# What is Machine Learning (ML)?

Machine Learning (ML) is a subfield of artificial intelligence (AI) that focuses on building systems that can learn from data, identify patterns, and make decisions with minimal human intervention. Instead of being explicitly programmed for every task, ML algorithms improve their performance over time as they are exposed to more data.  
Example: A machine learning model can learn to recognize handwritten digits after being trained on thousands of labeled digit images.

# What is a Supervised Machine Learning Algorithm?

Supervised learning is a type of ML where the model is trained on a labeled dataset. This means the training data includes both the input and the correct output. The algorithm learns to map the input to the output so it can make accurate predictions on new, unseen data.  
There are two main types of problems supervised learning handles:

* Regression (predicting continuous values)
* Classification (predicting categories)

Example: Predicting house prices based on features like location, size, and age using historical data with known prices.

# What is Regression and Classification?

* Regression is used when the output variable is a continuous number.  
   Example: Predicting the temperature tomorrow or the value of a stock.
* Classification is used when the output variable belongs to a specific category or class.  
   Example: Determining whether an email is spam or not (binary classification), or classifying types of flowers based on features (multi-class classification).