MODULE 02

SUPERVISED LEARNING

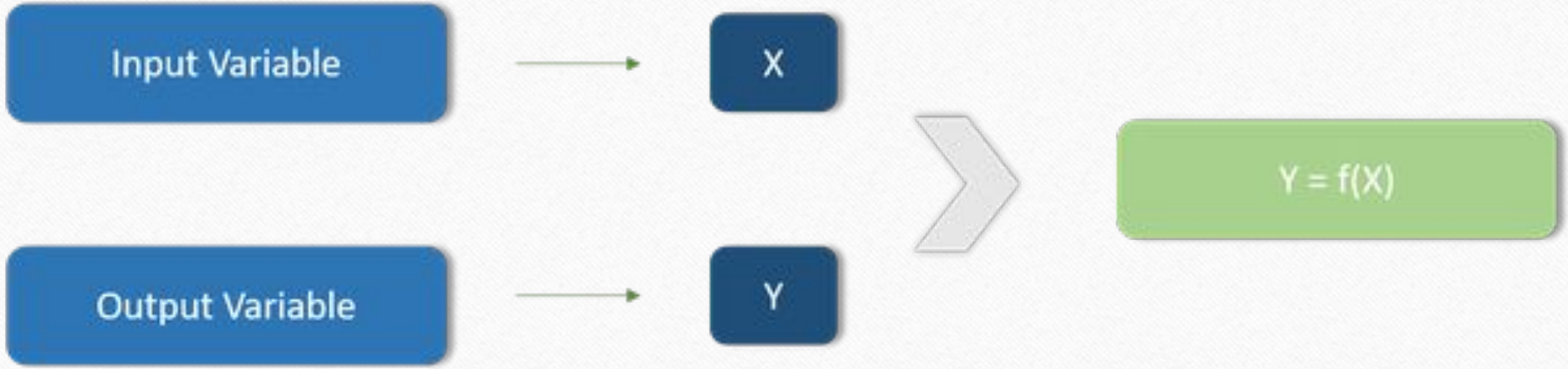
WHAT IS SUPERVISED LEARNING ?

Supervised learning is a type of machine learning where you have input variables (x) and an output variable (Y) and you use an algorithm to learn the mapping function from the input to the output.

$$Y = f(X)$$

The algorithm learns from "labeled" training data helps you to predict outcomes for unseen data.

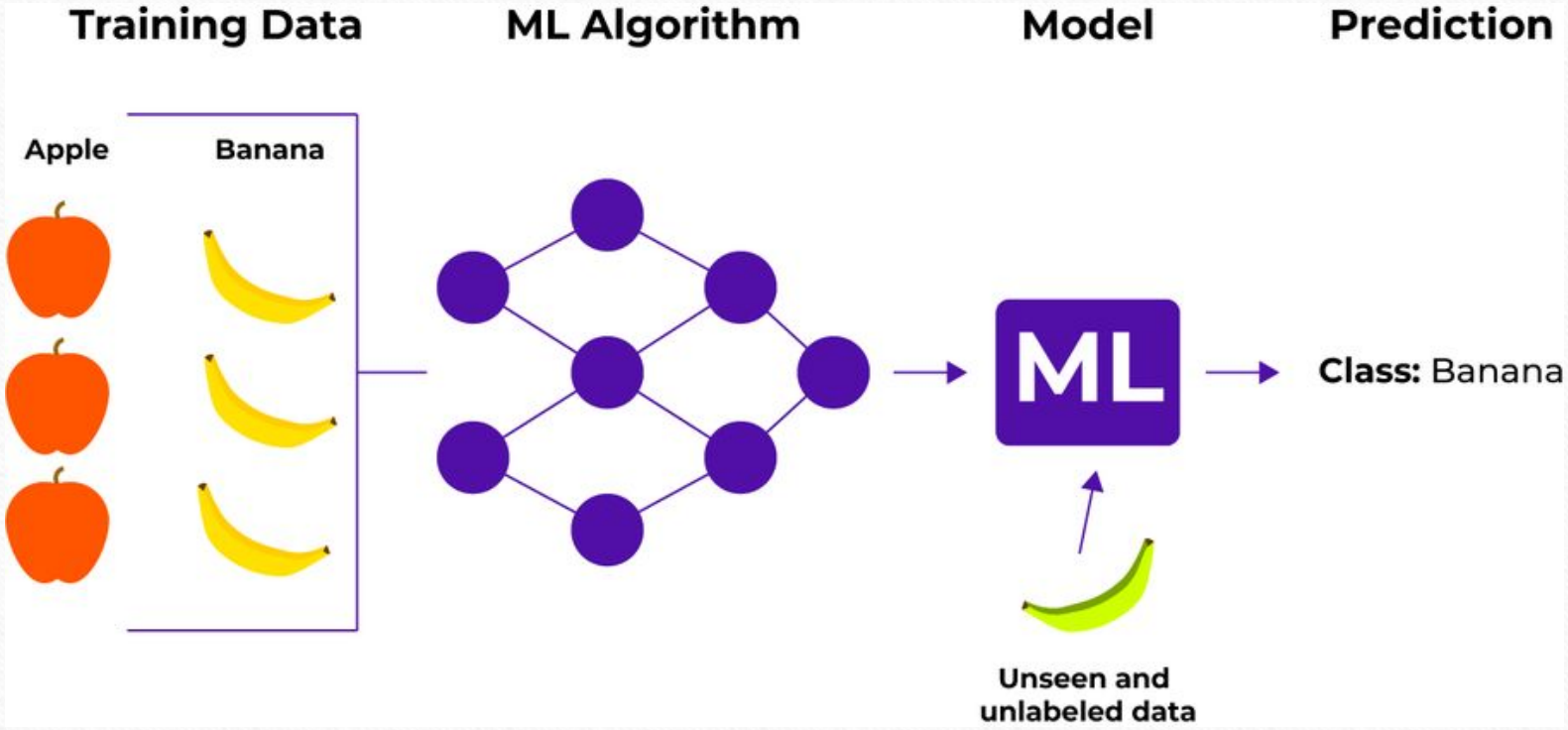
GOAL OF USING SUPERVISED LEARNING



The goal is to approximate the mapping function well , so that you can predict the output variables (Y) for that given input variable (x)

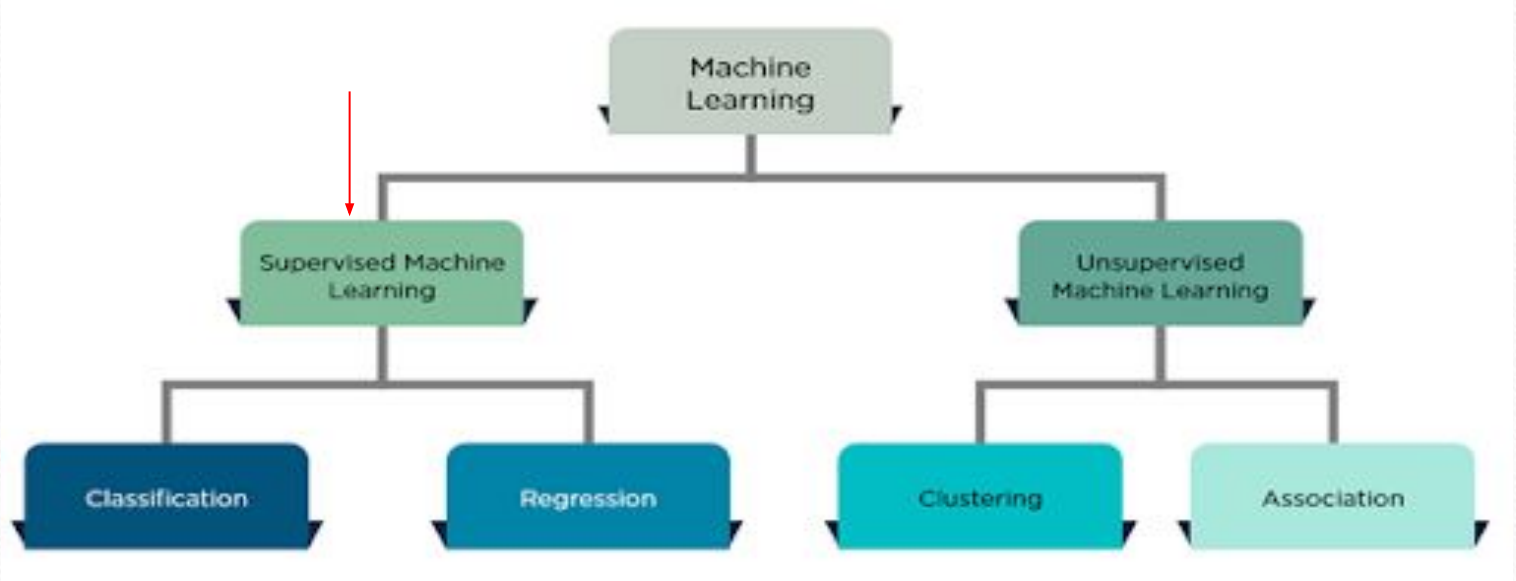
EXAMPLE OF SUPERVISED LEARNING

- If shape of object is rounded and depression at top having color Red then it will be labelled as –**Apple**.
- If shape of object is long curving cylinder having color Green-Yellow then it will be labelled as –**Banana**.
- Now suppose after training the data, you have given a new separate fruit based on the above inferences the new fruit should be identified



TYPES IN SUPERVISED LEARNING

Supervised learning can be split into two subcategories :
Classification and regression.



CLASSIFICATION :

Classification predictive modeling is the task of approximating a mapping function (f) from input variables (X) to discrete output variables (y)(classes).

Here the output variable is usually a category, such as “Red” or “blue” or “disease” and “no disease” or “spam” or “not spam”.

REGRESSION:

Regression predictive modeling is the task of approximating a mapping function (f) from input variables (X) to a real or continuous output variable (y)

Here , output variable is usually a real value, such as “dollars” or “weight”.

APPLICATIONS OF SUPERVISED LEARNING

- BIOINFORMATICS
- SPEECH RECOGNITION
- SPAM DETECTION
- OBJECT RECOGNITION
- SENTIMENTAL ANALYSIS