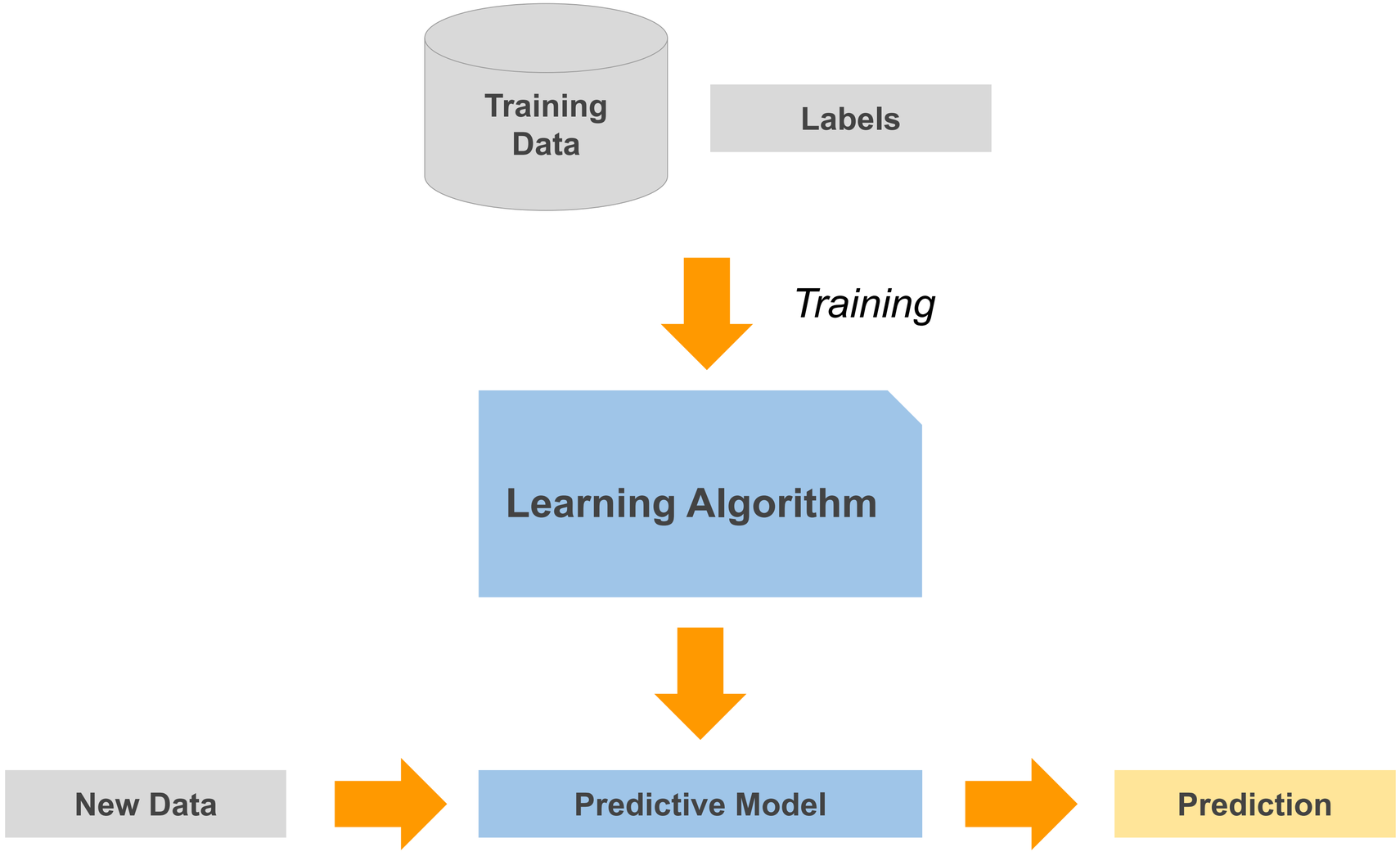
Unsupervised Learning

Reinforcement Learning

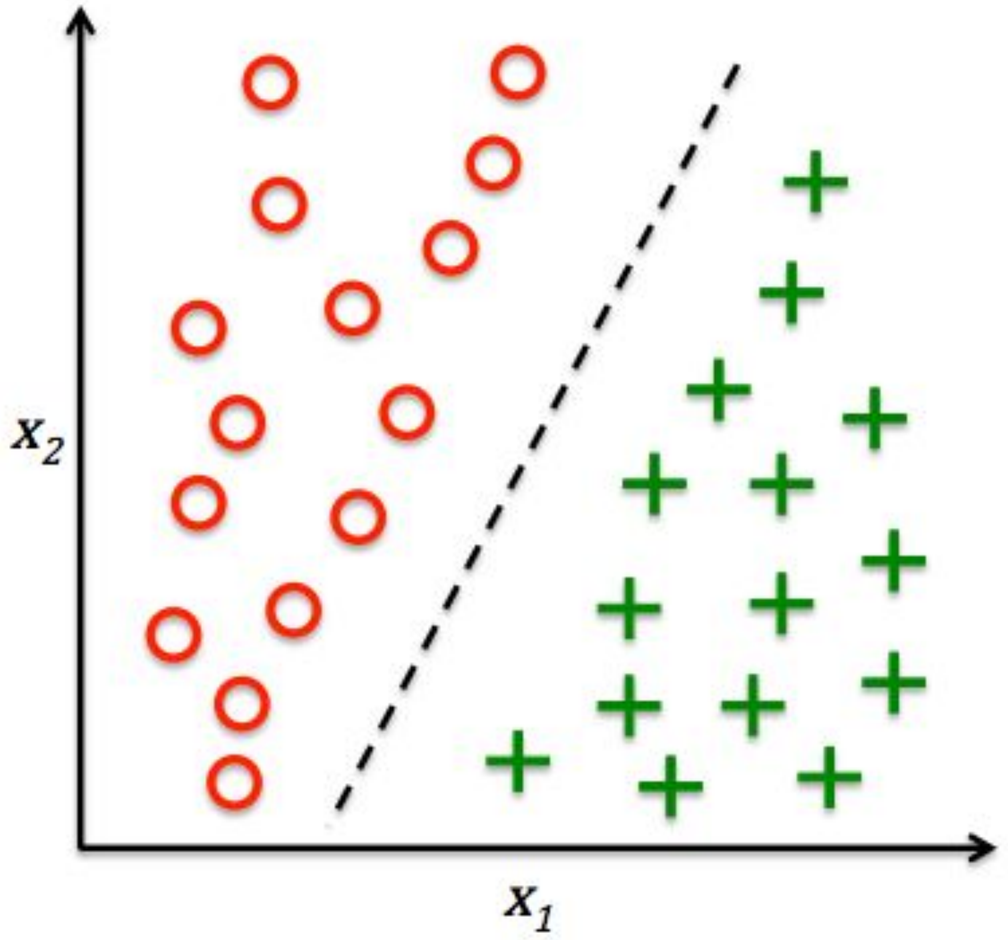
Supervised vs. Unsupervised Learning

- Supervised Learning
  - Data: both the features, x, and a target, y, for each item in the dataset
  - Goal: ‘learn’ how to predict the target from the features, y = f(x)
  - Example: Regression and Classification
- Unsupervised Learning
  - Data: Only the features, x, for each item in the dataset
  - Goal: discover ‘interesting’ things about the dataset
  - Example: Clustering, Dimensionality reduction, Principal Component Analysis (PCA)

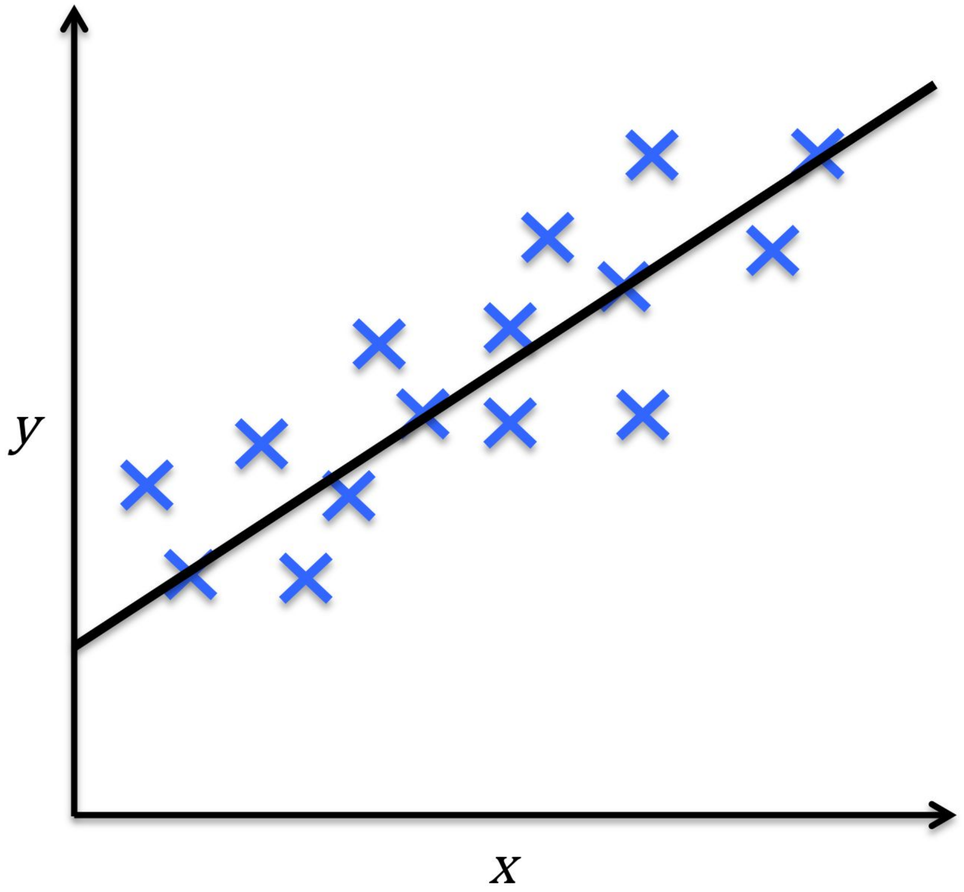
Supervised Learning



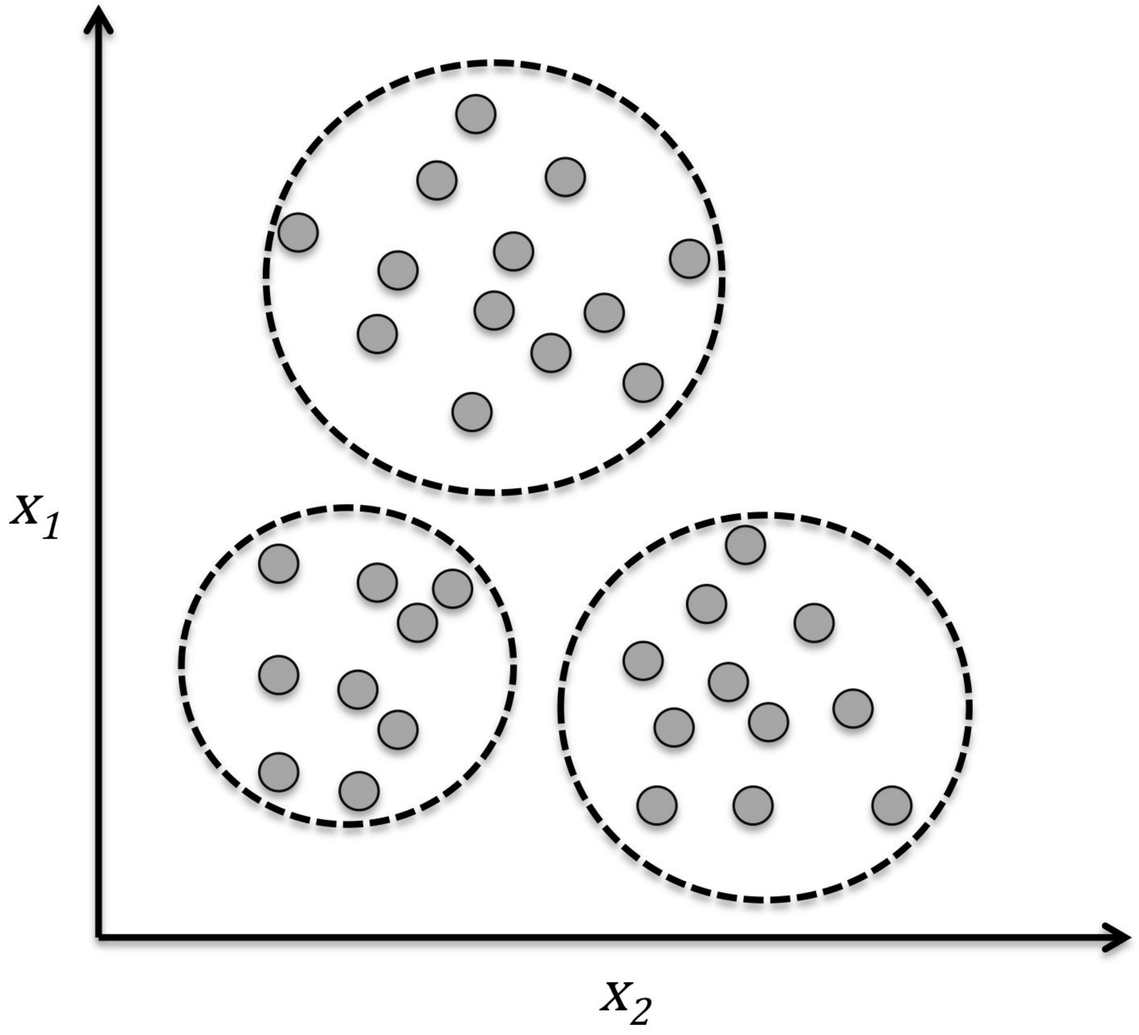
Supervised Learning: Classification for predicting class labels



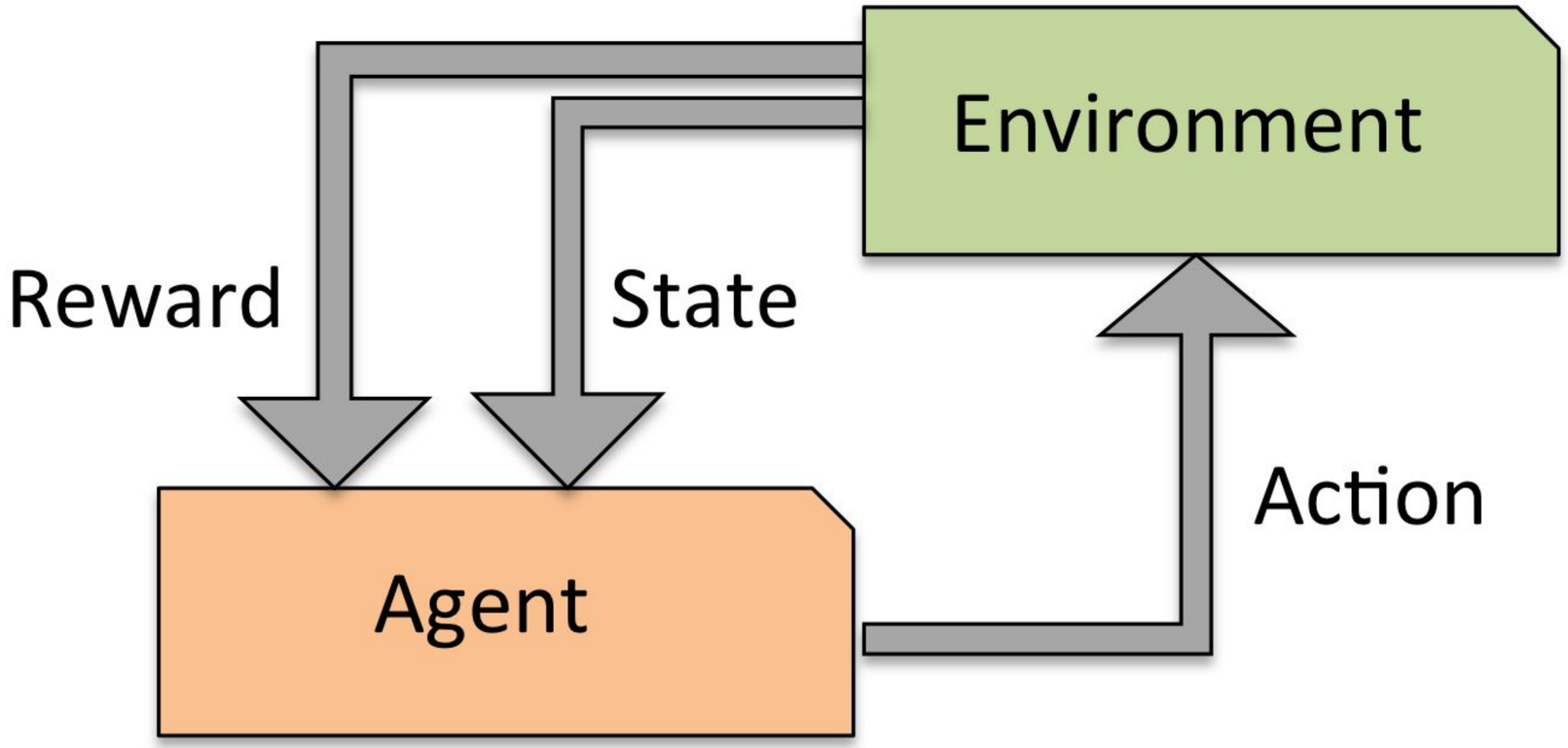
Supervised Learning: Regression for predicting continuous outcomes



Unsupervised learning: Finding subgroups with clustering



Reinforcement learning: Solving interactive problems



Summary

- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning