



# **SNS COLLEGE OF ENGINEERING**

Kurumbapalayam (Po), Coimbatore – 641 107

**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

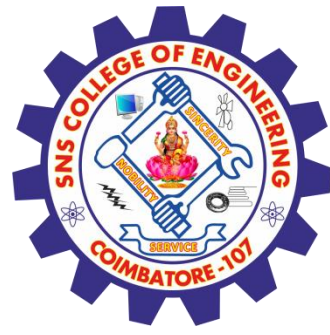
**COURSE NAME : 19CS501 Introduction to Machine Learning**

III YEAR /V SEMESTER

Unit 1- Introduction

Topic : Types of Machine Learning





# Do you remember this?



# Task: 1 minute Talk

## ① → THE 3 TYPES OF ML



#1  
Supervised  
learning

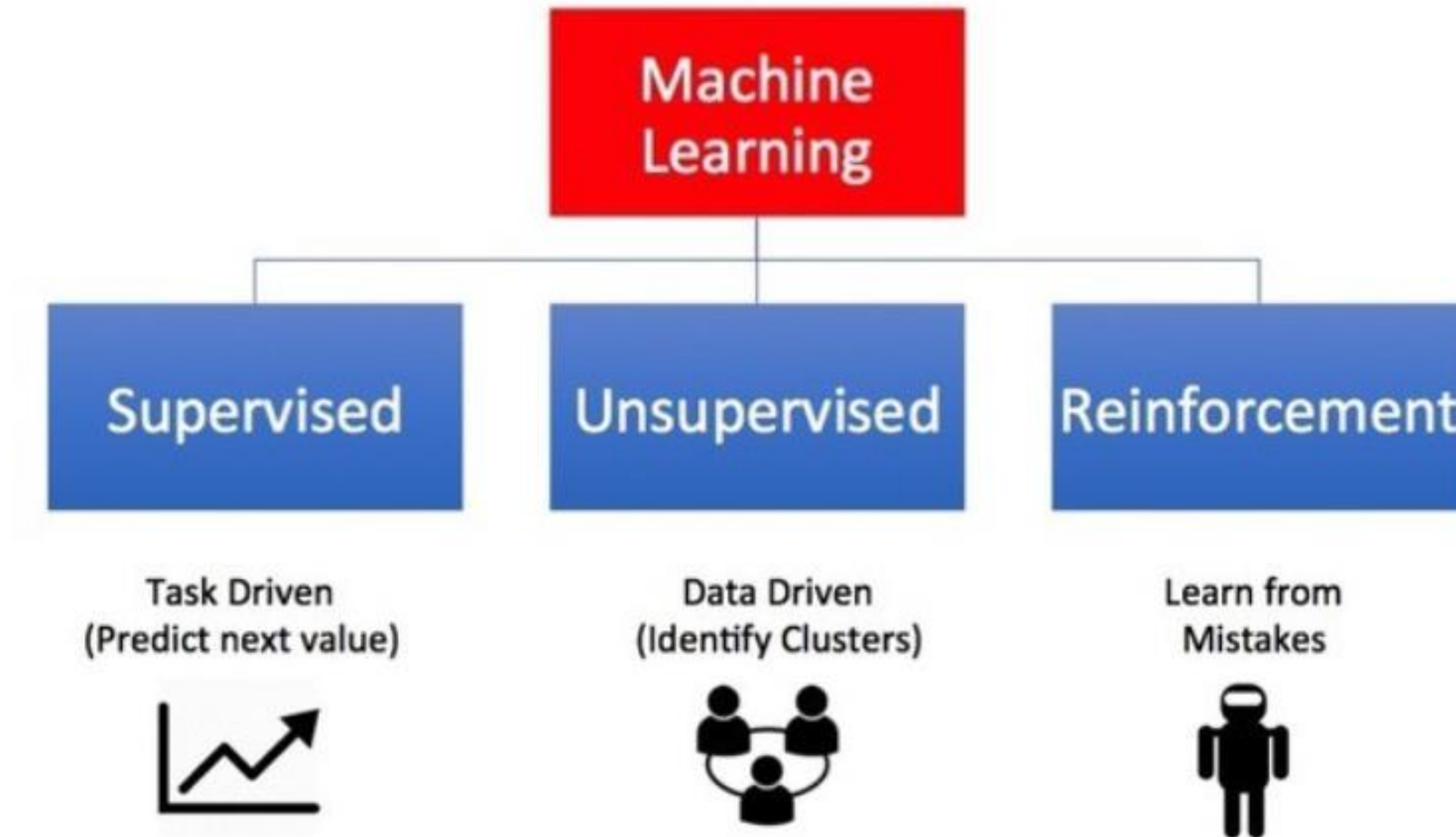


#2  
Unsupervised  
learning



#3  
Reinforcement  
Learning

# Types of Machine Learning





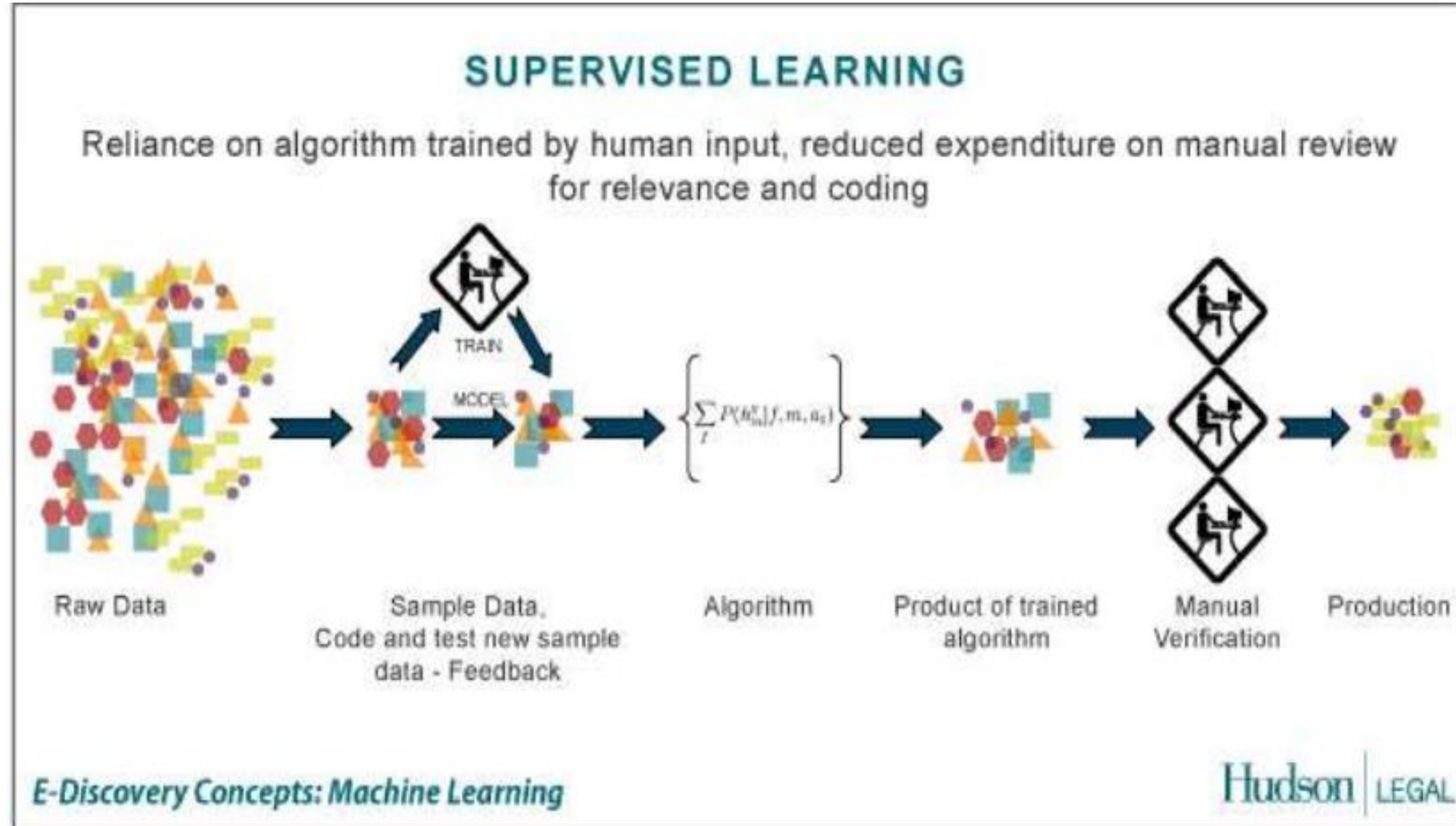
# About



- Supervised (inductive) learning
  - Training data includes desired outputs
  
- Unsupervised learning
  - Training data does not include desired outputs
  
- Semi-supervised learning
  - Training data includes a few desired outputs
  
- Reinforcement learning
  - Rewards from sequence of action

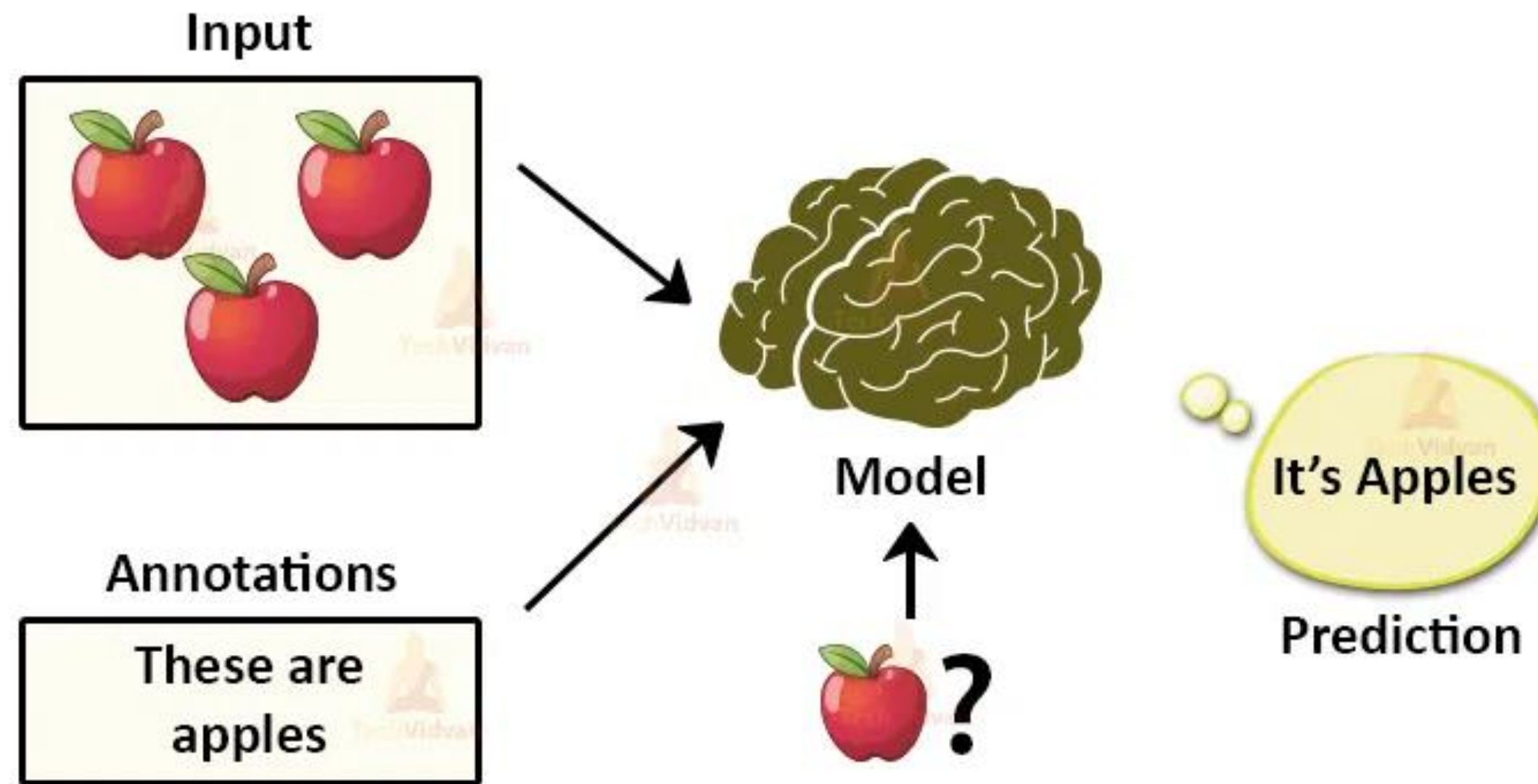
# Supervised Learning

the correct classes of the training data are known



# Supervised Learning

## Supervised Learning in ML





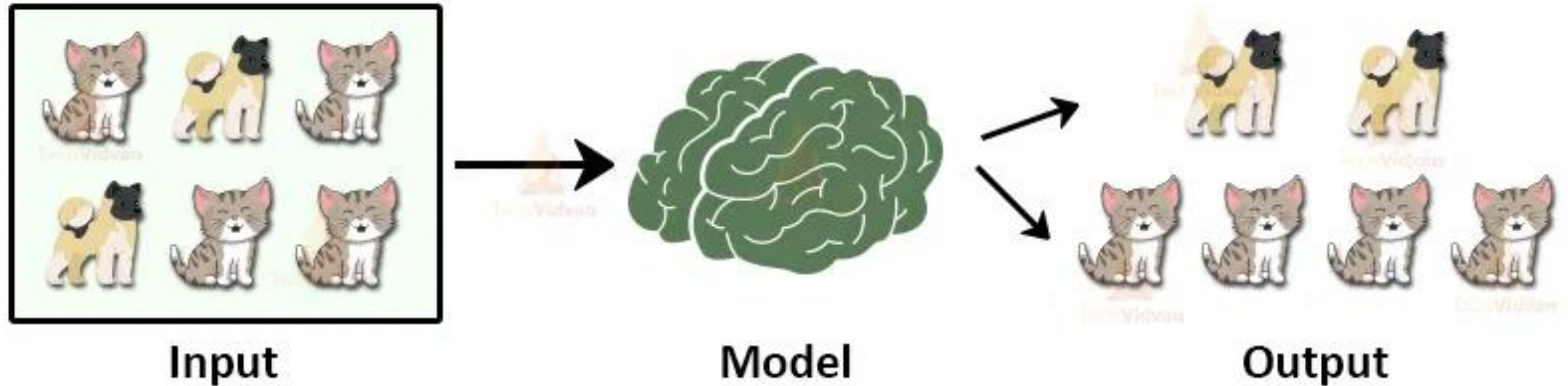
# Unsupervised Learning



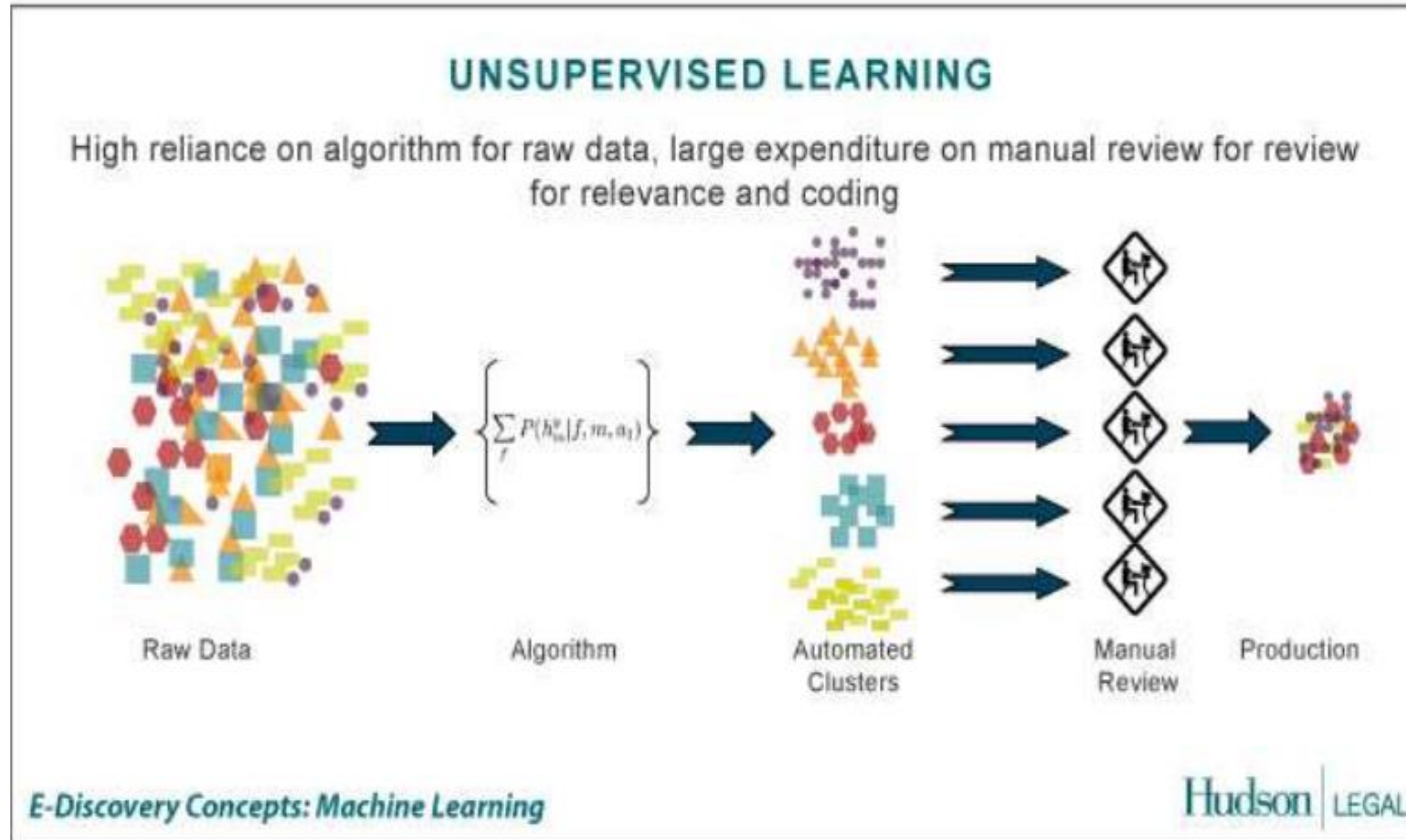
- Unsupervised learning needs no previous data as input.
- It is the method that allows the model to learn on its own using the data, which you give.
- Here, the data is not labelled, but the algorithm helps the model in forming clusters of similar types of data



## Unsupervised Learning in ML



# Unsupervised Learning





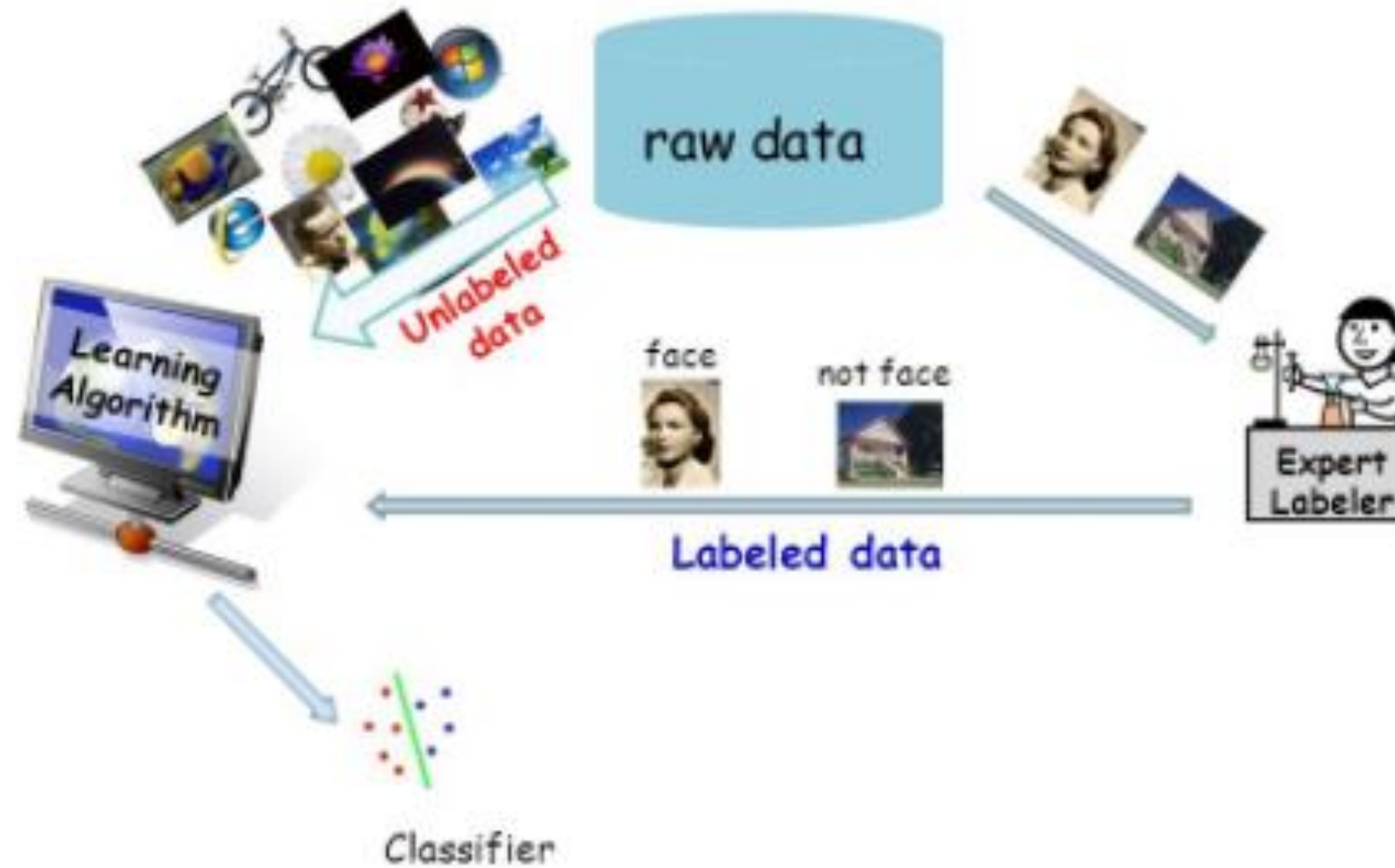
# Semi-supervised Learning Method



- This is a combination of supervised and unsupervised learning. This method helps to reduce the shortcomings of both the above learning methods.
- In supervised learning, labelling of data is manual work and is very costly as data is huge. In unsupervised learning, the areas of application are very limited. To reduce these problems, semi-supervised learning is used.
- In this, the model first trains under unsupervised learning. This ensures that most of the unlabeled data divide into clusters.
- For the remaining unlabeled data, the generation of labels takes place and classification carries with ease.
- This technique is very useful in areas like speech recognition and analysis, protein classification, text classification, etc. This is a type of hybrid learning problem.

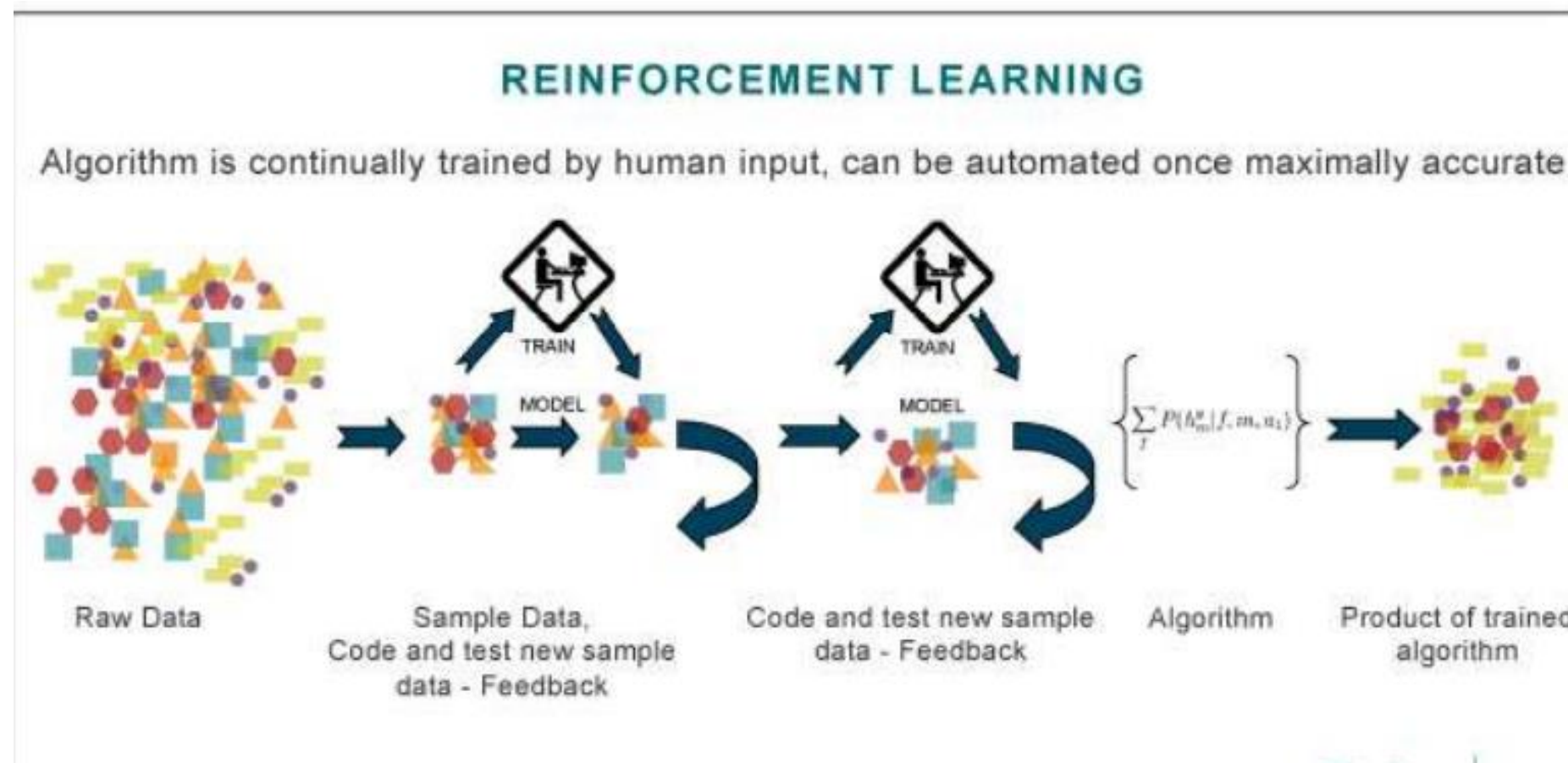
# Semi-supervised Learning Method

## Semi-Supervised Learning



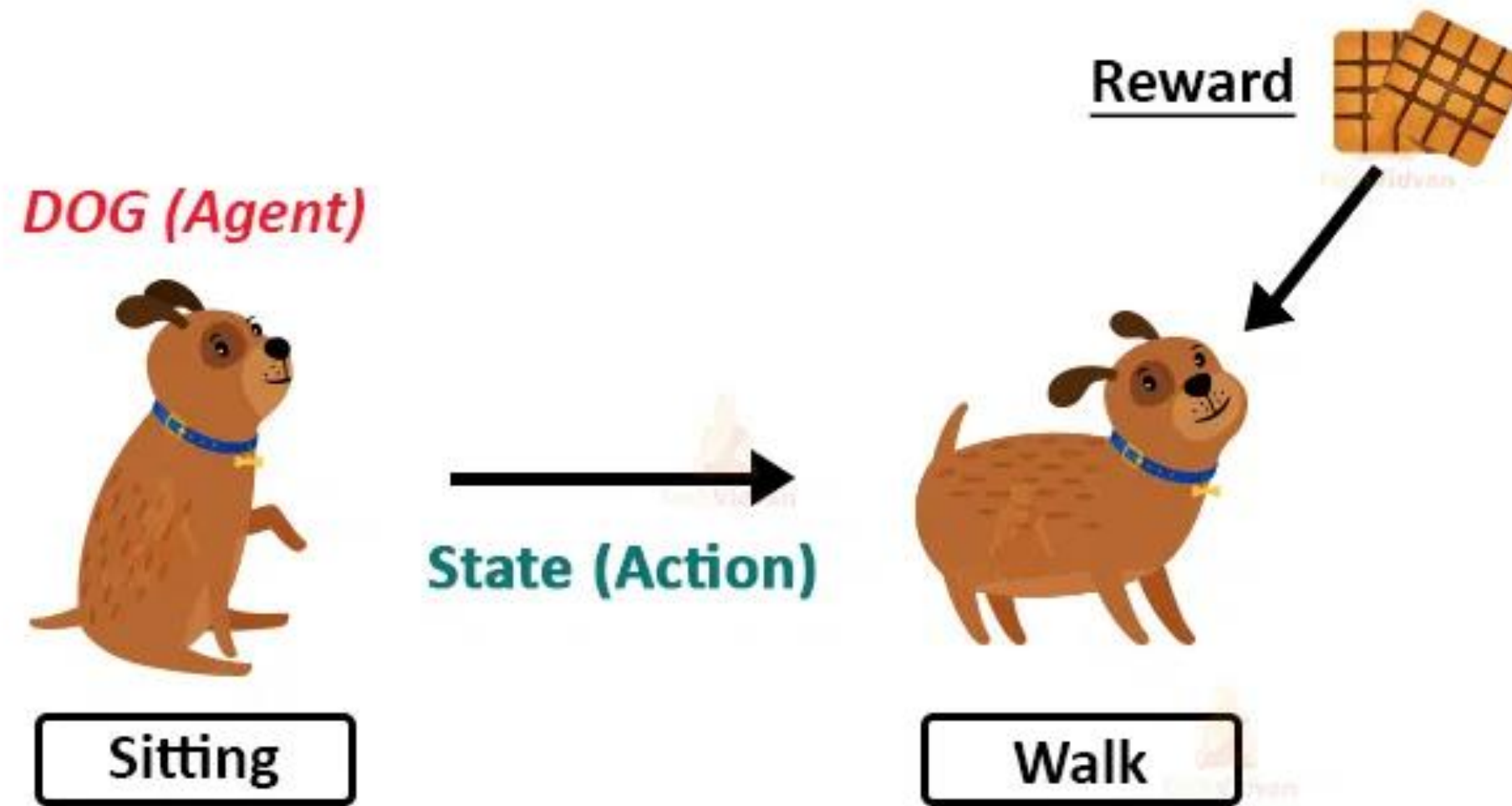
# Reinforcement Learning

- Reinforcement Learning is enforcing models to learn how to make decisions.
- This type of learning is very awesome to learn and is one of the most researched fields in ML.
- The algorithm of this method helps to make the model learn based on feedback.

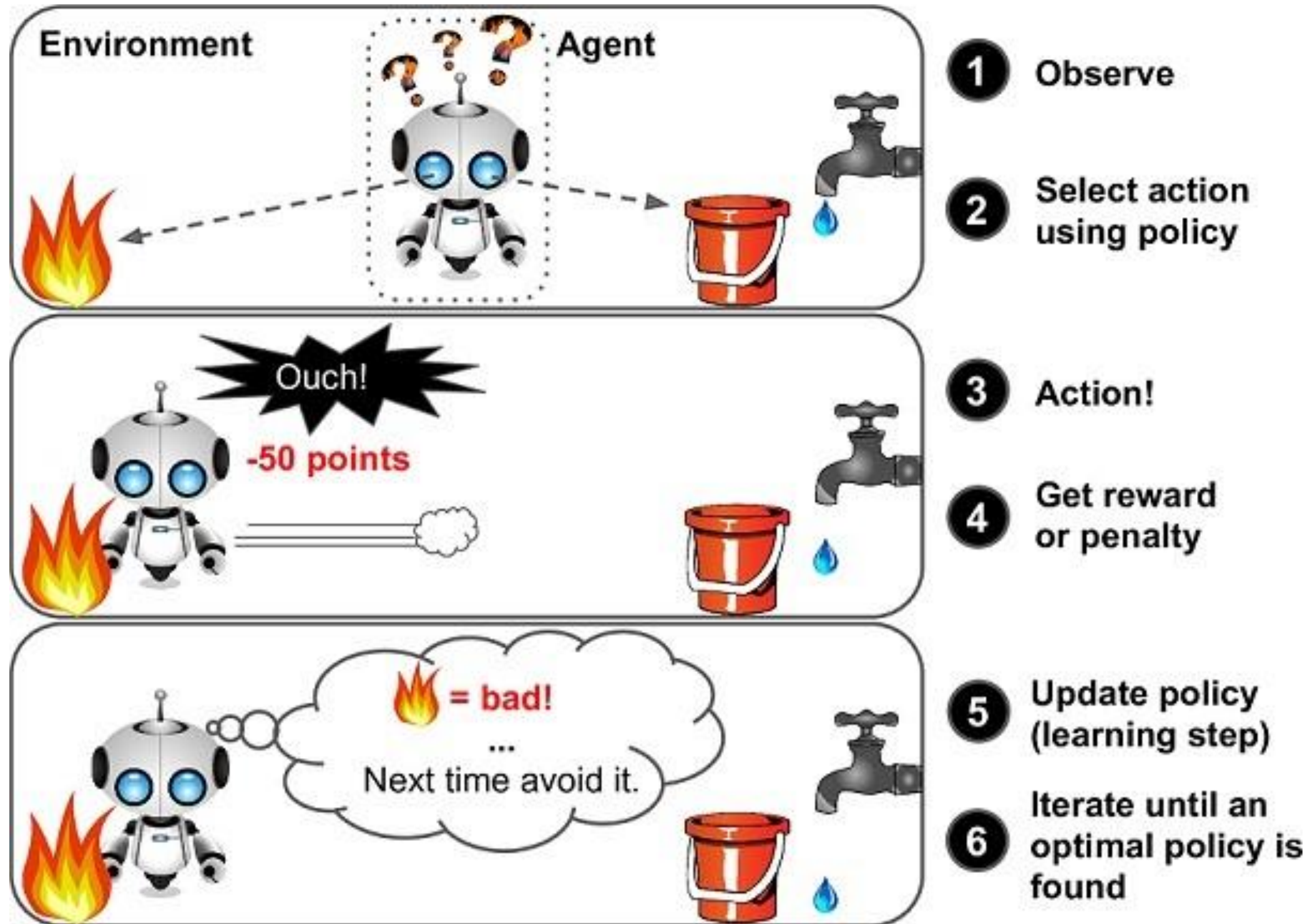


# Reinforcement Learning

## Reinforcement Learning in ML



# Reinforcement Learning





# Assessment



## What is Machine learning?

The autonomous acquisition of knowledge through the use of computer programs

The autonomous acquisition of knowledge through the use of manual programs

The selective acquisition of knowledge through the use of computer programs

The selective acquisition of knowledge through the use of manual programs

## Different learning methods do not include?

Memorization

Analogy

Introduction

Deduction

## Which of the following is a widely used and effective machine learning algorithm based on the idea of bagging?

Decision Tree

Random Forest

Regression

Classification





# REFERENCES



1. Tom M. Mitchell, “Machine Learning”, McGraw-Hill Education (India) Private Limited, 2013.
2. Trevor Hastie, Robert Tibshirani, Jerome Friedman, “The Elements of Statistical Learning: Data Mining, Inference, and Prediction”, Springer; Second Edition, 2009.

## THANK YOU