

MACHINE LEARNING



Presented by :

K. Pavan Kumar

Enrollment No: EBEON0322583426

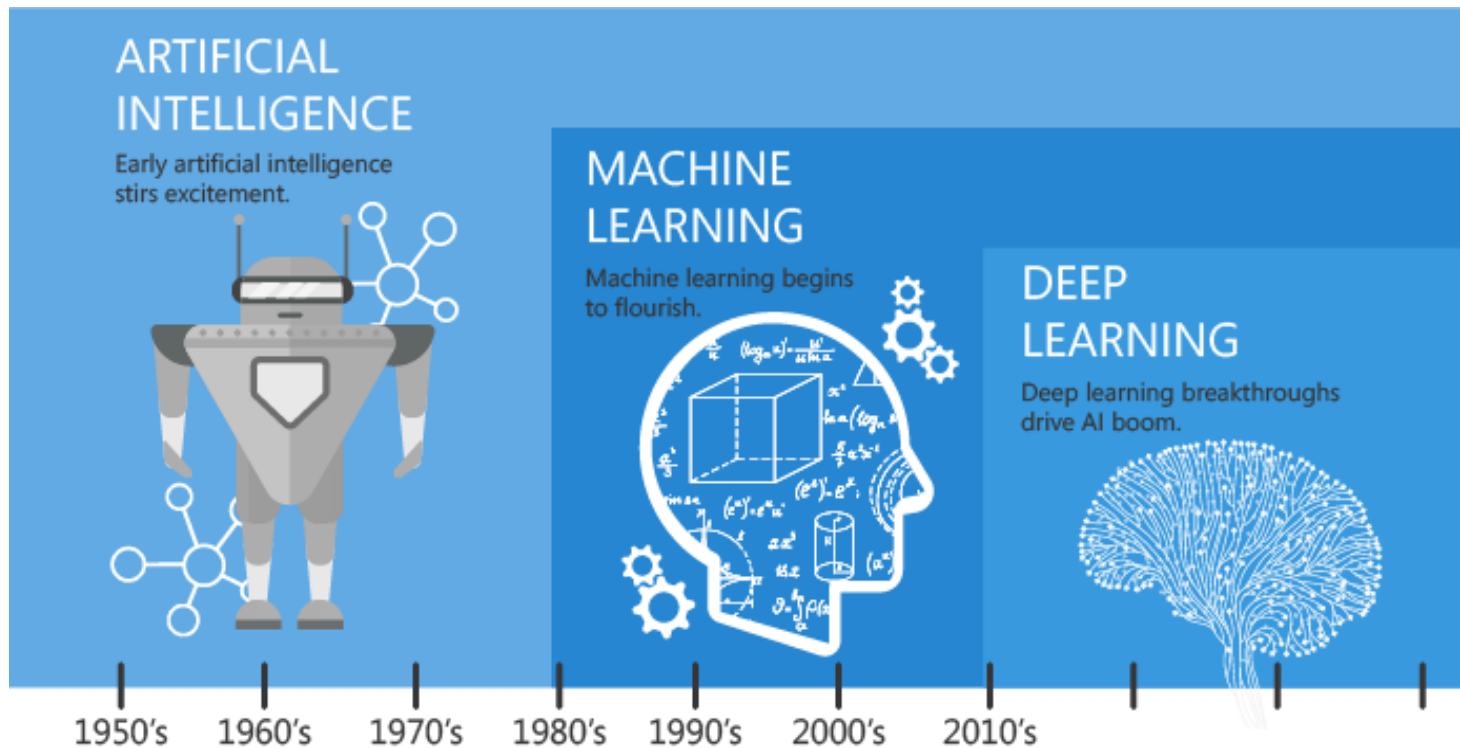
Batch Name : Bangalore 2021-7233

TABLE OF CONTENTS :

- INTRODUCTION
- BASIC POINTS FOR MACHINE LEARNING
- CLASSIFICATION OF MACHINE LEARNING AND ITS ALGORITHMS
- POPULAR LIBRARIES FOR MACHINE LEARNING
- APPLICATIONS OF MACHINE LEARNING
- PROJECTS OF MACHINE LEARNING
- SKILLS REQUIRED FOR MACHINE LEARNING
- CONCLUSION

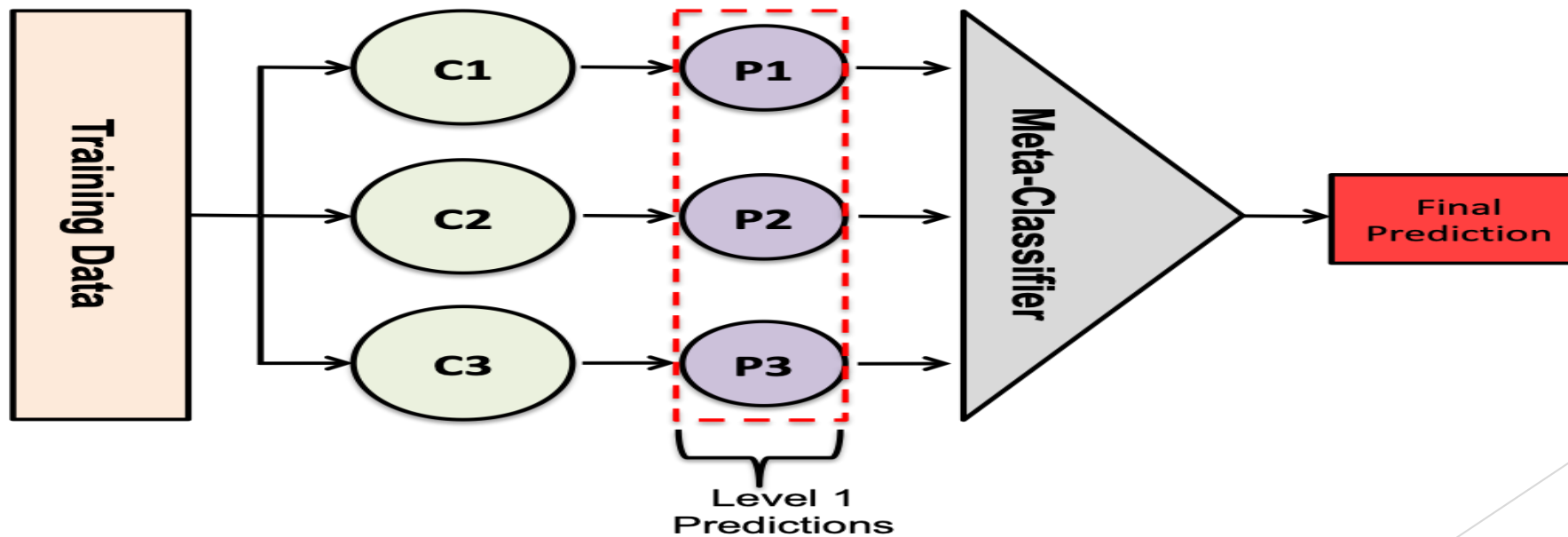
Introduction

Machine Learning (ML) is a sub-category of **artificial intelligence**, that refers to the process by which computers develop pattern recognition, or the ability to continuously learn from and make predictions based on data, then make adjustments without being specifically programmed to do so.



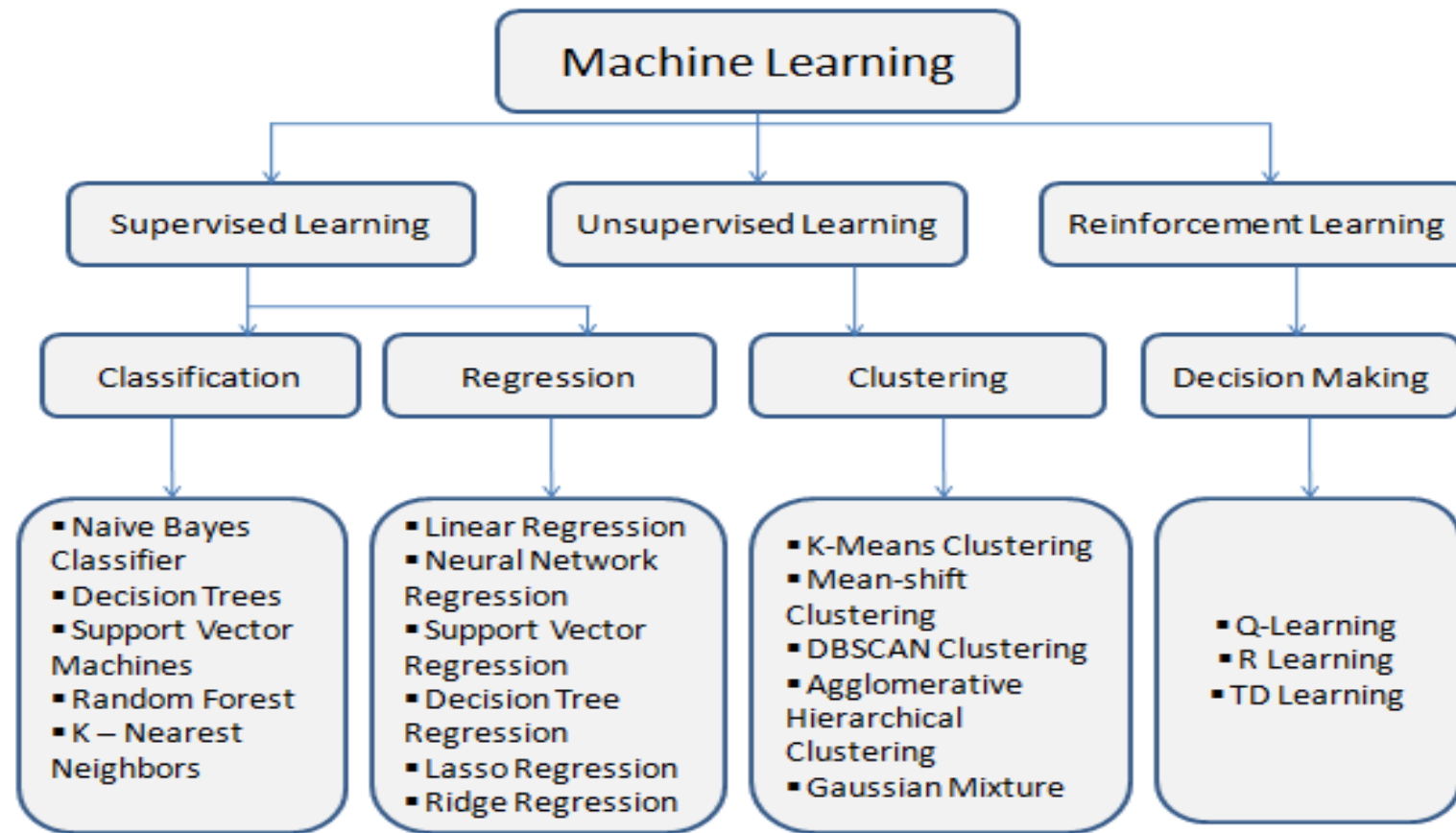
Basic points for Machine Learning

- ▶ classifier : It is a set of algorithms and functions that get trained for prediction.
- ▶ Training data : it is the data used to train the classifier.
- ▶ Testing data : the data required to test the trained classifier. This data is used to show the accuracy of the trained classifier.



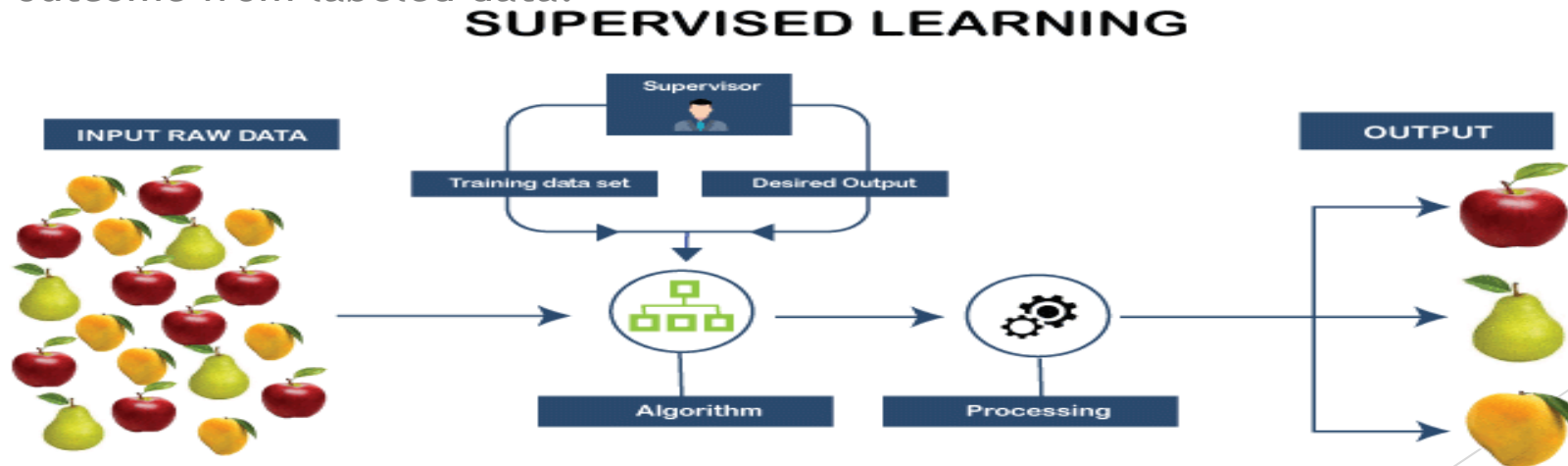
* C1, C2, and C3 are considered level 1 classifiers.

Classification of Machine Learning and its Algorithms :



Supervised learning :

- Supervised learning uses classification algorithms and regression techniques to develop predictive models.
- Classification separates the data, Regression fits the data.
- Supervised learning as the name indicates the presence of a supervisor as a teacher. Basically supervised learning is a learning in which we teach or train the machine using data which is well labeled that means some data is already tagged with the correct answer. After that, the machine is provided with a new set of examples (data) so that supervised learning algorithm analyses the training data (set of training examples) and produces a correct outcome from labeled data.

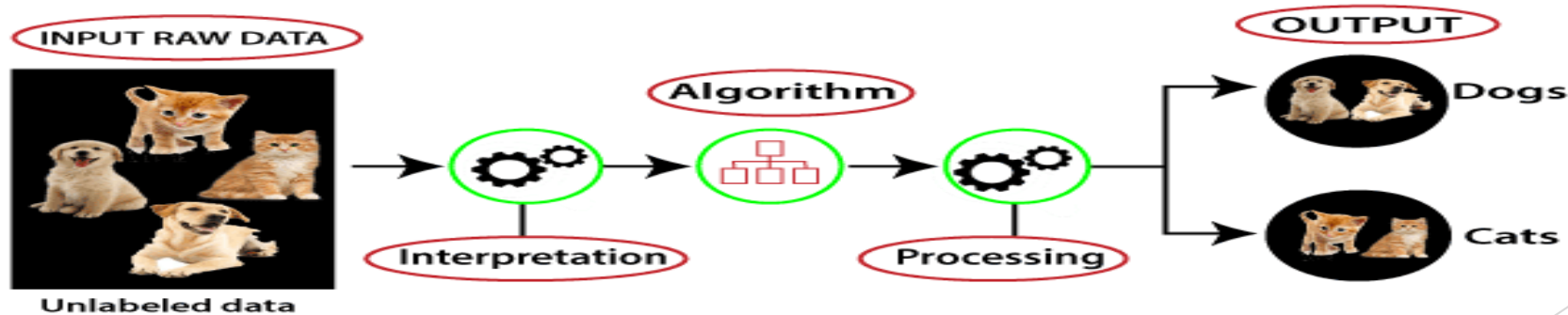


Algorithms of Supervised learning

- Linear Regression
- Logistic regression
- Decision trees
- Random forest
- Naive Bayes Classification
- Regression : It is a supervised machine learning algorithm and is used for continuous prediction of data or value based on independent variables._
- Classification : It is also a supervised machine learning algorithm and used for classifying data as similar groups through set of algorithms and functions._

Unsupervised learning :

- ▶ Unsupervised learning is a machine learning technique, where you do not need to supervise(train) the model. Instead, you need to allow the model to work on its own to discover information. It mainly deals with the unlabeled data.
- ▶ Unsupervised learning algorithms allows you to perform more complex processing tasks compared to supervised learning. Although, unsupervised learning can be more unpredictable compared with other natural learning methods.



Algorithms of Unsupervised Learning :

- Hierarchical clustering
- K-means clustering
- K-NN (K-nearest Neighbours)
- Clustering : It is an important concept when it comes to unsupervised learning. It mainly deals with finding a structure or pattern in a collection of uncategorized data. Clustering algorithms will process your data and find natural clusters(groups) if they exist in the data. you can also modify how many clusters your algorithms should identify. It allows you to adjust the granularity of these groups.

Reinforcement Learning :

- Reinforcement learning is an area of machine learning. It is about taking suitable action to maximize reward in a particular situation.
- It is employed by various software and machines to find the best possible behavior or path it should take in a specific situation.
- Reinforcement learning differs from the supervised learning in away that in supervised learning the training data has the answer key with it so the model is trained with correct answer itself whereas in reinforcement learning, there is no answer but the reinforcement agent decides what to do to perform the given task. In the absence of training dataset, it is bound to learn from its experience.

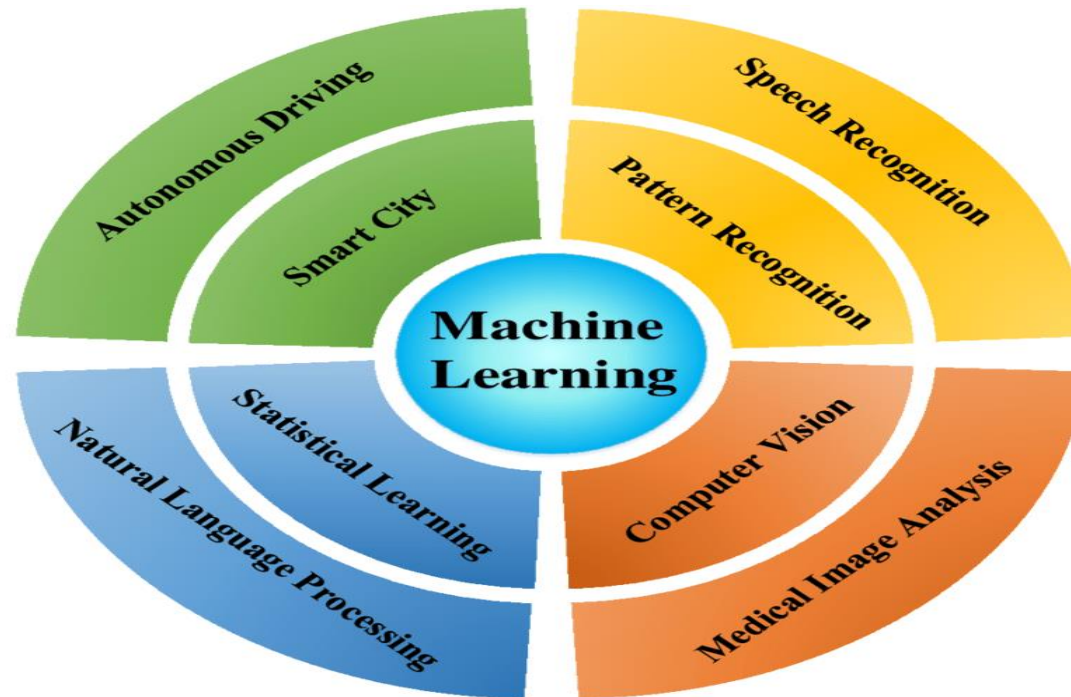


Popular Libraries of Machine Learning :

- Numpy
- Pandas
- Matplotlib
- Scikit learn
- Seaborn
- Tensorflow
- Theano
- Keras
- PyTorch
- OpenCV
- Flask

Applications of Machine learning :

- Image recognition. Image recognition is a well-known and widespread example of machine learning in the real world.
- Speech recognition.
- Medical diagnosis.
- Statistical arbitrage.
- Predictive analytics.
- Extraction.



Best projects for Machine Learning

➤ Beginner level projects :

1. Titanic survival data
2. Housing prices prediction
3. Google search Analysis using Python

➤ Intermediate projects :

1. Finding frauds using imbalanced data
2. Text Summary
3. Million songs Analysis

➤ Advanced projects :

1. Netflix Artwork Personalization Using Artificial Intelligence
2. YouTube Comment Analysis
3. Hate speech Detection

Skills required for Machine Learning :

► Programming languages needed :

1. Python
2. Java
3. C++
4. C#
5. R programming

➤ Mathematical skills needed :

1. Probability
2. Statistics
3. Calculus

Conclusion :

In this presentation we have gone through the basics of Machine Learning, its types and common libraries used in it. Also we have seen its applications, best real world projects and what are the skills one should have before learning Machine Learning.

