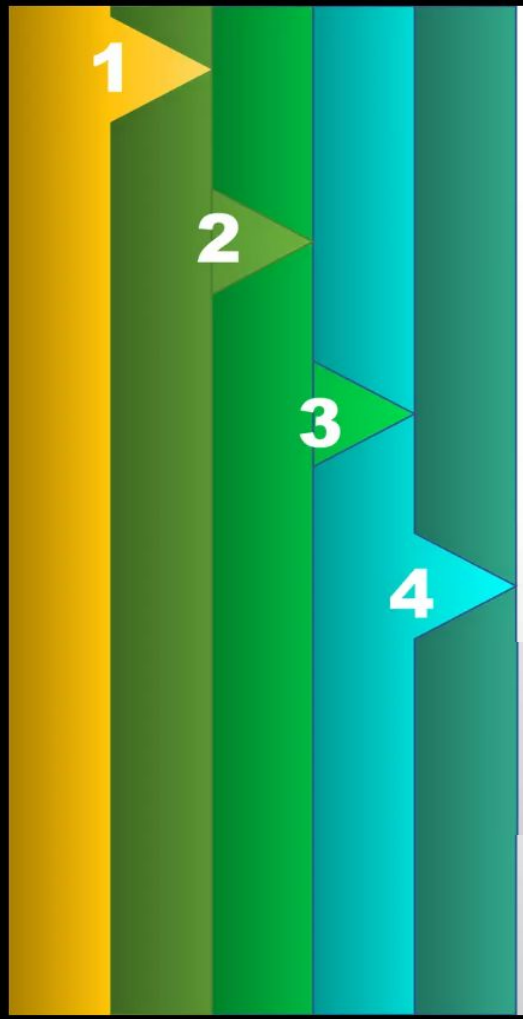
# Introduction to Machine Learning

18th February, 2023.
9:00 AM
EEE Lecture Hall 3 Upstairs




# Overview

1.What Is Machine Learning?

2.Machine Learning Process

3.Types Of Machine Learning

4.Machine Learning Algorithms

# What is Machine Learning?

Machine Learning is an application of Artificial Intelligence (AI) that provides system the ability to automatically learn and improve from experience without being explicitly programmed

Ordinary System

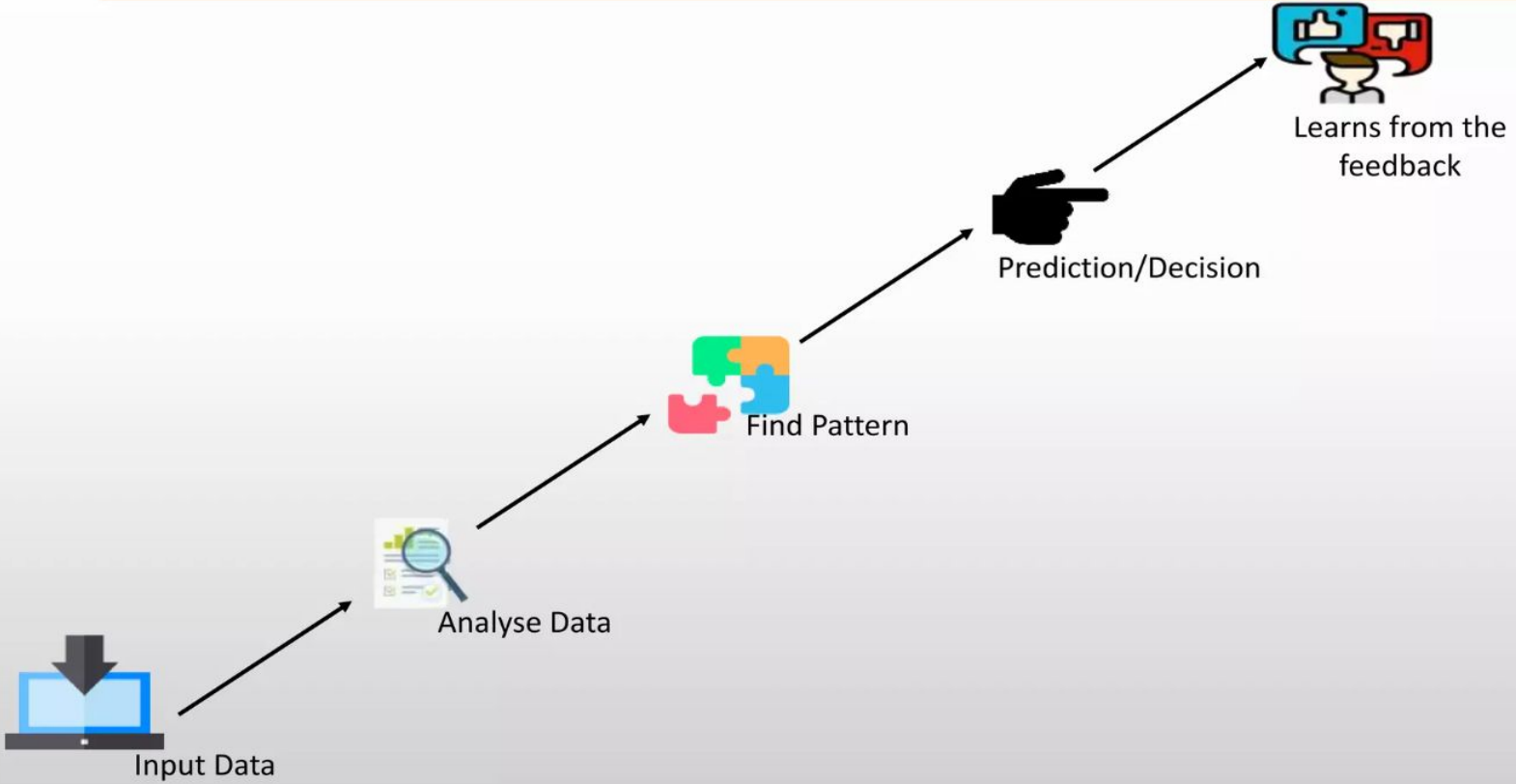
With Artificial Intelligence

Machine Learning

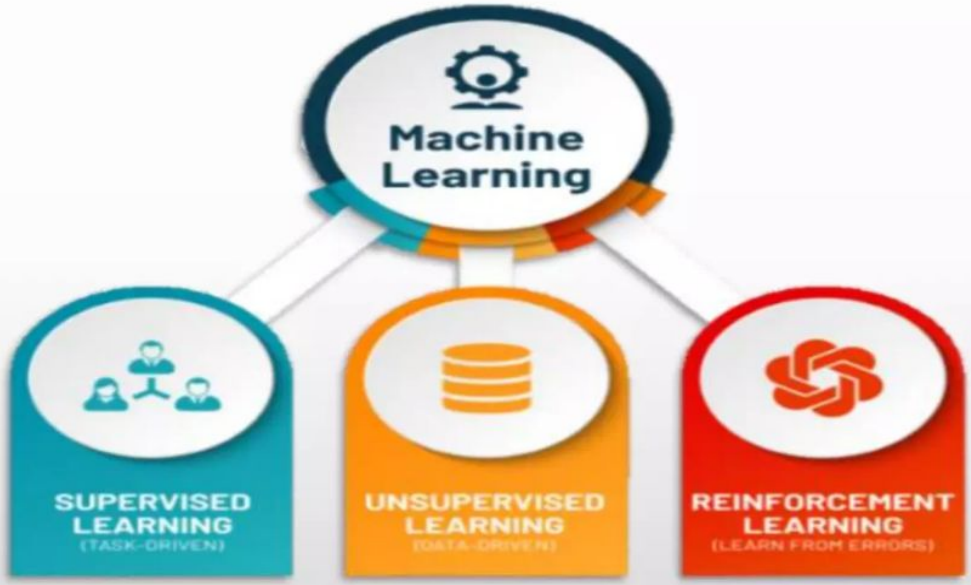

Predicts

Improves

# Machine Learning Process



# Types In Machine Learning



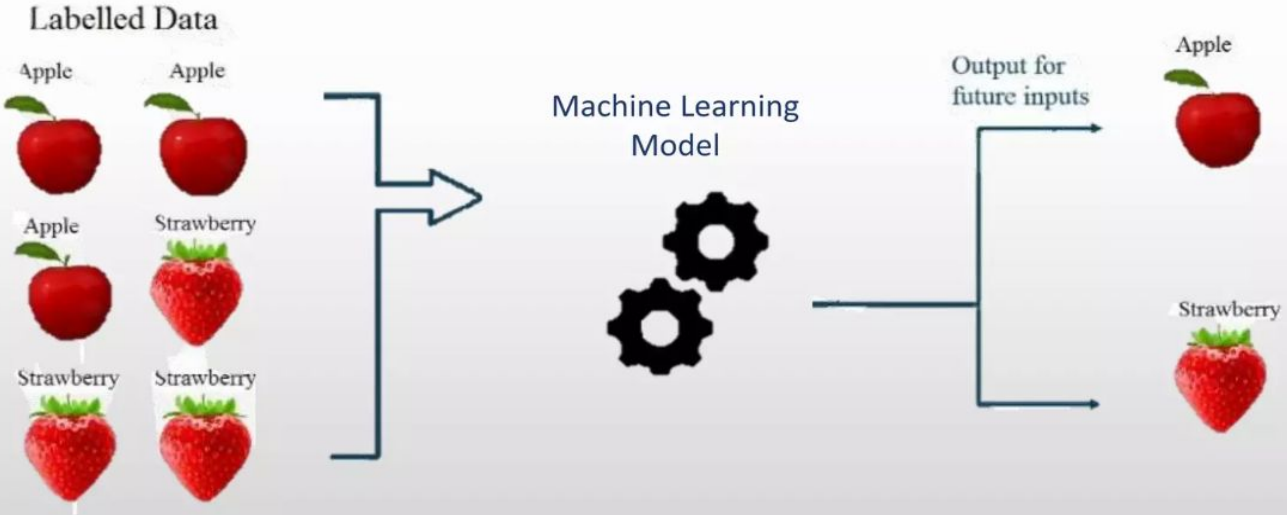

The machine learns from the training data that is labelled

No labelled training data

Machine learns on it's own

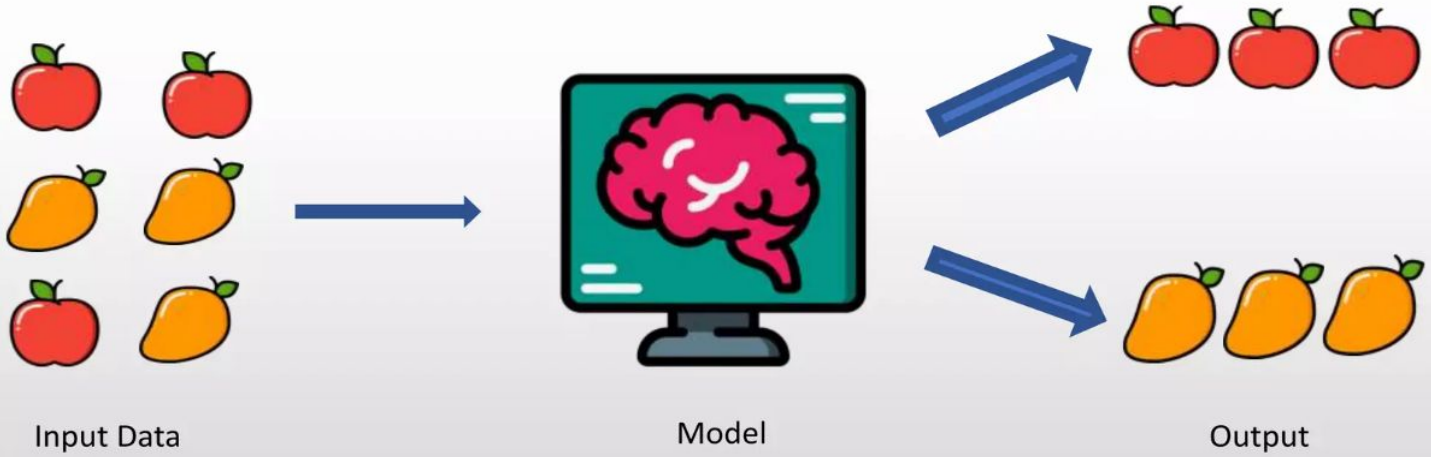
# Types In Machine Learning

**1.Supervised Machine Learning**



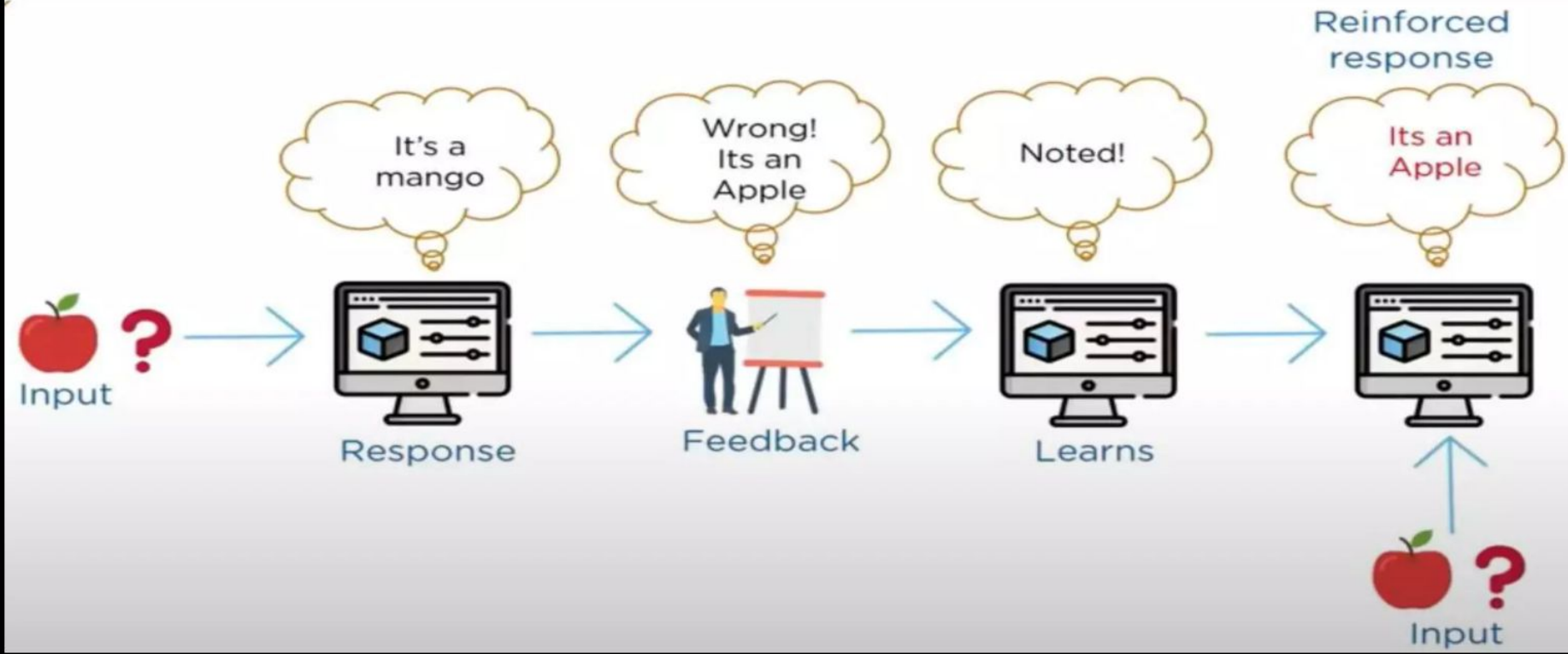
# Types In Machine Learning

**2.Unsupervised Machine Learning**



# Types In Machine Learning

**2.Reinforcemet Machine Learning**



# Types In Machine Learning

**Classification**

Used when the output is categorical like 'YES' or 'NO'

**Algorithms used**

- Decision Tree
- Naïve Bayes
- Random Forest
- Logistic regression
- KNN

**Regression**

Used when a value needs to be predicted like the 'stock prices'

**Algorithms used**

- Linear Regression

**Clustering**

Used when the data needs to be organized to find patterns in the case of 'product recommendation'

**Algorithms used**

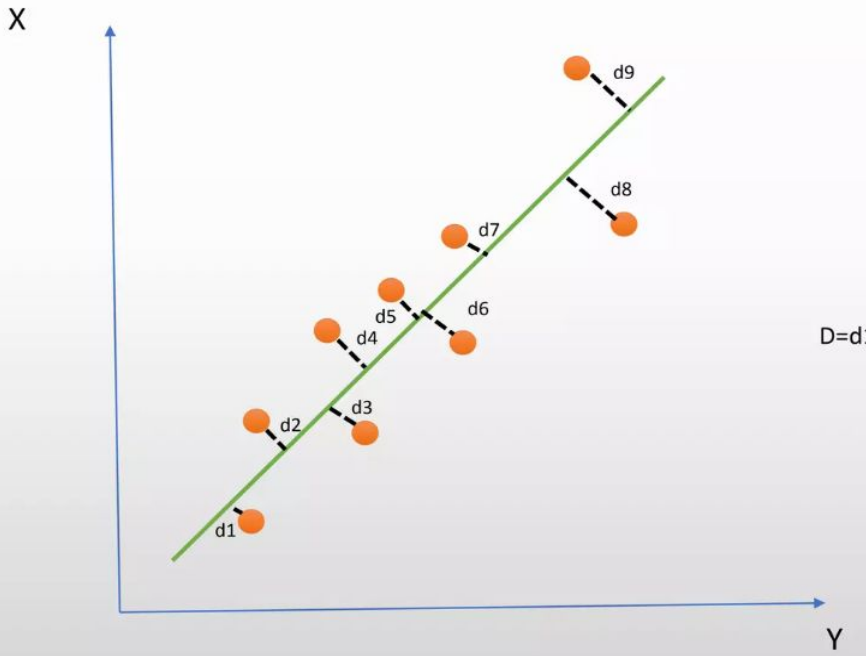
- K Means

# Machine Learning Algorithm

# Linear Regression

- Linear regression attempts to model the relationship between two variables by fitting a linear equation to observed data. One variable is considered to be an explanatory variable, and the other is considered to be a dependent variable. For example, a modeler might want to relate the weights of individuals to their heights using a linear regression model.

# Linear Regression




$$D=d1^2+d2^2+d3^2+d4^2+d5^2+d6^2+d7^2+d8^2+d9^2$$

The regression line(green line) has the least value of D

# Azure Machine Learning Studio