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FUTURE IMPORTANCE OF MACHINE LEANING: A STATE OF ART

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Abstract

Machine learning (ML) is the scientific study of algorithms and statistical models that computer systems use to perform a specific task without using unambiguous instructions, relying on patterns and inference instead. It is seen as a subset of artificial intelligence. Machine learning algorithms build a mathematical model based on sample data, known as "training data", in order to make predictions or decisions without being explicitly programmed to perform the task. Machine learning algorithms are used in a wide variety of applications online transportation traffic prediction video surveillance, Pattern recognition and many other business purposes . Machine Learning is going to have huge effects on the economy and living in general. Entire work tasks and industries can be automated and the job market will be changed forever. In this work we propose the importance of machine learning in future era.

Keywords*: Machine Learning, Applications, Training Data ,Future importance of ML.*

I. INTRODUCTION

Machine learning shortly describe as ML is a kind of artificial intelligence (AI) which compose available computers with the efficiency to be trained without being veraciously programmed. ML learning interest on the extensions of computer programs which is capable enough to modify when unprotected to new-fangled data. ML algorithms are broadly classified into three divisions namely supervised learning, unsupervised learning and reinforcement learning and is shown in Fig.1. The evolution of machine learning is comparable to that of data mining. Both data mining and machine learning consider or explore from end to end data to assume for patterns. On the other hand, in choice to extracting data for human knowledge as is the case in data mining applications; machine learning generate use of the data to identify patterns in data and fine-tune program actions therefore[1]. Machine Learning and data mining algorithms has been deployed in various fields such as Computer networking, travel and tourism industry, finance forecasting, telecommunication industry and electric load forecasting and so on [2].

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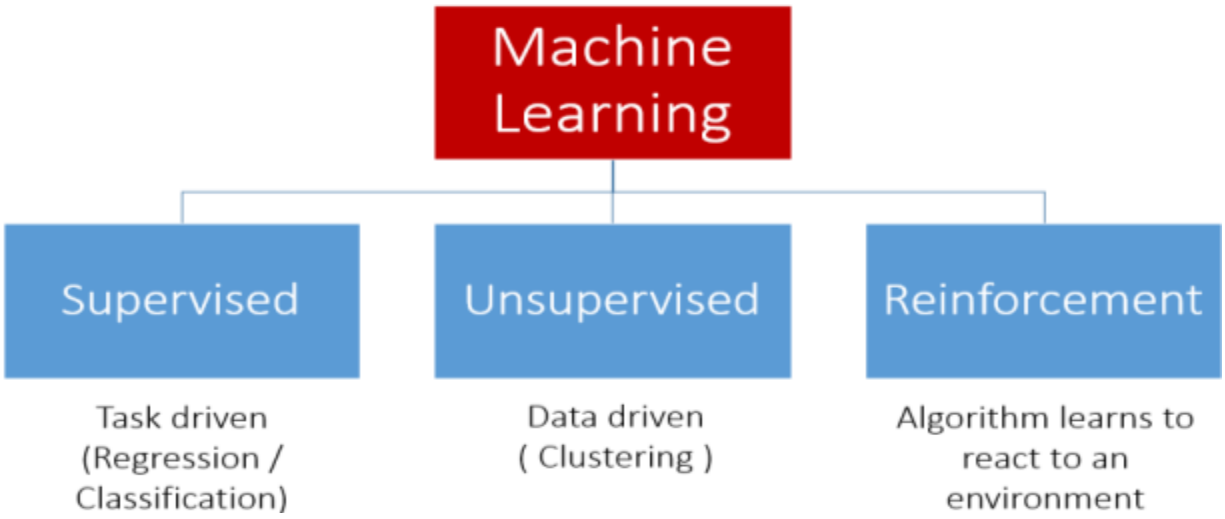

Fig 1

ML provides a software the flexibility and adaptability when necessary. In spite of some application (e.g., to write matrix multiplication programs) where ML may fail to be beneficial, with increase of data resources and increasing demand in personalized customizable software, ML will thrive in near future. Besides software development, ML will probably but help reform the general outlook of Computer Science. By changing the defining question from "how to program a computer" to "how to empower it to program itself," ML priories the development of devices that are self- monitoring, self-diagnosing and self-repairing, and the utilizes of the data flow available within the program rather than just processing it[3].

1.1 History of machine learning

1642 - Blaise Pascal invents a mechanical machine that can add, subtract, multiply and divide.1679 - Gottfried Wilhelm Leibniz devises the system of binary code.1834 - Charles Babbage conceives the idea for a general all-purpose device that could be programmed with punched cards.1842 - Ada Lovelace describes a sequence of operations for solving mathematical problems using Charles' Babbage's theoretical punch-card machine and becomes the first programmer[4].

II. MACHINE LEARNING METHODS

Supervised learning

It can apply what has been learned in the past to new data using labeled examples to predict future events. Starting from the analysis of a known training dataset, the learning algorithm produces an inferred function to make predictions about the output values. The system is able to provide targets for any new input after sufficient training. The learning algorithm can also compare its output with the correct, intended output and find errors in order to modify the model accordingly. In contrast, unsupervised machine learning algorithms are used when the information used to train is neither classified nor labeled [5].

Unsupervised learning

Unsupervised Learning deals with unlabeled data (data that doesn't have a label). Unsupervised Learning is mostly used for finding relationships in datasets, reducing dimensionality or identifying anomalies.

Semi-supervised learning

It fall somewhere in between supervised and unsupervised learning, since they use both labeled and unlabeled data for training – typically a small amount of labeled data and a large amount of unlabeled data. The systems that use this method are able to considerably improve learning accuracy. Usually, semi-supervised learning is chosen when the acquired labeled data requires skilled and relevant resources in order to train it / learn from it. Otherwise, acquiring unlabeled data generally doesn't require additional resources.

Reinforcement learning

It is a learning method that interacts with its environment by producing actions and discovers errors or rewards. Trial and error search and delayed reward are the most relevant characteristics of reinforcement learning. This method allows machines and software agents to automatically determine the ideal behavior within a specific context in order to maximize its performance. Simple reward feedback is required for the agent to learn which action is best; this is known as the reinforcement signal. Machine learning enables analysis of massive quantities of data. While it generally delivers faster, more accurate results in order to identify profitable opportunities or dangerous risks, it may also require additional time and resources to train it properly. Combining machine learning with AI and cognitive technologies can make it even more effective in processing large volumes of information[5].

III. MACHINE LEARNING ALGORITHMS

There is lot of algorithms available to implement machine learning concepts. Here we have survey some preliminary algorithms .

Deep Learning

Deep learning architectures and algorithms have already made impressive advances in fields such as computer vision and pattern recognition. Following this trend, recent NLP research is now increasingly focusing on the use of new deep learning methods. For decades, machine learning approaches targeting NLP problems have been based on shallow models (e.g., SVM and logistic regression) trained on very high dimensional and sparse features. In the last few years, neural networks based on dense vector representations have been producing superior results on various NLP tasks [6]. This trend is sparked by the success of word embeddings and deep learning methods. Deep learning enables multi-level automatic feature representation learning. In contrast, traditional machine learning based NLP systems liaise heavily on hand-crafted features. Such hand-crafted features are time-consuming and often incomplete.

Artificial Neural Network

It intended to simulate the behavior of biological systems composed of "neurons" and it is supervised learning method. ANNs are computational models inspired by an animal's central nervous systems. It is capable of machine learning as well as pattern recognition. These presented as systems of interconnected "neurons" which can compute values from inputs. A neural network is an oriented graph. It consists of nodes which in the biological analogy represent neurons, connected by arcs. It corresponds to dendrites and synapses. Each arc associated with a weight while at each node. Apply the values received as input by the node and define Activation function along the incoming arcs, adjusted by the weights of the arcs. A neural network is a machine learning algorithm based on the model of a human neuron. The human brain consists of millions of neurons. It sends and process signals in the form of electrical and chemical signals. These neurons are connected with a special structure known as synapses. Synapses allow neurons to pass signals. From large numbers of simulated neurons neural networks forms. An Artificial Neural Network is an information processing technique. It works like the way human brain processes information. ANN includes a large number of connected processing units that work together to process information. They also generate meaningful results from it. We can apply Neural network not only for classification. It can also apply for regression of continuous target attributes.

Neural networks find great application in machine learning used in sectors. For example economics, forensics, etc and for pattern recognition. It can be also used for data classification in a large amount of data after careful training.

A neural network may contain the following 3 layers:

- Input layer – The activity of the input units represents the raw information that can feed into the network.
- Hidden layer – To determine the activity of each hidden unit. The activities of the input units and the weights on the connections between the input and the hidden units. There may be one or more hidden layers.
- Output layer – The behavior of the output units depends on the activity of the hidden units and the weights between the hidden and output units [7].

Decision Tree

Algorithms using Decision trees are used mainly in classification problem. They splits attributes in two or more groups by sorting them using their values. Each tree have nodes and branches[8]. Attributes of the groups are represented by each node and each value represented by branch [9]. An example of decision tree is given in Fig. 2.

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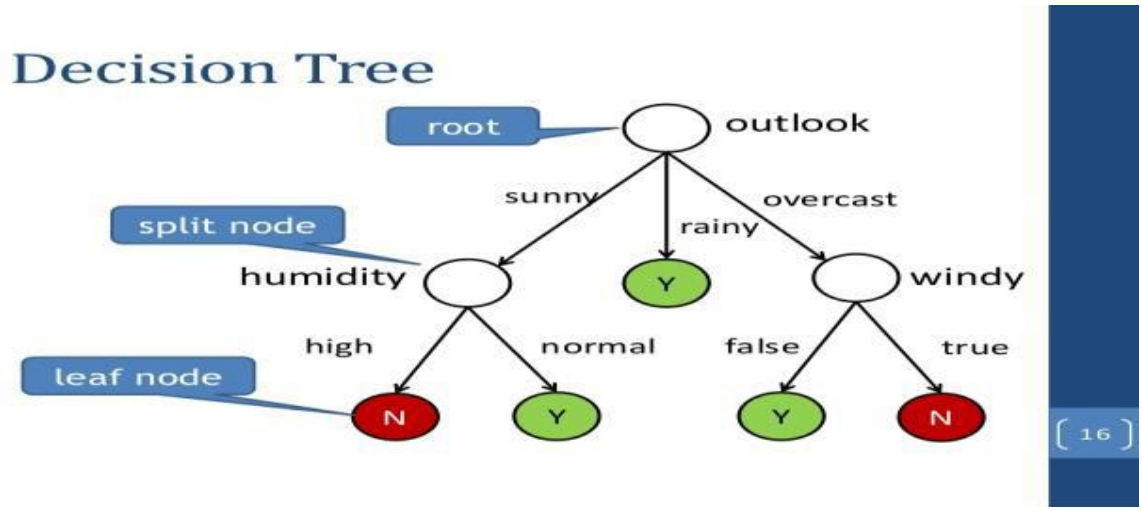

Fig 2.

The most well known algorithms using decision tree are:

- Iterative Dichotomized 3
- M5
- Chi squared Automatic Interaction Detection
- C5.0 and C4.5 (different versions of a powerful approach)
- Decision Stump
- Classification and Regression Tree
- Conditional Decision Trees

Machines Learning Versus Human Input

Machine learning allows a computer, software platform, system, etc. to actively react to new information. This means that when a novel situation or dataset presents itself the machine will modify its process to fit this new information which in turn modifies its results. The existing method of software and system development creates software that cannot 'think' of its own results responses and is limited to a set series of possible responses coded into the software by its programmers[10].

While this has been the common method of software created for the entire lifespan of computers the datasets and information software is required to read has become very complex. Programming ways to interpret such vast amounts of information has become difficult for even the best programmers to conceptualize. This is why machine learning is so important. It allows for the creation of methodologies beyond human planning and foresight.

IV. THE FUTURE OF MACHINE LEARNING

While machine learning algorithms have been around for decades, they've attained new popularity as artificial intelligence (AI) has grown in prominence. Deep learning models, in particular, powers today's most advanced AI applications.

Machine learning platforms are among enterprise technology's most competitive realms, with most major vendors, including Amazon, Google, Microsoft, IBM and others, racing to sign customers up for platform services that cover the spectrum of machine learning activities, including data collection, data preparation, data classification, model building, training and application deployment.As machine learning continues to increase in importance to business operations and AI becomes ever more practical in enterprise settings, the machine learning platform wars will only intensify.

V. CONCLUSION

In this paper we studied and reviewed about machine learning methods ,algorithms & future benefits of machine learning .for this study how machine learning increase the business operation and learning is applied in classification problems like face recognition, medical diagnosis, pattern recognition, character recognition, , web advertizing .In future machine learning will produce accurate predictions.

VI. REFERENCE

[1] A Literature Review on Supervised Machine Learning Algorithms and Boosting Process
M. Praveena, V. Jaiganesh, PhD International Journal of Computer Applications (0975 – 8887) Volume 169 – No.8, July 2017

[2] Teng Xiuyi1,Gong Yuxia1. "Research on Application of Machine Learning in Data Mining". IOP Conf. Series: Materials Science and Engineering, 2018.

[3] Kajaree Das, Rabi Narayan Behera B.Tech, Dept. of I.T., Institute of Engineering and Management, Kolkata, India1 International Journal of Innovative Research in Computer and Communication Engineering Vol. 5, Issue 2, February 2017.

[4] https://searchenterpriseai.techtarget.com/definition/machine-learning-ML

[5] https://expertsystem.com/machine-learning-definition/

[6] Tom Young†≡, Devamanyu Hazarika‡≡, Soujanya Poria⊕≡, Erik Cambria5∗ Recent Trends in Deep Learning Based Natural Language Processing-Nov 2018

[7] https://www.datasciencecentral.com/profiles/blogs/artificial-neural-network-ann-in-machine-learning

[8] Kajaree Das, Rabi Narayan Behera. "A Survey on Machine learning: Concept, Algorithms and Applications", International Journal of Innovative Research in Computer and communication Engineering . vol. 5, 2017.

[9] S.B. Kotsiantis."Supervised Machine Learning: A Review of Classification Techniques", Informatica. pp 249-268, 2007.

[10]https://www.imre.uk/2018/02/basics-purpose-machine-learning/