

Homework 1 Presentation

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Overview

1 Supervised and Unsupervised Learning

2 Hastie and Tibshirani

Supervised and Unsupervised Learning

Q: What's the difference between Supervised and Unsupervised learning?

Supervised and Unsupervised Learning

Supervised Learning

- Labeled Data

Unsupervised Learning

- Unlabeled Data

Remark

Supervised learning requires labeled or pre-classified data.

Caution!

Labeled data often comes with a greater up-front cost, typically through manual classification.

Supervised and Unsupervised Learning

Supervised Learning

- Labeled Data
- Known Features

Unsupervised Learning

- Unlabeled Data
- Unknown Features

Remark

Labeled data implies that the feature of interest is already known.

Examples:

- Training a model to classify pictures of animals
- Training a model for handwriting recognition

Supervised and Unsupervised Learning

Supervised Learning

- Labeled Data
- Known Features
- Leverages Experience

Unsupervised Learning

- Unlabeled Data
- Unknown Features
- Discovers New Patterns

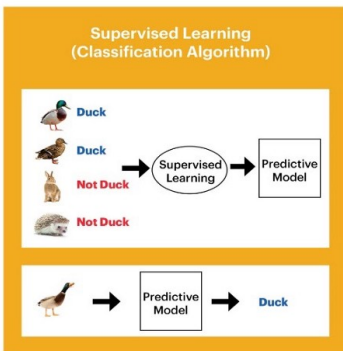
Remark

Supervised learning will model already established patterns; unsupervised may discover new patterns, or new ways to group or cluster data.

Supervised and Unsupervised Learning

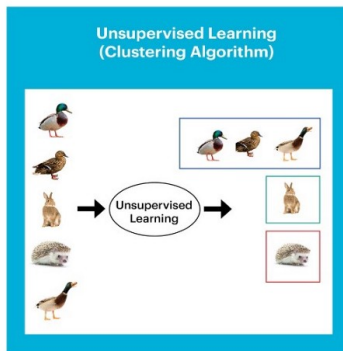
Supervised Learning

- Labeled Data
- Known Features
- Leverages Experience



Unsupervised Learning

- Unlabeled Data
- Unknown Features
- Discovers New Patterns



Common Uses: Supervised Learning

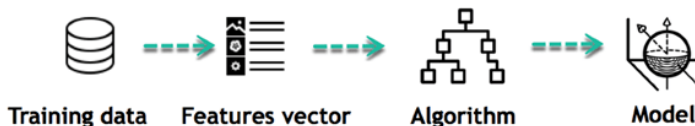
Supervised Learning

- Predictive Modeling

Remark

Using known data to predict results

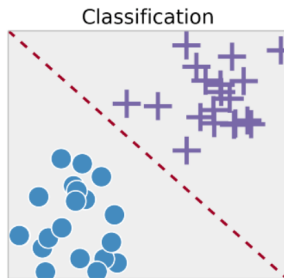
Learning Phase



Common Uses: Supervised Learning

Supervised Learning

- Predictive Modeling
- Classification



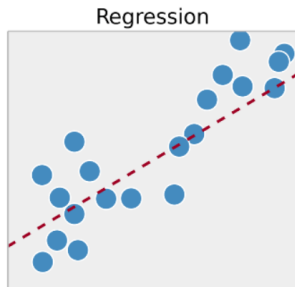
Remark

Classification into known group types based on the features provided to the model

Common Uses: Supervised Learning

Supervised Learning

- Predictive Modeling
- Classification
- Regression



Remark

Regression analysis based on the provided data

Common Uses: Unsupervised Learning

Unlabeled Data nknown Features
iscovers New Patterns

Unsupervised Learning

- Labeled Data

Common Uses: Unsupervised Learning

Unlabeled Data Unknown Features
Discovers New Patterns

Unsupervised Learning

- Labeled Data
- Known Features

Common Uses: Unsupervised Learning

Unlabeled Data
Unknown Features
Discovers New Patterns

Unsupervised Learning

- Labeled Data
- Known Features
- Leverages Experience

Adversarial Networks: The Happy Medium?

Hastie and Tibshirani