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 ijircce@gmail.com

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Survey on Machine Learning Algorithms

Seema Milind Jadhav

Assistant Professor, Dept. of Information Technology, Shah & Anchor Kutchhi Engineering College, Chembur, India

ABSTRACT: Machine Learning is very crucial part of our life. Now a days, human can train machine and predict the task using different machine learning algorithms. Machine learning algorithms are used for data cleaning, data transformation and data cleaning. In this paper, a brief survey of machine learning algorithms with various examples is presented.

KEYWORDS: Machine Learning Algorithm, Supervised learning, Unsupervised learning.

I. INTRODUCTION

Machine learning is used to teach machines how to handle the data more efficiently. Sometimes after viewing the data, we cannot interpret the pattern or extract information from the data. In that case, we apply machine learning [1]. The purpose of machine learning is to learn from the data. Many studies have been done on how to make machines learn by themselves [2] [3]. Many mathematicians and programmers apply several approaches to find the solution of this problem. Some of them are demonstrated in Fig. 1.

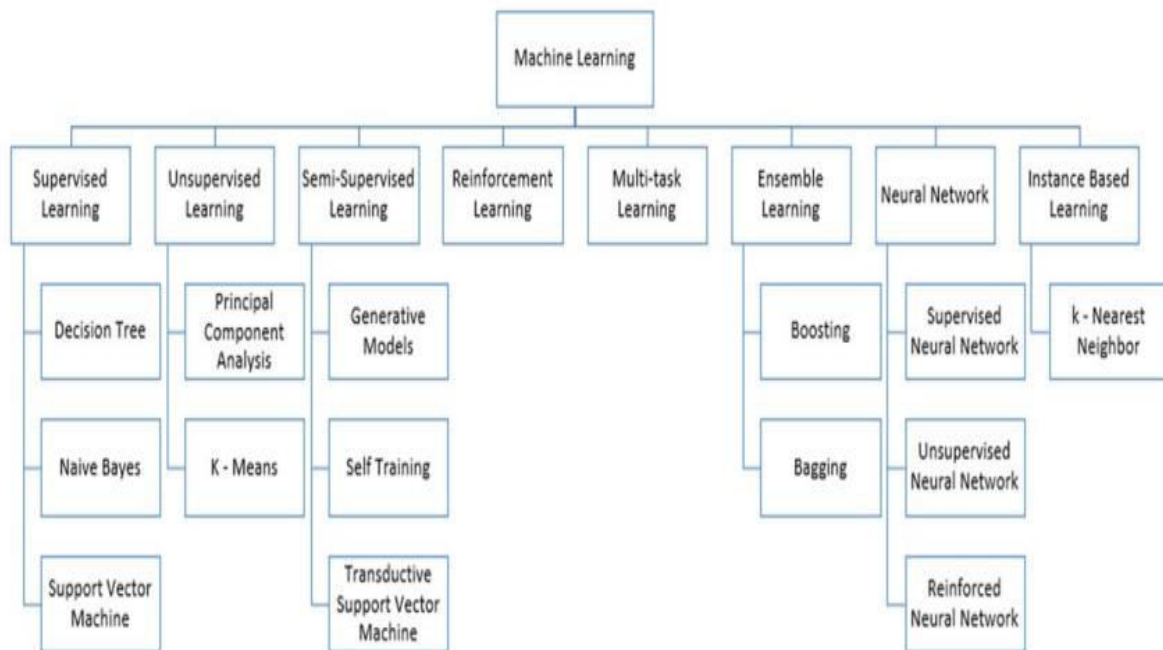


Fig. 1. Types of Machine Learning [2][3]

II. TYPES OF MACHINE LEARNING

A. Supervised Learning:

In Supervised Learning, the machine learns under supervision. It contains a model that is able to predict with the help of a labeled dataset. A labeled dataset is one where you already know the target answer.

Supervised learning is based on training. During its training phase, the system is fed with labeled data sets, which instruct the system what output is related to each specific input value. The trained model is then presented with test data: This is data that has been labeled. But the labels have not been revealed to the algorithm. The aim of the testing data is to measure how accurately the algorithm will perform on unlabeled data.

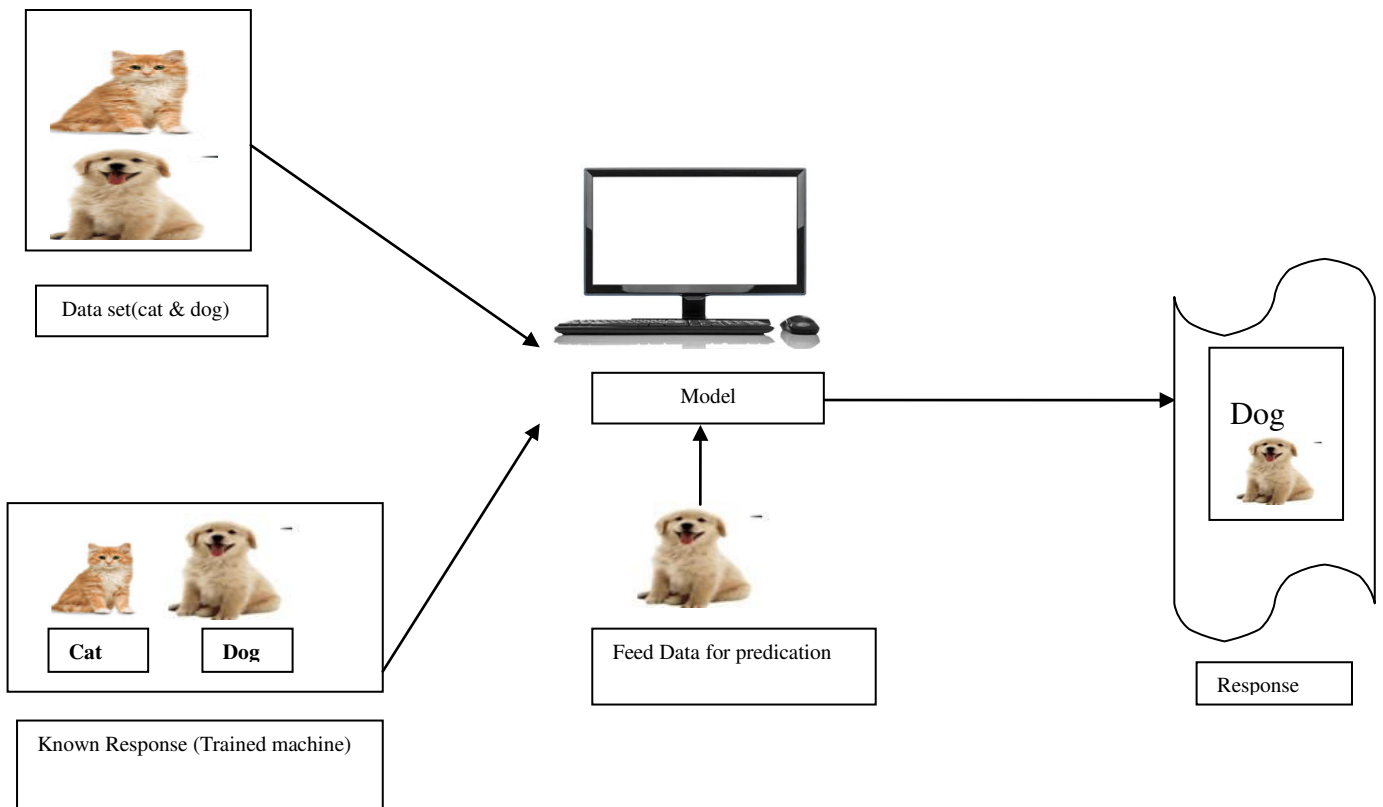


Fig.2. Supervised Learning

In this case, we have images that are labelled as cat or dog. This known data is fed to the machine, which analyses and learns the association of these images based on its features such as shape, size, sharpness, etc. Now when a new image is fed to the machine without any label, the machine is able to predict accurately that it is a cat with the help of historical data.

The supervised machine learning algorithms are those algorithms which needs external assistance. The input dataset is divided into train and test dataset. The train dataset has output variable which needs to be predicted or classified. All algorithms learn some kind of patterns from the training dataset and apply them to the test dataset for prediction or classification [4].

Linear regression, logistic regression, neural networks, decision trees, support vector machines (SVMs), random forests algorithms are used for supervised learning.

Basically two category of supervised learning: classification & regression.

Classification: It uses algorithms to assign the test data into specific categories. Categorical data is used for classification. True & False, male & female are examples of classification.

Regression: It is used to understand the relationship between dependent and independent variables. Linear regression, logistical regression, and polynomial regression are popular regression algorithms.

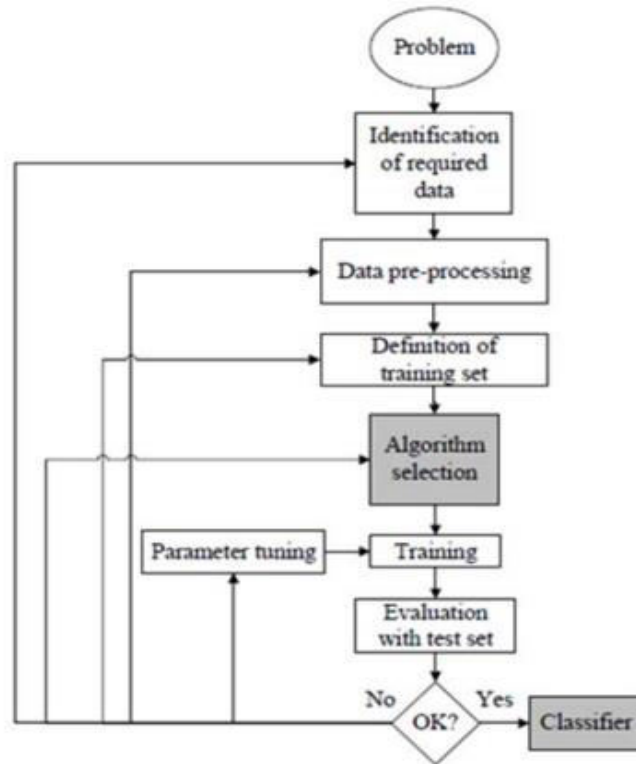


Fig.3. Workflow of supervised machine learning technique [4]

Decision Tree:

Decision Tree is one of the most widely used supervised machine learning algorithm (a dataset which has been labeled) for inductive inference. Decision tree learning is a method for approximating discrete valued target functions in which the function which is learned during the training is represented by a decision tree. The learned tree can also be represented as nested if-else rule to improve human readability.

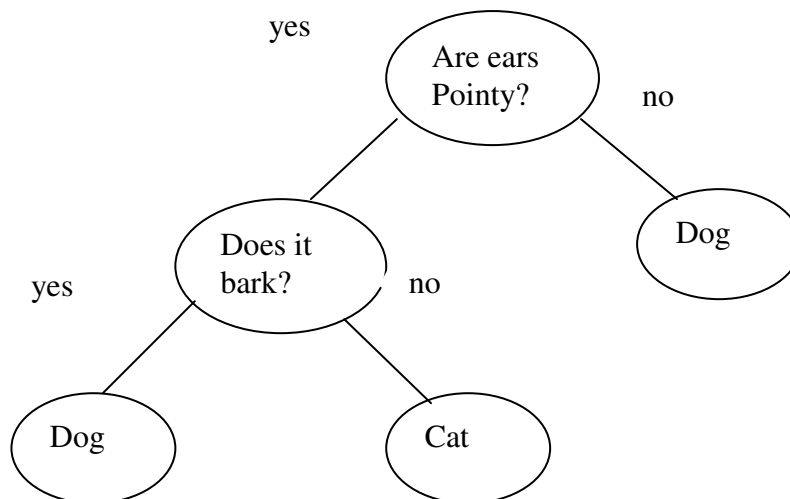


Fig.4. Simple Decision Tree

B. Unsupervised Learning:

In Unsupervised Learning, unlabeled data is used by machine and learns on itself without any supervision. The machine tries to find a pattern in the unlabeled data and gives a response.

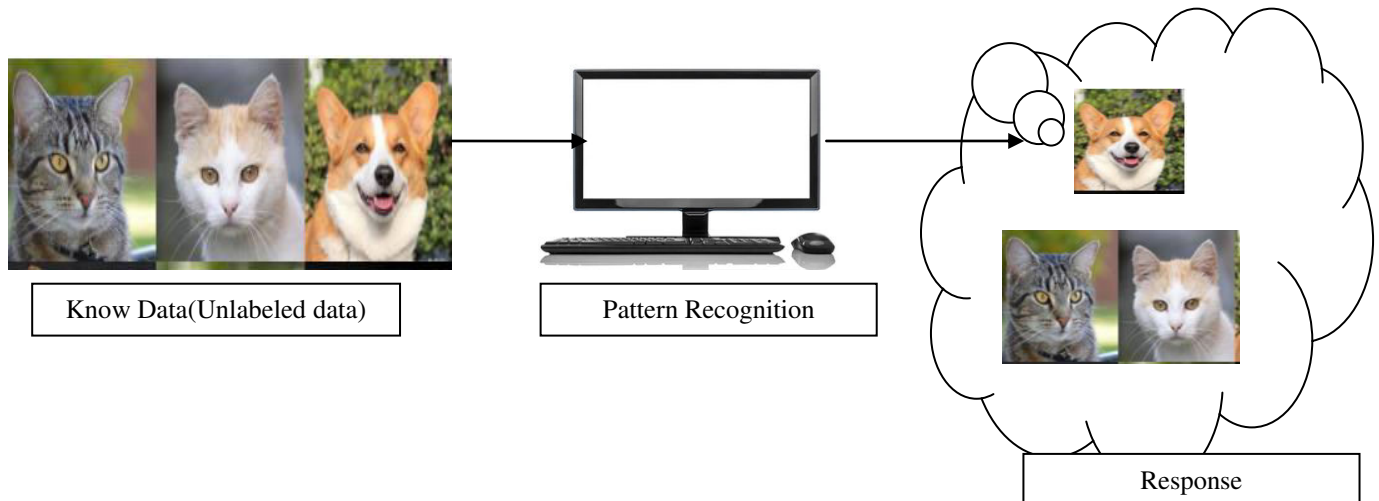


Fig.5. Unsupervised Learning

Unsupervised learning are divided into clustering and association.

1. **Clustering:** The act of clustering is the arrangement of a collection of items so that those in the same group referred to as a cluster and are more similar to one another than to those in any other group. Fig.5[6] shows example of clustering algorithm.
2. **Association:** Association is a rule-based machine learning to discover the probability of the co-occurrence of items in a collection. For example, finding out which products were purchased together.

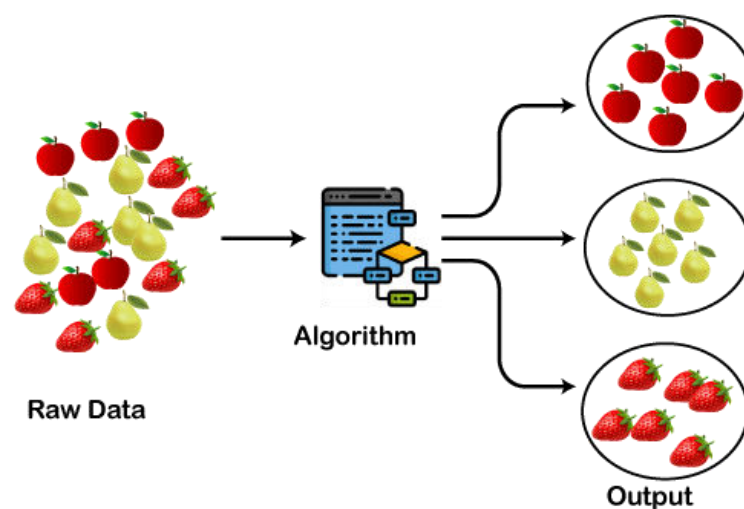


Fig.6. Clustering



III. CONCLUSION

In this paper studied, different machine learning algorithms like supervised and unsupervised learning with examples are presented. We can train machine using algorithm and predict the results. Machine learning is one of the high rising technologies used recently for solutions to various problems.

REFERENCES

1. W. Richert, L. P. Coelho, "Building Machine Learning Systems with Python", Packt Publishing Ltd., ISBN 978-1-78216-140-0.
2. M. Welling, "A First Encounter with Machine Learning".
3. M. Bowles, "Machine Learning in Python: Essential Techniques for Predictive Analytics", John Wiley & Sons Inc., ISBN: 978-1-118- 96174-2.
4. S.B. Kotsiantis, "Supervised Machine Learning: A Review of Classification Techniques", Informatica 31 (2007) 249-268.
5. Dey, A. Machine learning algorithms: a review. International Journal of Computer Science and Information Technologies, 2016, 7(3): 1174-1179.
6. <https://static.javatpoint.com/tutorial/machine-learning/images/clustering-in-machine-learning.png>.
7. X. Zhu, "Semi-Supervised Learning Literature Survey", Computer Sciences, University of Wisconsin-Madison, No. 1530, 2005 .
8. R. S. Sutton, "Introduction: The Challenge of Reinforcement Learning", Machine Learning, 8, Page 225-227, Kluwer Academic Publishers, Boston, 1992.
9. L. P. Kaelbling, M. L. Littman, A. W. Moore, "Reinforcement Learning: A Survey", Journal of Artificial Intelligence Research, 4, Page 237-285, 1996 .
10. R. Caruana, "Multitask Learning", Machine Learning, 28, 41-75, Kluwer Academic Publishers, 1997.
11. Alsheikh, M. A., Lin, S., Niyato, D., Tan, H. P. Machine learning in wireless sensor networks: Algorithms, strategies, and applications. IEEE Communications Surveys & Tutorials, 2014, 16(4): 1996-2018.
12. J. M. Keller, M. R. Gray, J. A. Givens Jr., "A Fuzzy K-Nearest Neighbor Algorithm", IEEE Transactions on Systems, Man and Cybernetics, Vol. SMC-15, No. 4, August 1985.



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