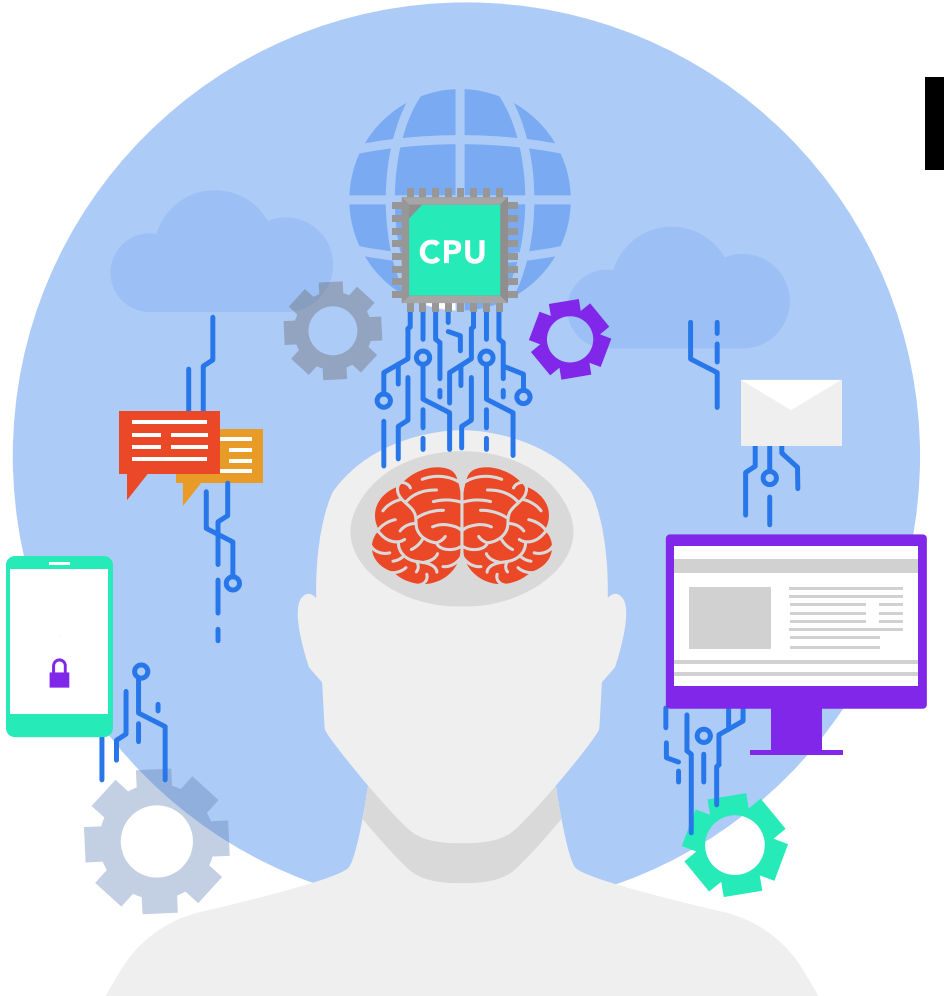
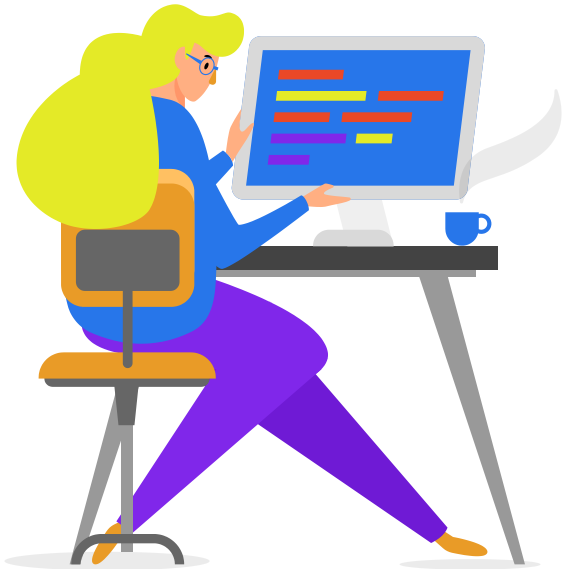


Introduction to Machine Learning

A Comprehensive Guide to Basic Machine Learning Concepts

Course Contents



Module 1
Supervised Learning Methods

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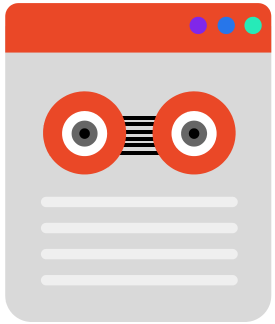
Supervised Learning Methods

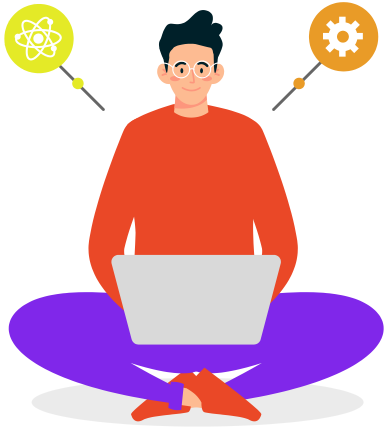
Supervised Learning

Supervised learning trains models on labeled data.



The model

Some common methods include Linear Regression.



Linear Regression

Models relationships between variables.

Unsupervised Learning

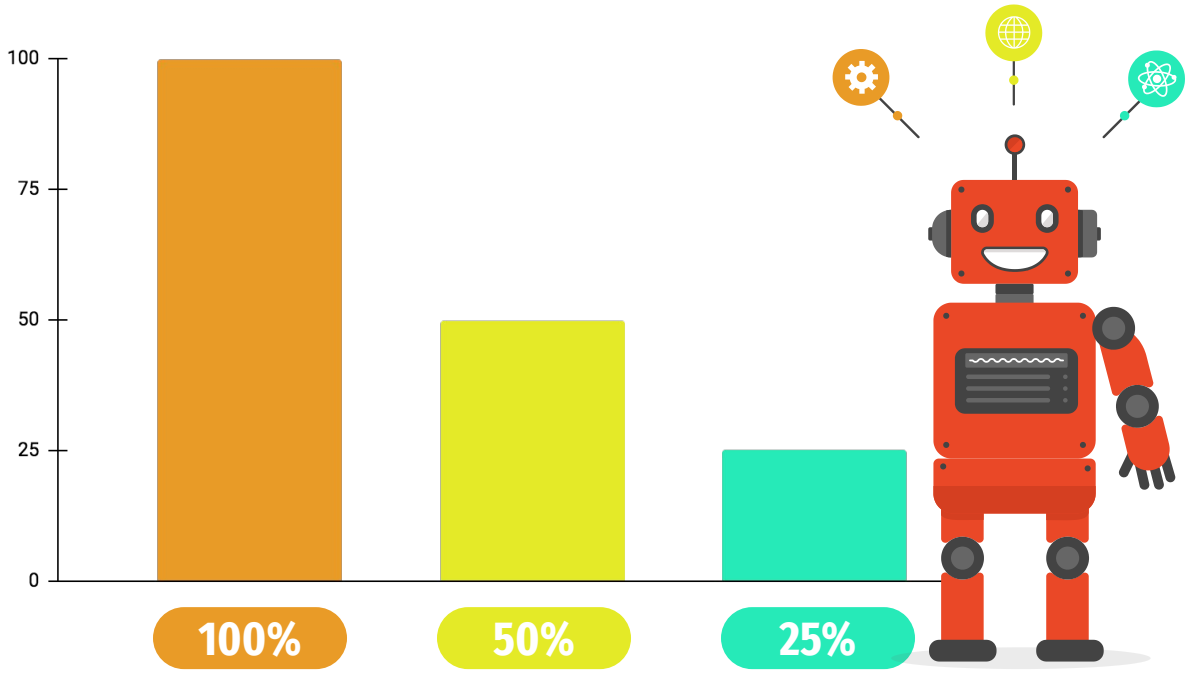
While others like K-Means are unsupervised and used for clustering.

Loss Functions in Classification

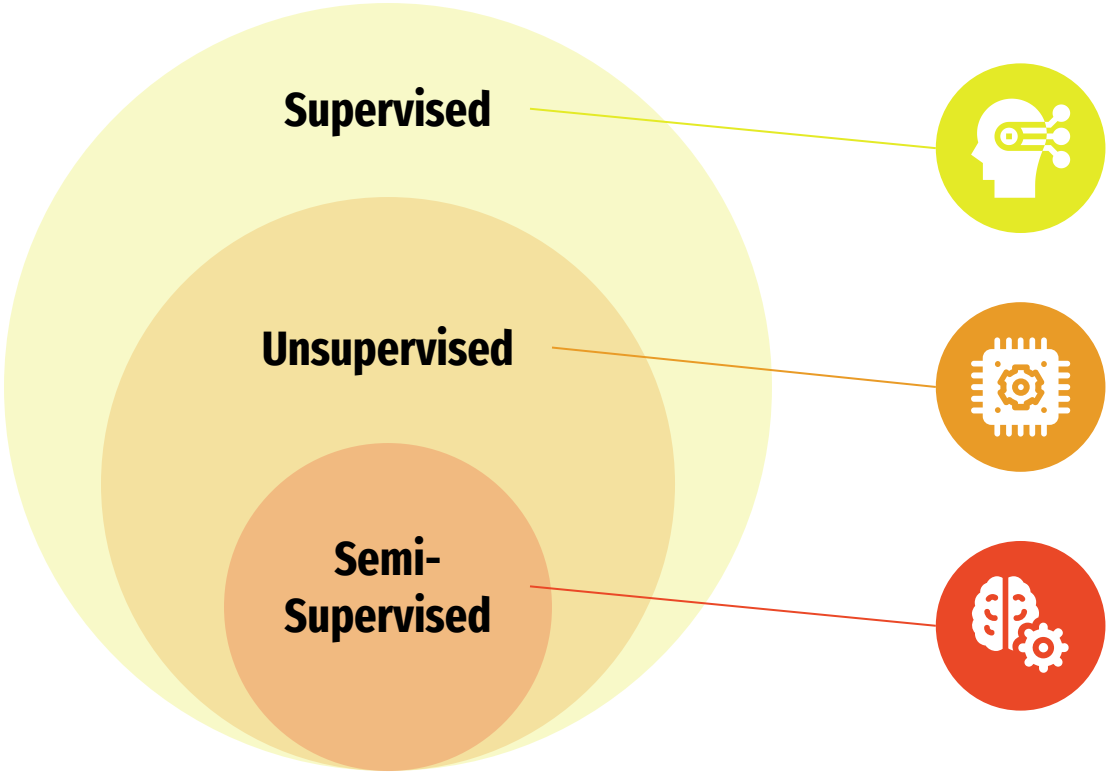
01 Loss Functions
Loss Functions measure how well a model is performing.

02 Classification
For classification problems, **Cross-Entropy** is commonly used.

03 Cross-Entropy
Is used to quantify the difference between predicted and actual probabilities.



Types of Machine Learning



Machine Learning is commonly categorised into **Supervised, Unsupervised**, and **Semi-supervised Learning**. *There's no category called "Uncontrolled Learning."*

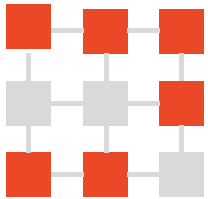
Support vector Machine (SVM)

01

SVM

SVM stands for **Support Vector Machine**

02



Support Vector Machine

SVM is a supervised learning algorithm used for classification and regression tasks, working by finding the hyperplane that best separates the classes.

Partitioning an Unlabeled Dataset

45%

K-Means

Is an algorithm used to partition unlabeled data.

35%

Clustering

The K-means algorithm does this by categorising the data into groups or clusters.

20%

The Goal

The algorithm aims to minimise the variance within each cluster.

Overfitting in Machine Learning

Overfitting in Machine Learning

01 Overfitting

Overfitting refers to a model that performs well on the training data but poorly on unseen data.

02 Cause

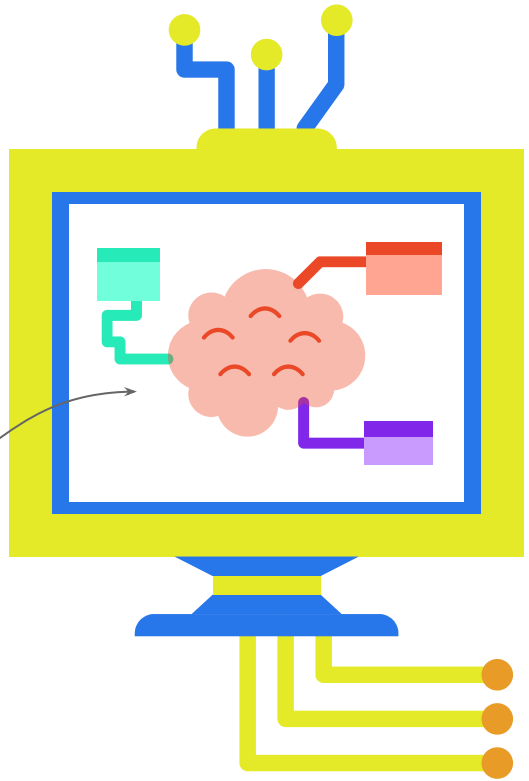
It has learned the noise in the training data rather than the underlying pattern.

Goals of Regression in Machine Learning

Regression

Regression in Machine Learning aims to predict a continuous value based on input variables

- Input 1
- Input 2
- Input 3



Predictions

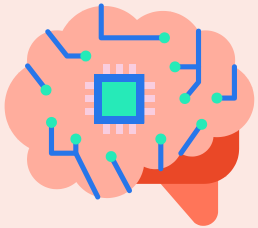
The Regression model tries to fit the best line or curve to represent the relationship between variables

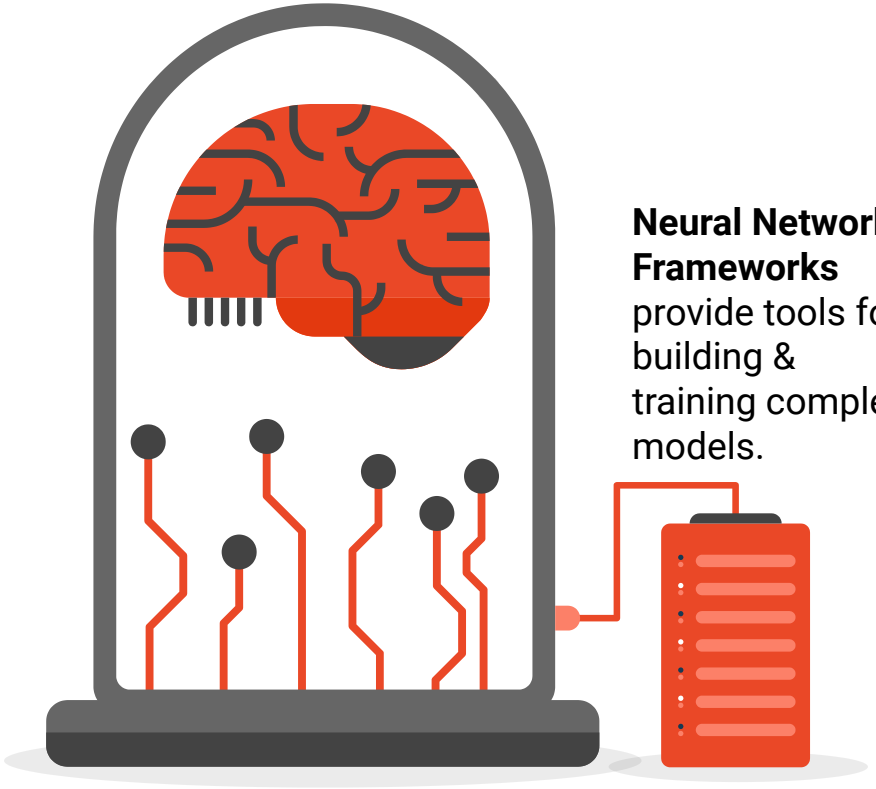
- Output 1
- Output 2
- Output 3

Neural Network Frameworks

TensorFlow

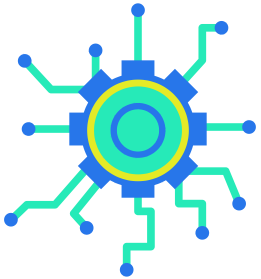
TensorFlow is a popular open-source framework used to develop neural networks & other Deep Learning models.





Neural Network Frameworks provide tools for building & training complex models.

Data Splitting into Training & Testing Sets



Training

Data Splitting
Is the process of dividing a dataset into Training & Testing Sets.

Relationships	Patterns
Dependencies	Structures

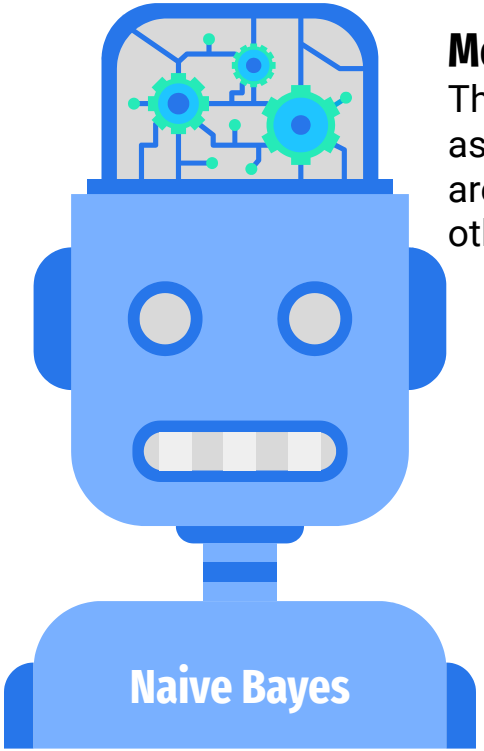
Testing

Benefits
This helps by evaluating the model's performance on unseen data.

Bayes Theorem in Machine Learning Algorithms

Naive bayes
Is a Classification Algorithm.

Bayes Theorem
The **Naive Bayes** Algorithm is based on **Bayes Theorem.**



Method
The **Naive Bayes** Algorithm assumes that the features are independent of each other.

Result
The **Naive Bayes** Algorithm calculates probabilities to makes predictions.

Course Complete
Great Work!

01

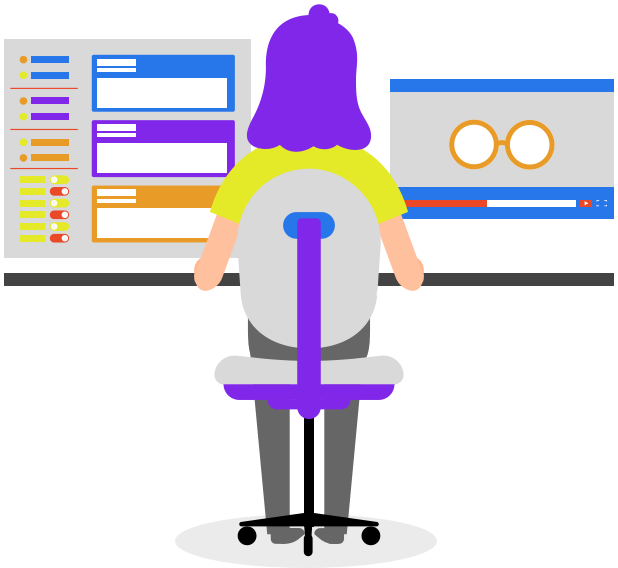
Course Complete

Congratulations on completing the Machine Learning course!

02

What You've Learned

You've explored essential topics such as supervised learning methods, loss functions, overfitting, regression, neural networks, and more.



03

Next Steps

You're now ready to take the exam on the Streamlit application.

04

Exam Time!

Good luck!