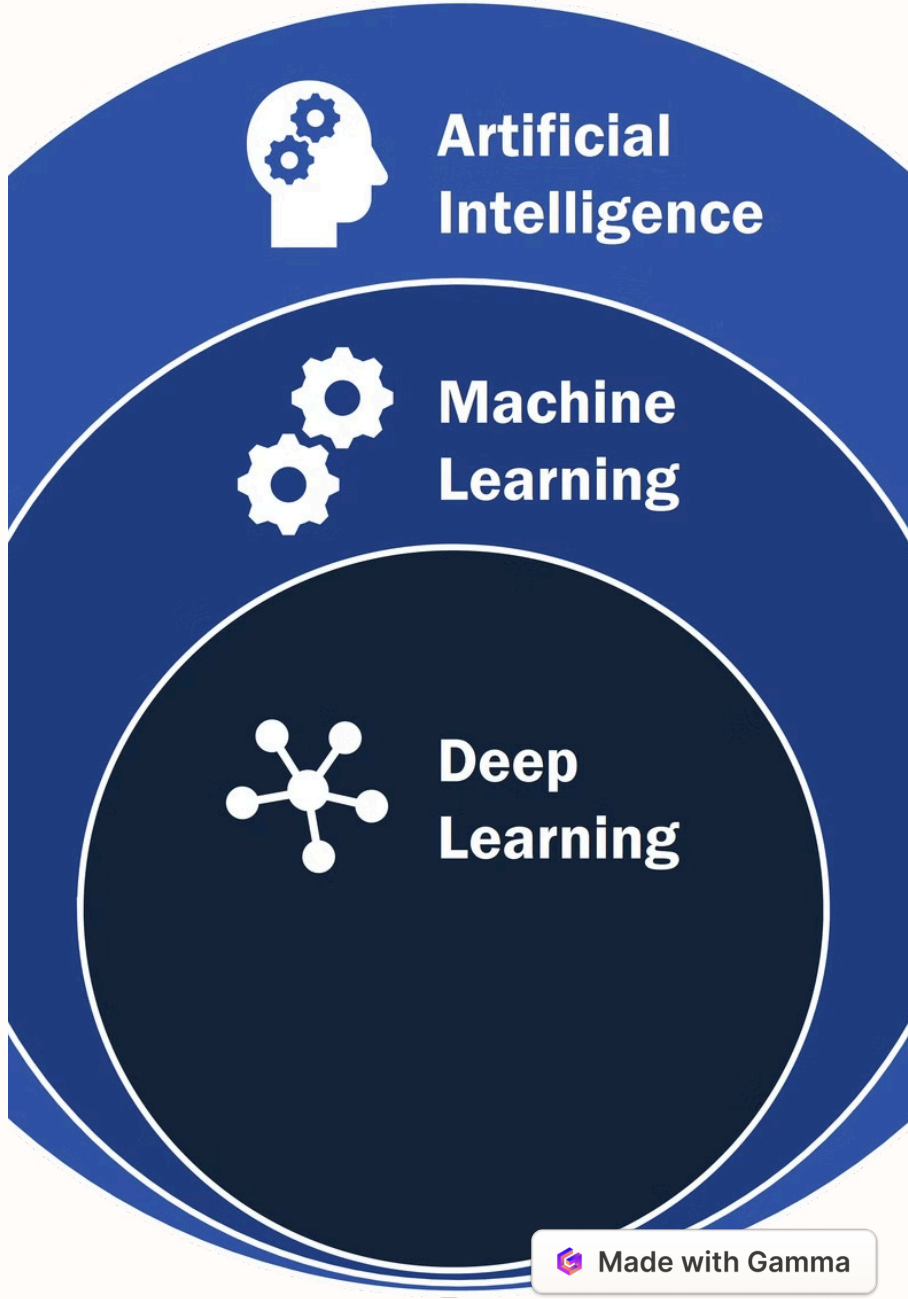
Introduction to Machine Learning

Machine Learning (ML) is a branch of artificial intelligence. It is a method where computers use data to learn patterns and make predictions or decisions automatically. It allows systems to get better over time without needing specific instructions.



What is Machine Learning?

Algorithms

Machine Learning uses algorithms to analyze data and identify patterns.

These algorithms are designed to learn from data and improve their performance over time.

Data

Data is the fuel for Machine Learning.

The quality and quantity of data significantly impact the accuracy and effectiveness of ML models.

Introduction to data in machine learning

Textual Data

Unstructured data like reviews, articles, or social media posts.

Categorical Data

Labels or categories, such as colors, genders, or types of products.

Numerical Data

Numbers represent measurements or quantities, like age, height, or temperature.

Image Data

Visual information like photos, videos, or graphics.

Types of Machine Learning

Supervised Learning

Learning from labeled data to make predictions.

Unsupervised Learning

Finding patterns in unlabeled data.

Reinforcement Learning

Learning by interacting with an environment and receiving rewards or penalties.

Supervised Machine Learning

The training data is labelled, target column is present(which helps us make final decission)

Types of Supervised Machine Learning

- Regression: This is used to predict continuous numerical output.(person's weight based on their height)
- Classification: This is used to predict categorical output.(fruit is an apple or an orange based on its features)

Regression:

Types of Regression:

- Simple Linear Regression
- Multiple Linear Regression
- Polynomial Linear Regression

Linear Regression:

Linear regression is a method that models the relationship between two variables by fitting a straight line to the data points, allowing us to predict one variable based on the value of another.

(predicts a person's salary based on their years of experience by drawing a straight line through the data points.)