International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Machine Learning Algorithms: An Extensive Study

Silky Verma[1], Ms Rinku[2], Ms Kajal[3]

[1]PG Student, Department of Computer Application, Global Group of Institutes, Amritsar, Punjab, India
[2,3]Assistant Professor, Department of Computer Application, Global Group of Institutes, Amritsar, Punjab, India

Abstract
Machine learning (ML) is a subset of artificial intelligence (AI) that enables systems to learn from data and make predictions or decisions programmed. This research paper explores various machine learning algorithms, and there types also.ML is all about the prediction that they make.

1. Introduction

Machine Learning is a branch of artificial intelligence that learn from data and provide predictions using algorithms. There are three different types of machine learning i.e. supervised, unsupervised, and reinforcement learning.

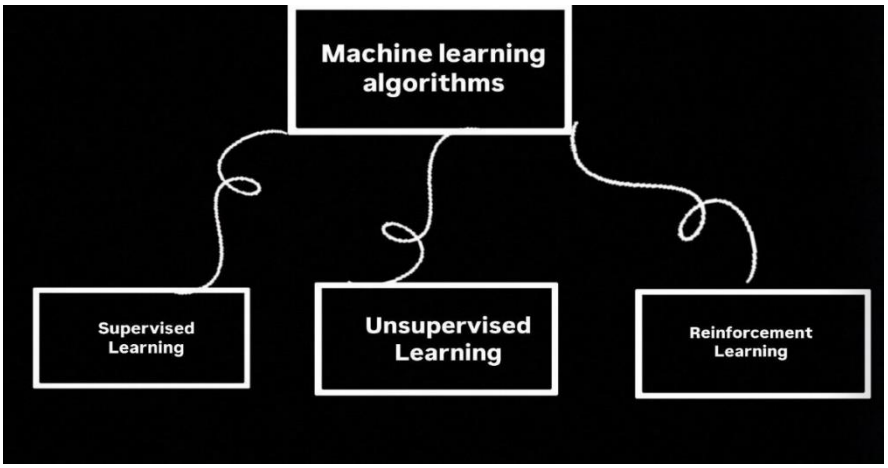
Components of Machine Learning:

1. Datastore (which stores a vast amount of data) is a fundamental component of learning.
2. Abstraction (a process that involves understanding stored data)
3. Evolution (the process of providing the user with feedback to gauge the usefulness of the knowledge)

APPLICATIONS OF MACHINE LEARNING:-

1. 1 Image identification
2. Maintenance of predictions
3. The Process of Natural Language
4. Online advertising

2. Types of Machine Learning Algorithms

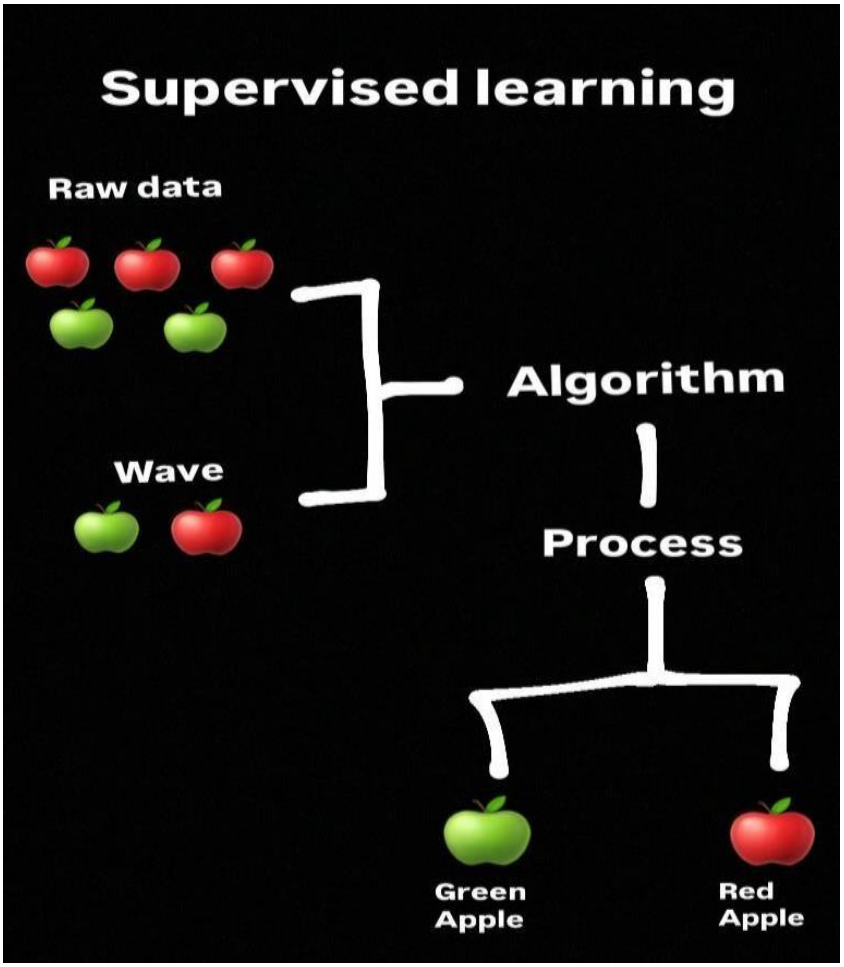


2.1 Supervised Learning

In Supervised learning input data is labelled. It has a feedback mechanism and it divided into regression and classification. The supervised learning used for the prediction.

Supervised learning has three types; -

1. Linear regression
2. Decision tree
3. Logical regression



2.1.1 Linear Regression

Linear regression is a technique for solving regression problems. Supervised learning is the foundation of this machine learning algorithm.

2.1.2 Logistic Regression

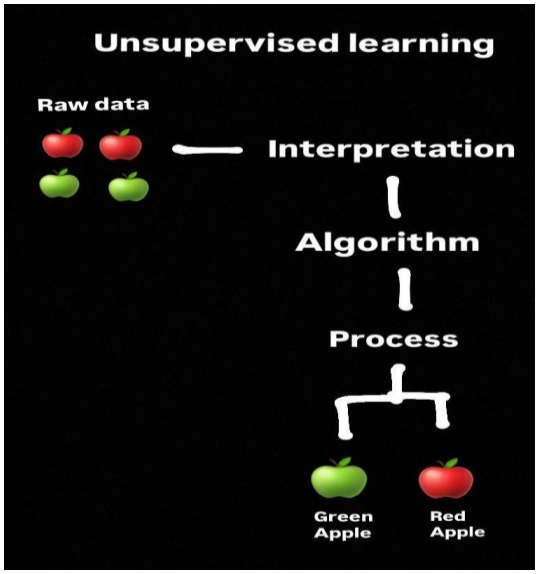
Logistic regression is employed to solve the categorization process. It is a method of supervised learning. Logical regression's outcome can only fall between 0 and 1.

2.1.3 Decision Trees

Although Decision Trees may be applied to both regression and classification problems, it works best on clusting problems. The structure resembles a tree. The branches of the data set are represented by nodes, and the decision rules are represented by branches.

2.2 Unsupervised Learning

Unsupervised learning works with unlabeled data. It splits into clustrings and is used for analysis; it lacks a feedback mechanism.

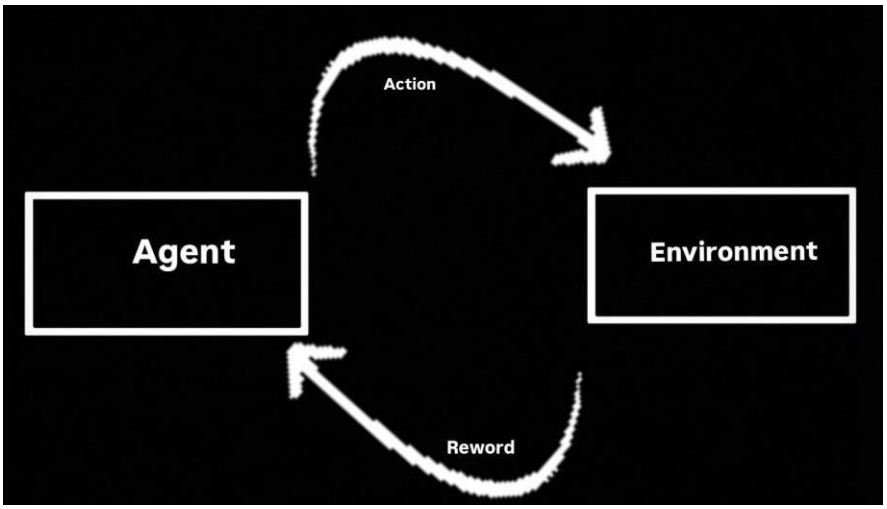


2.2.1 clustring

It is an unsupervised technique in the machine learning. That group of similar data point into clusters.
How its work: -
1 Analyse same data
2 Make that data into cluster
3 Create a new column into data

2.3 Reinforcement Learning

A machine learning method called reinforcement learning teaches an agent to choose the course of action that will maximize rewards. The basis is trial and error, and agents gain knowledge from their errors. It is utilized in gaming and other tasks that call for human assistance.


Action
Agent
Environment
Reword

Conclusion

The analysis and use of data has changed as a result of machine learning. Through this study, we haved examined multiple machine learning algorithms, such as reinforcement learning, supervised learning, and unsupervised learning. Supervised learning algorithms like Decision Trees predictions for labelled data, while unsupervised techniques. Clustering uncover hidden patterns within unlabelled datasets. Reinforcement learning, algorithm based on the trials and errors and learn through the experience.

References

1. Bishop, C. M. (2006). *Pattern Recognition and Machine Learning.* Springer.
2. Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning.* MIT Press.
3. Russell, S. J., & Norvig, P. (2020). *Artificial Intelligence: A Modern Approach (4th Edition).* Pearson.
4. Murphy, K. P. (2012). *Machine Learning: A Probabilistic Perspective.* MIT Press.
5. Mitchell, T. M. (1997). *Machine Learning.* McGraw-Hill.
6. Sutton, R. S., & Barto, A. G. (2018). *Reinforcement Learning: An Introduction (2nd Edition).* MIT Press