

PREPARATION PHASE

PRIOR KNOWLEDGE

DATE	22 AUGUST 2022
TEAM ID	PNT2022TMID15499
PROJECT NAME	EARLY DETECTION OF CHRONIC KIDNEY DISEASE USING MACHINE LEARNING

PRIOR KNOWLEDGE:

Machine learning:

Supervised and Unsupervised Learning In Machine Learning | Machine Learning | What is Machine Learning?

Watch later Share Info

Machine Learning is the science of making computers learn and act like humans by feeding data and information without being explicitly programmed!

Past Data Train Analyse System Learns Prediction Output

Data is processed System Learns Machine Learning makes predictions and decisions based on past data

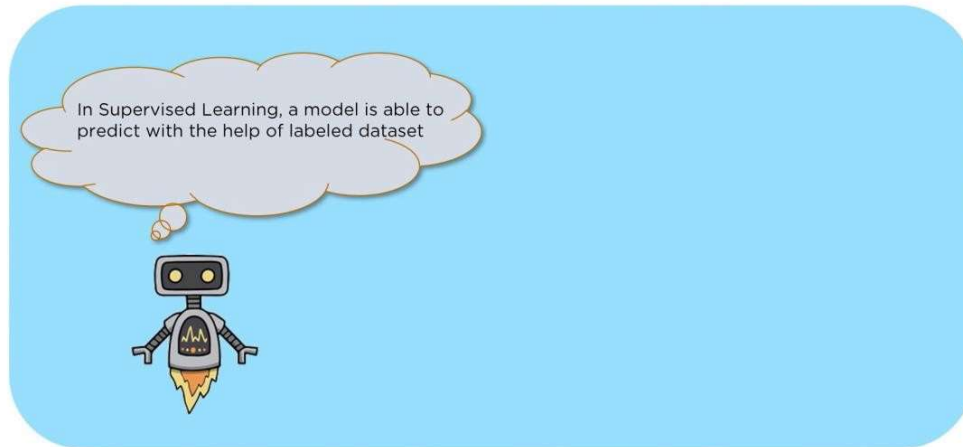
1:12 / 9:39 • What is Machine Learning? simplelearn YouTube

Machine learning is defined as making machines learn and act as humans by feeding them with data.

There are two types of learning in machine learning:

1. Supervised learning:

Supervised Learning

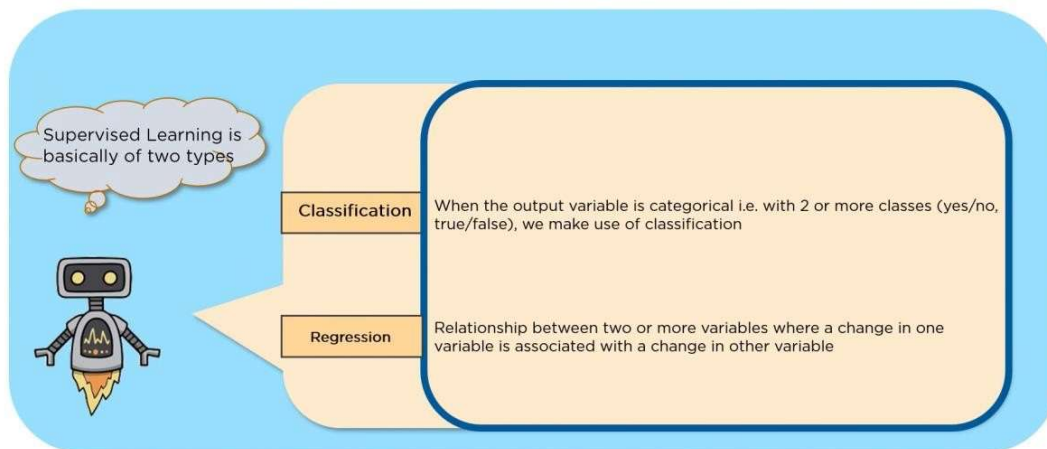


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Supervised learning is done with the help of a labelled dataset.

Types of Supervised Learning



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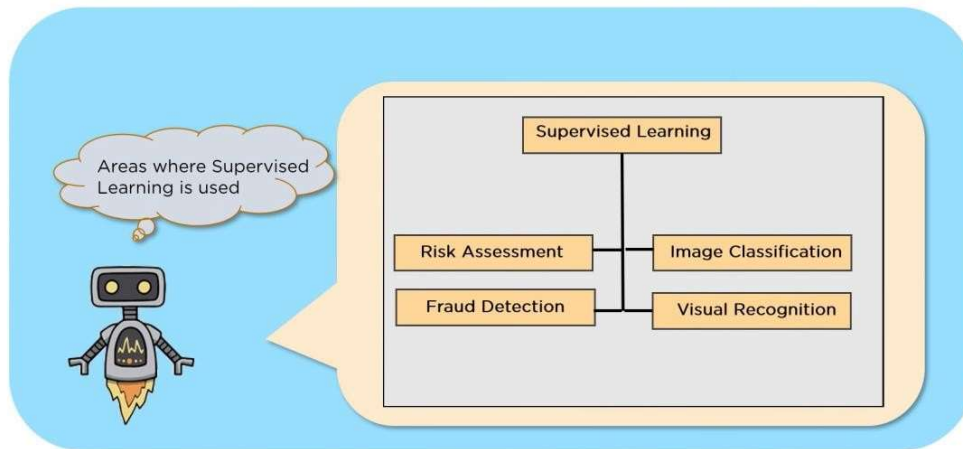
There are two types of supervised learning:

a) Classification

b) Regression

Applications of supervised learning:

Applications of Supervised Learning



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2. Unsupervised learning:

Unsupervised Learning



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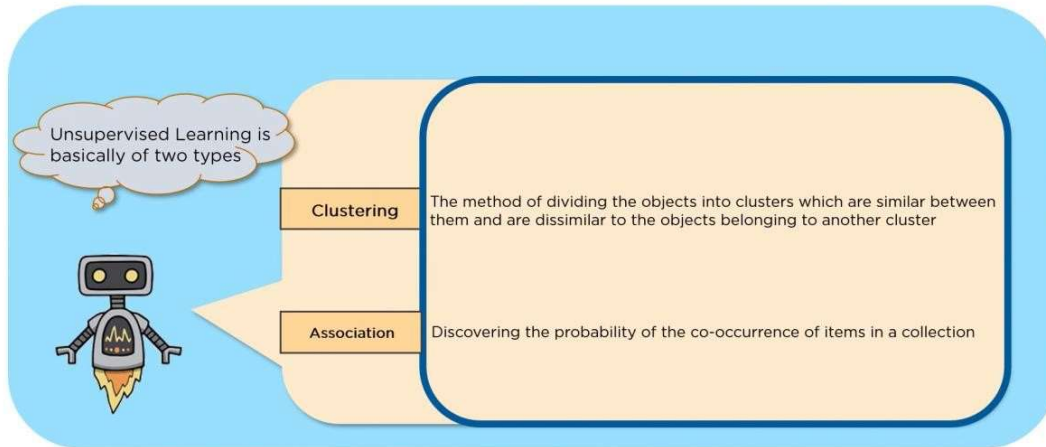
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Unsupervised learning is defined as using unlabeled data to train the model.

Types of unsupervised learning:

- a) Clustering
- b) Association

Types of Unsupervised Learning

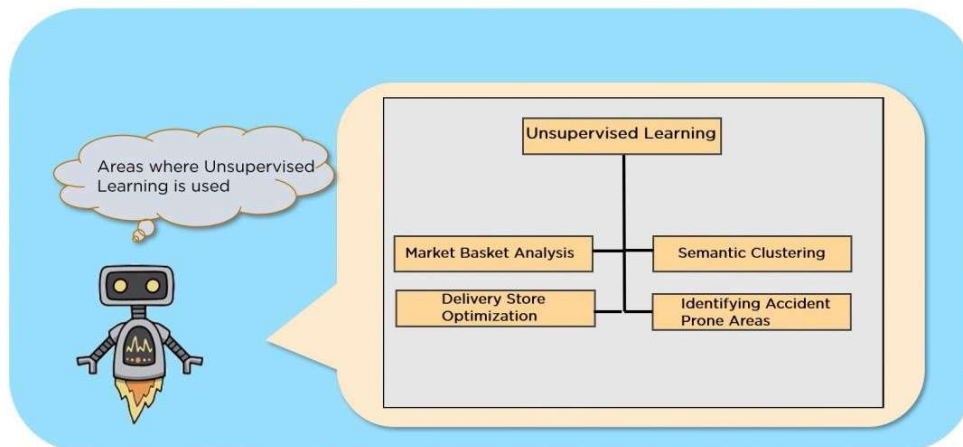


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Applications of unsupervised learning:

Applications of Unsupervised Learning



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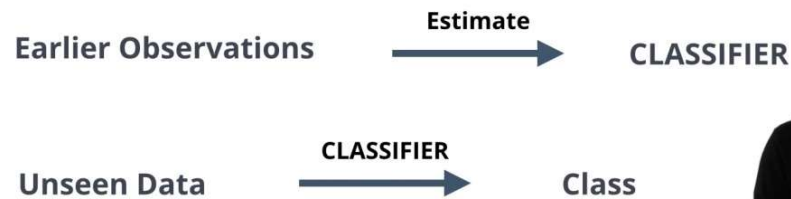
Classification:



Introduction to Machine Learning

Classification Problem

Goal: predict category of new observation



Introduction to Machine Learning

Classification Applications

- Medical Diagnosis
- Animal Recognition

Important:

- Qualitative Output
- Predefined Classes

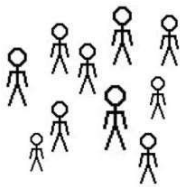


Regression:



Introduction to Machine Learning

Regression



- Relationship: **Height - Weight?**
- Linear?
- Predict: **Weight → Height**



Introduction to Machine Learning

Regression Model

Fitting a **linear** function

$$\text{Height} \approx \beta_0 + \beta_1 \times \text{Weight}$$

- **Predictor:** Weight
- **Response:** Height
- **Coefficients:** β_0, β_1

Estimate on previous input-output

```
> lm(response ~ predictor)
```



Regression Applications

- Payments → Credit Scores
- Time → Subscriptions
- Grades → Landing a Job
- Quantitative Output
- Previous **input-output** observations



Clustering:

Clustering

- **Clustering:** grouping objects in clusters
 - *Similar* within cluster
 - *Dissimilar* between clusters
- **Example:** Grouping similar animal photos
 - No labels
 - No **right** or **wrong**
 - Plenty possible clusterings

