

Week 3

Machine Learning Specific





Week 1	Prerequisite Learning
Week 2	Programming Fundamentals (Python) + Required Installation
Week 3	ML Specific
Week 4	Coding
Week 5	Git Hub Deployment
Week 6	Extension + Summarization

An Introduction to Machine Learning

The field of study known as machine learning is concerned with the question of how to construct computer programs that automatically improve with experience.

Examples

- A robot driving learning problem
- Handwriting recognition learning problem

A computer program which learns from experience is called a machine learning program or simply a learning program .

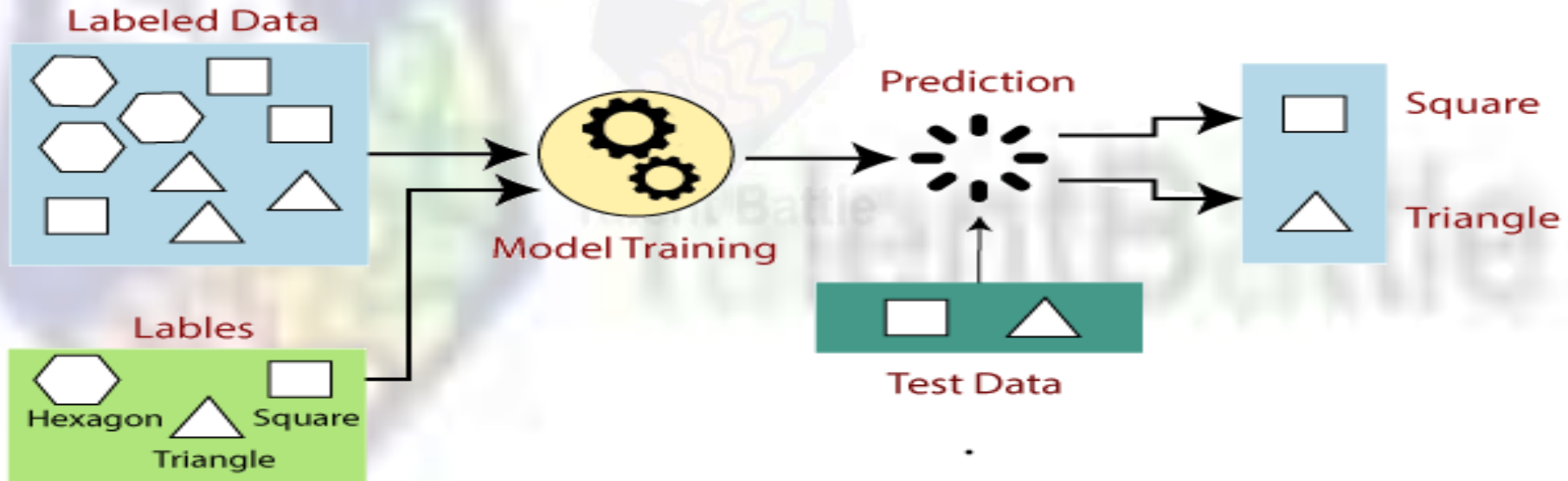
Classification of Machine Learning

- 1. Supervised Learning**
- 2. Unsupervised Learning**
- 3. Reinforcement Learning**
- 4. Semi-Supervised Learning**

Supervised learning:

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

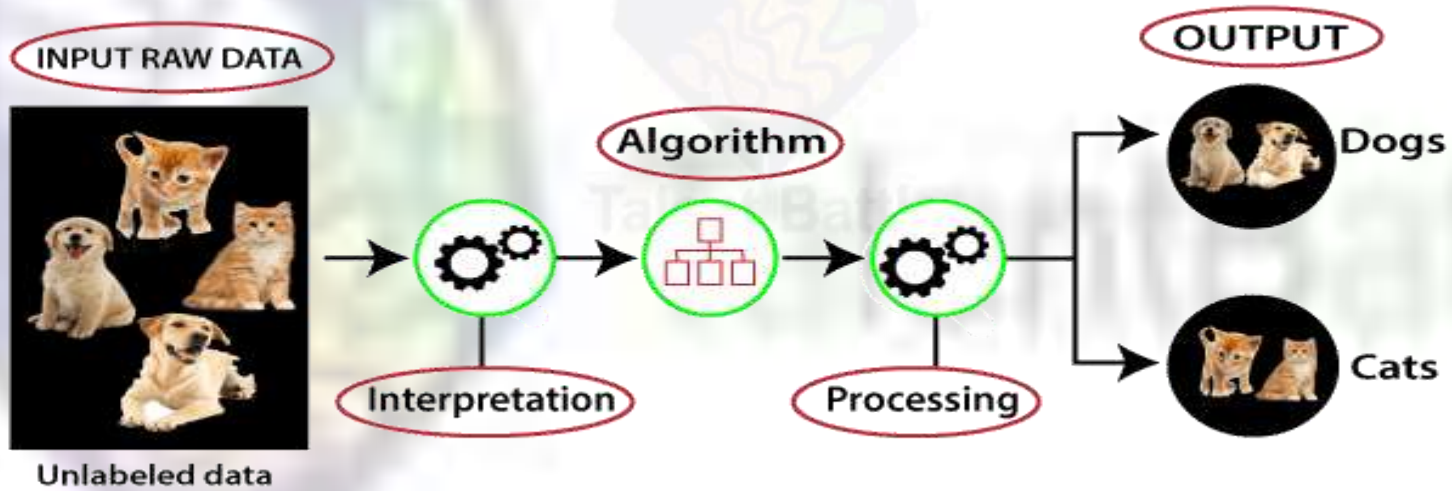
Both classification and regression problems are supervised learning problems .



Unsupervised learning:

Unsupervised learning is a type of machine learning algorithm used to draw inferences from datasets consisting of input data without labeled responses.

In unsupervised learning algorithms, classification or categorization is not included in the observations.

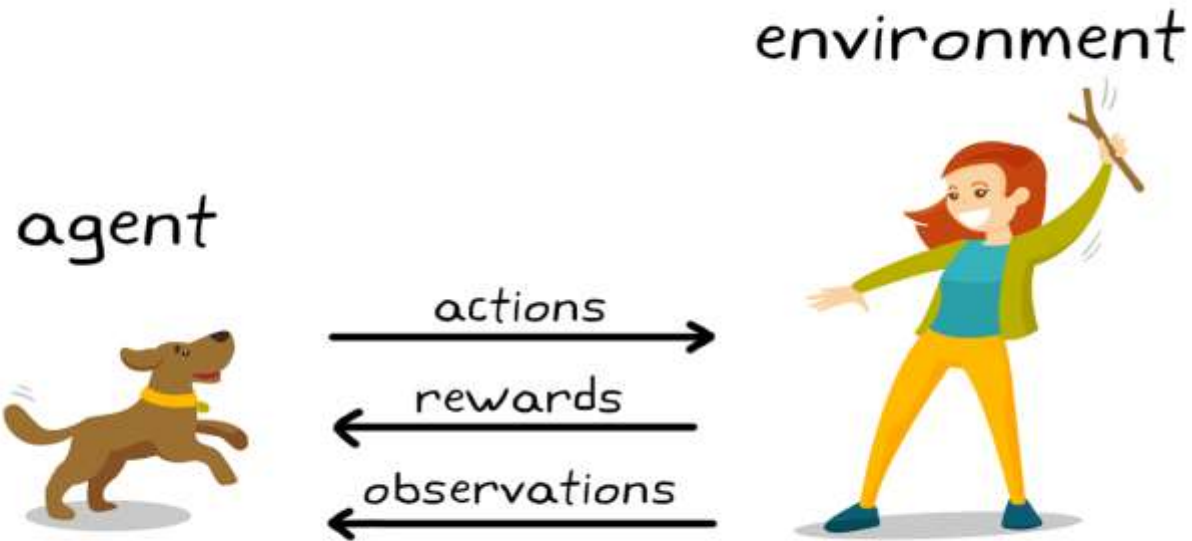




Reinforcement learning:

Reinforcement learning is the problem of getting an agent to act in the world so as to maximize its rewards.

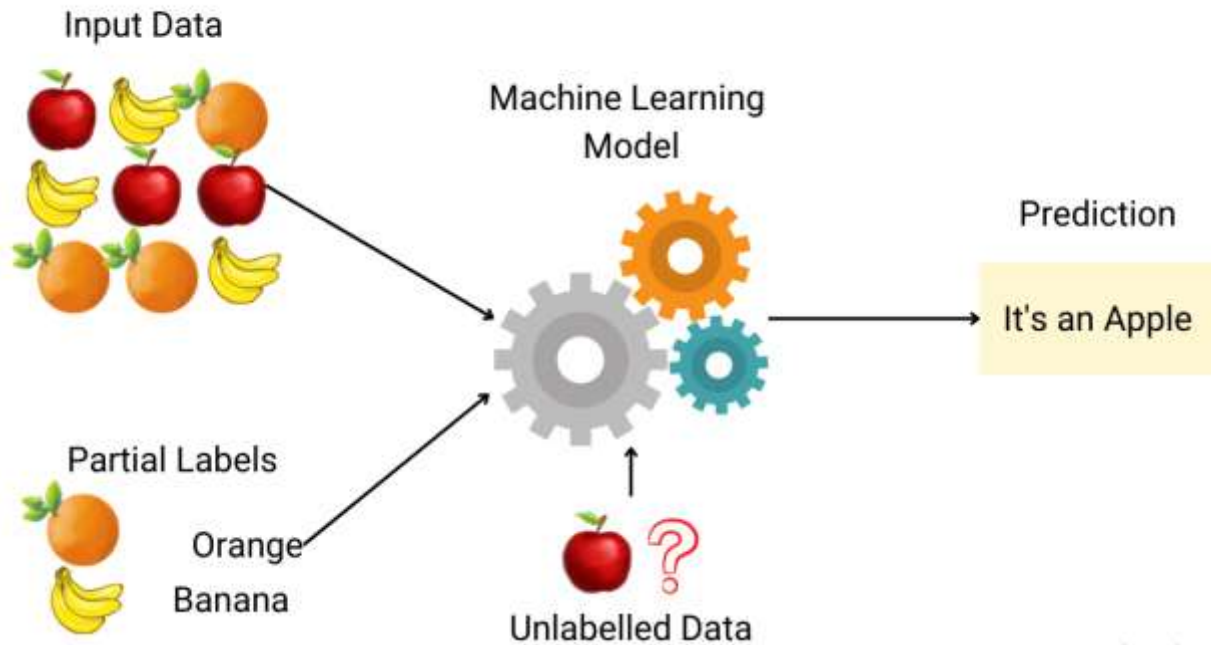
A learner is not told what actions to take as in most forms of machine learning but instead must discover which actions yield the most reward by trying them.



Semi-supervised learning:

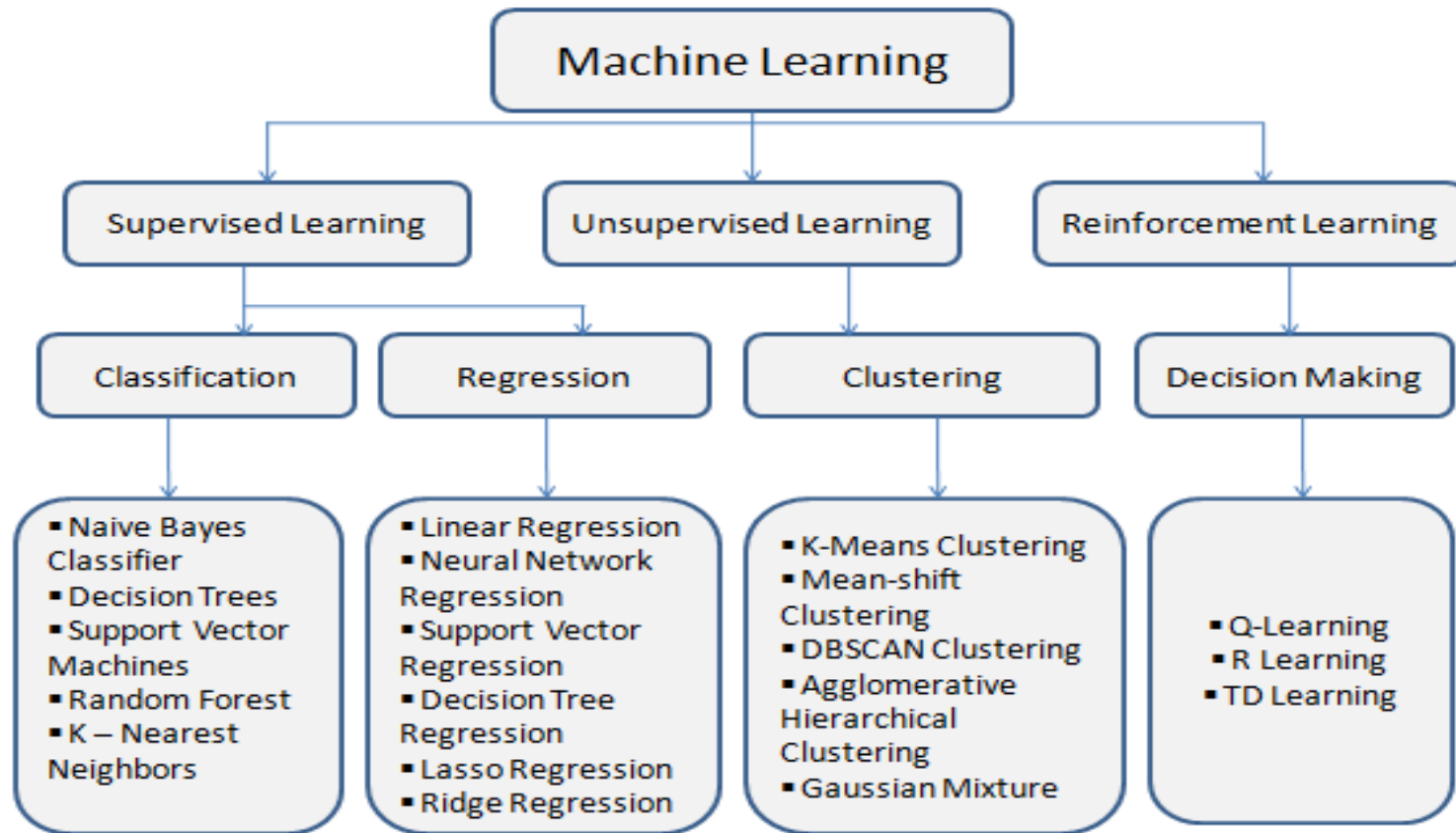
Semi-supervised learning is an approach to machine learning that combines small labeled data with a large amount of unlabeled data during training.

Semi-supervised learning falls between unsupervised learning and supervised learning.



Machine Learning Model Development Steps

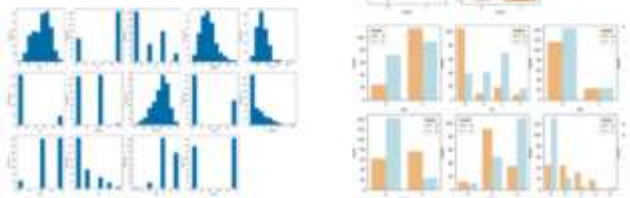
- 1. Collecting Data**
- 2. Preparing the Data**
- 3. Choosing a Model**
- 4. Training the Model**
- 5. Evaluating the Model**
- 6. Parameter Tuning**
- 7. Making Predictions**



Machine Learning Algorithms - Classification

Exploratory Data Analysis (EDA)

- 1) Histogram: `df.plot(kind = 'hist')`
- 2) Box Plot: `sns.boxplot()`
- 3) Grouped Bar Chart: `sns.countplot()`



Model Evaluation

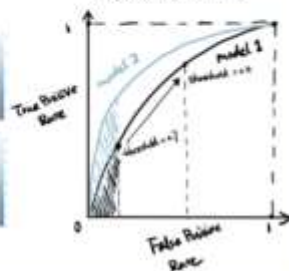
Confusion Matrix

`confusion_matrix(y_test, y_pred)`

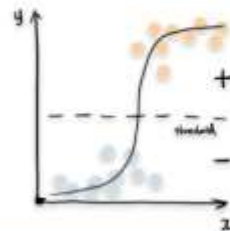


ROC & AUC

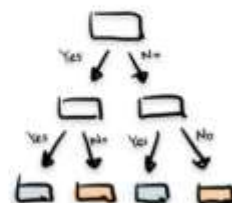
`metrics.auc(fpr, tpr)`



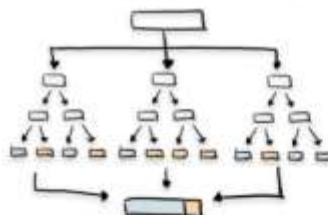
Logistic Regression



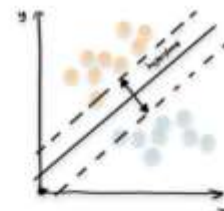
Decision Tree



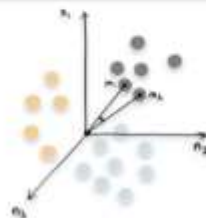
Random Forest



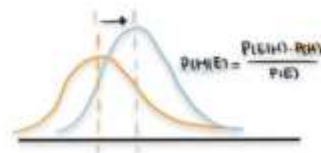
Support Vector Machine



K Nearest Neighbour



Naive Bayes



01 Optimal Naive Bayes

02 Gaussian Naive Bayes



03 Multinomial Naive Bayes

04 Bernoulli Naive Bayes

Student's Queries ???

Is it okay if we are familiar with basic syntax of python?

Kindly give us more time to complete those documents related to weekly tasks. It becomes hectic after office work. Thank you 😊

What will be our approach for the project how we are going to proceed further what all features will be considered while building ML model

Student's Queries ???

We need to cover all Data Science concepts from provided video ?
Or just an overview of the DS concept?

Where do we have to submit the Literature Survey

I am literally in dilemma that how stress management works??

What kind of dataset we are going to use in our project?

As I'm a complete beginner will we be guided for the coding part ?



Talent Battle

Thank You !!!