Supervised Learning

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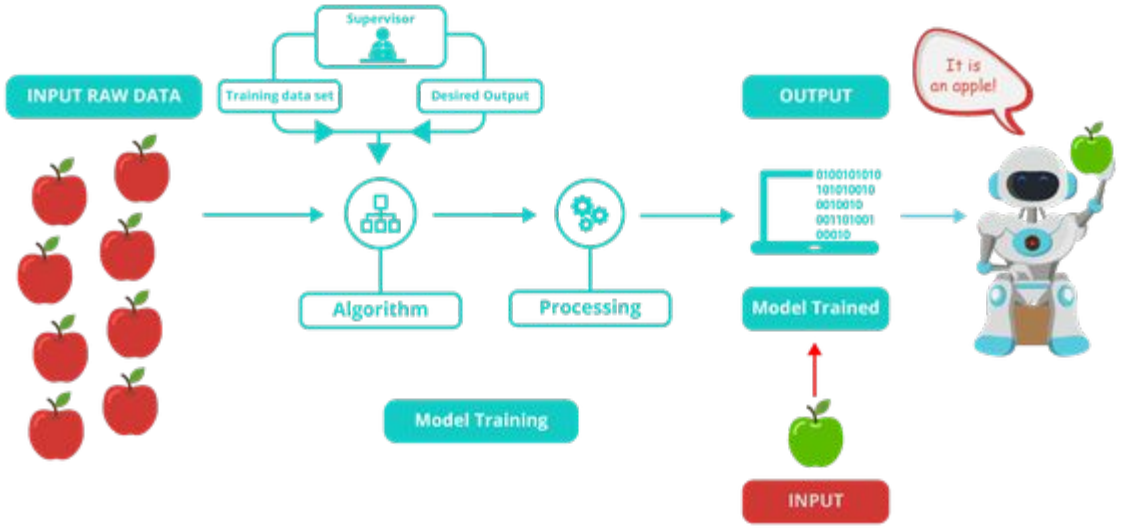
Supervised Learning – Introduction

Supervised learning is the machine learning task of learning a function that maps an input to an output based on example input-output pairs.

It infers a function from labeled training data consisting of a set of training examples.

Supervised Learning – Example



Supervised Learning – i/o Variables

Supervised learning is 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 goal is to approximate the mapping function so well that when you have new input data (x) that you can predict the output variables (Y) for that data.

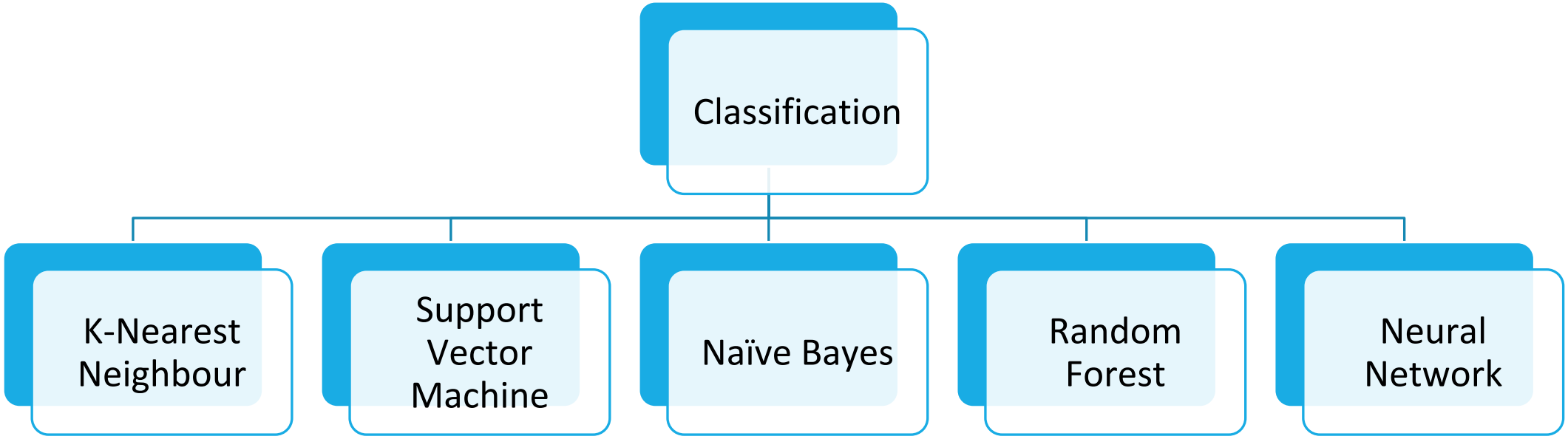
Supervised Learning – Approach

Supervised learning problems can be further grouped into regression and classification problems.

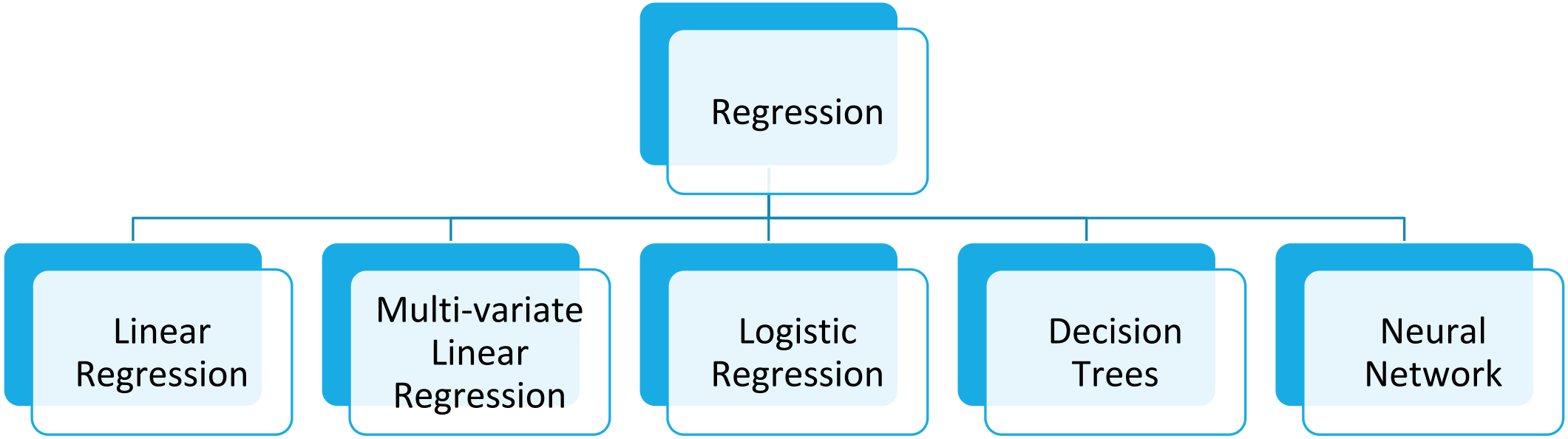
Classification: A classification problem is when the output variable is a category, such as “red” or “blue” or “disease” and “no disease”.

Regression: A regression problem is when the output variable is a real value, such as “dollars” or “weight”.

Supervised Learning – Classification



Supervised Learning – Regression



Applications

- Bioinformatics
- Handwriting Recognition
- Information Retrieval
- Information Extraction
- Spam Detection
- Pattern Recognition
- Speech Recognition

Summary

Learning Dataset consists of both input and output variables.

Supervised learning can be grouped as classification and regression.

Bioinformatics, Speech Recognition and Information retrieval are few of the applications of Supervised Learning.