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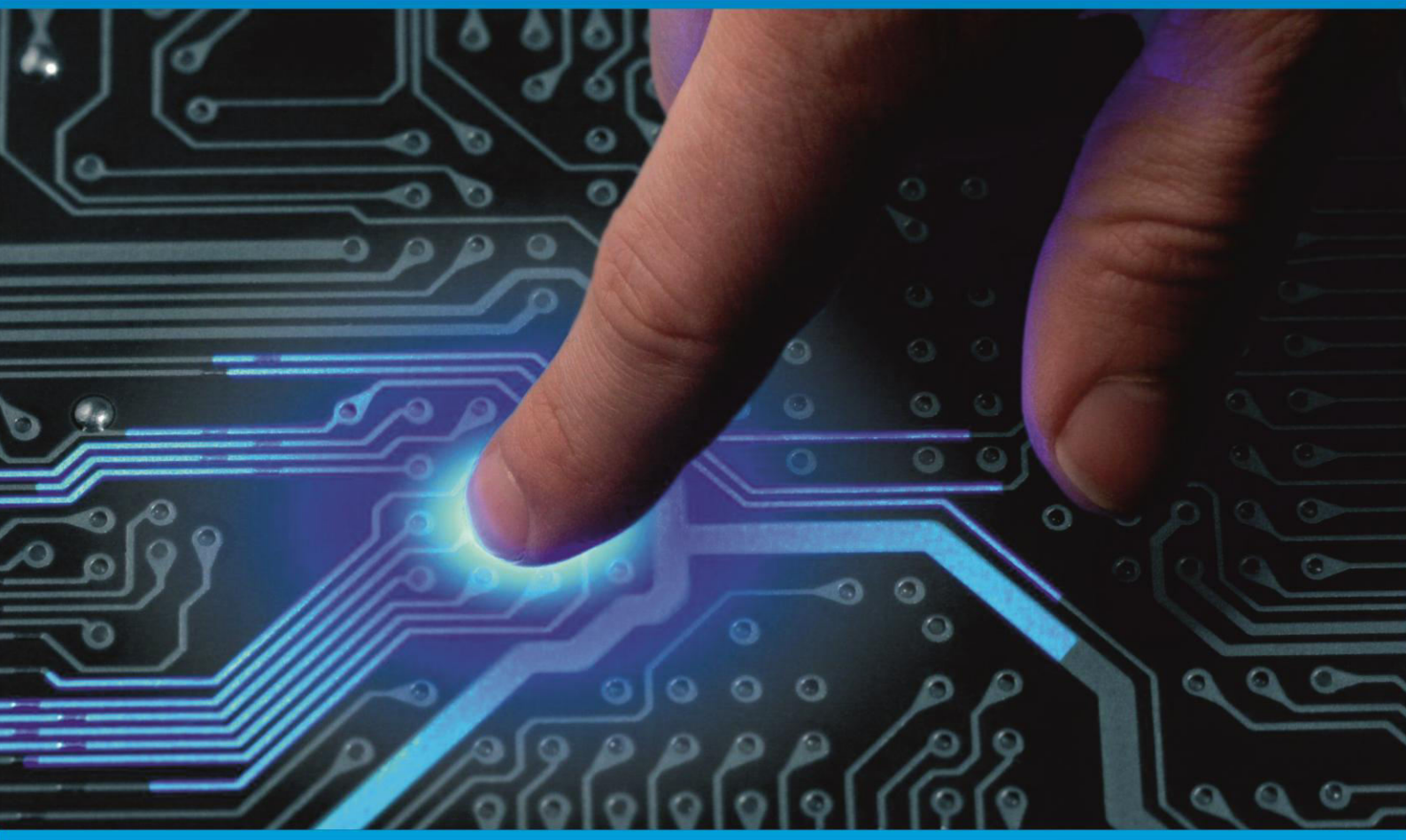

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A Review Paper on Machine Learning

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ABSTRACT: Machine Learning is a method of Teaching Computer to make prediction based on some DATA**.** Machine Learning is an application of Artificial Intelligence. Machine Learning uses to build algorithm that can receive the input data and use statistical analysis to predict the output based on the type of data available. There are some commonly used algorithm in machine learning is – Supervised learning Algorithm and Unsupervised learning Algorithm**.** Machine Learning that's learns by itself without being programmed by a human. The computer algorithm locates a pattern in a data and predicts the apparent outcome which saves time and money. Now a day's organizations are looking for ways to grow their business. Machine Learning will solve huge data problems. This Seminar Contains Introduction of Artificial Intelligence in Machine Learning, Types of Machine Learning, Applications of Machine Learning, and Implementation of two machine learning algorithm Supervised learning Algorithm and Unsupervised learning Algorithm with type and example of the algorithms.

KEYWORDS: Machine learning, Supervised, Unsupervised, Framework, Application, Benefits, Drawbacks.

I. INTRODUCTION

Machine learning is a subfield of artificial intelligence (AI). The goal of machine learning generally is to understand the structure of data and fit that data into models that can be understood and utilized by people. Machine Learning is a branch of artificial intelligence. It is a scientific discipline concerned with the design and development of algorithms that allow computers to evolve behaviours based on empirical data. Such as from sensors and data bases. Machine Learning is adding learning ability to machine. It means that we are enabling a machine to learn by them self.
Machine Learning is all about writing an algorithm.

- To pass the data.
- Use that pass data to learn or understand the pattern of the data.
- After that use that learn machine algorithm.

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.

II. FRAMEWORKS

A. Scikit-Learn: Scikit-learn are also a library in Python that provides many unsupervised and supervised learning algorithms. The utility that scikit-learn provides includes: Regression, additionally as Linear and logistic Regression. Classification, additionally as K-Nearest Neighbors.

B. Shogun : Shogun is also a free, open-source machine learning software system library has written in C++. It offers varied algorithms and data structures for machine learning problems. It offers interfaces for Octave, Python, R, Java, Lua, and Ruby and C #using SWIG.

*C. Theano :*Theano may be a Python library allowing you to stipulate mathematical expressions utilized in Machine Learning, optimize these expressions and price those very efficiently by decisively using GPUs in vital areas. It'll rival typical full C-implementations in most of the cases.

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*D. Torch :*Torch is an open-source machine learning library, a scientific computing framework, and a script language supported the Lua programming language. It provides a large range of algorithms for deep learning, and uses the scripting language LuaJIT, and an underlying C implementation

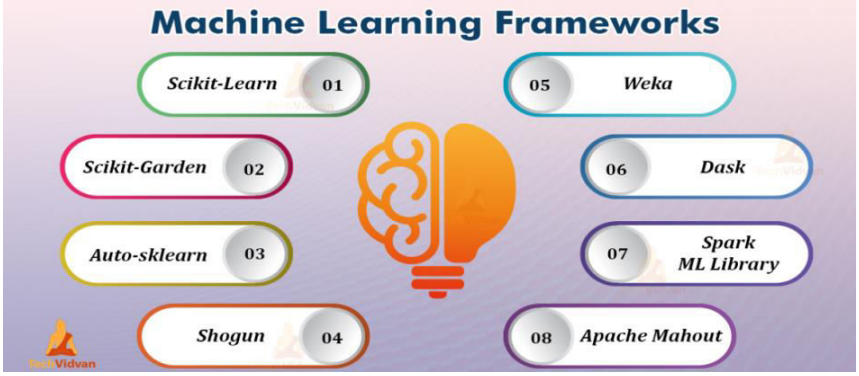

Fig.1. Machine Learning Frameworks

III. TYPES OF MACHINE LEARNING

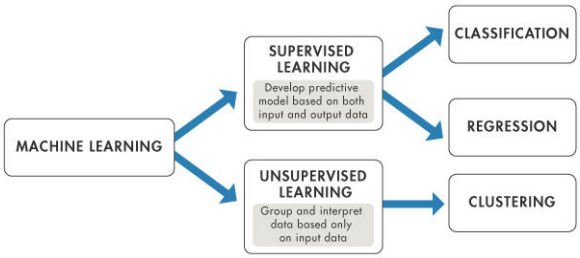

Fig. 2. Types of Machine Learning

A. Supervised Machine Learning

Supervise suggests that to look at and direct the execution of a task, project, or activity. Obviously, we have a tendency to be reaching to be superintendence someone. Instead, we'll be superintendence a machine learning model which may be able to turn out classification regions, etc.
So, however will we supervise a machine learning model? We have a tendency to do that by "teaching" the model. I.e. we have a tendency to load the model with data in order that we will have it predict future instances. But! However precisely will we teach a model? We have a tendency to teach the model by coaching it with some knowledge from a tagged dataset. It's vital to notice that the information is tagged .And what will a tagged dataset look like? Well, it will look one thing sort of computer program with correct labeling over it. The highest row referred as and is termed Attributes and therefore the columns as called options. The additional it rains, the longer you'll be driving to urge back to your home. It does additionally see the association between the time you permit work and therefore the time you will be on the road. The nearer you are to six p.m. the longer it takes for you to urge home. Your machine could notice a number of the relationships along with your tagged knowledge.

There are two types of Supervised Machine Learning :

a. *Regression*: Regression technique predicts one output worth victimization coaching information. Is a live of the relation between the average of 1 variable (e.g. output) and corresponding worth of different variables (e.g. time and cost). Regression analysis may be an applied math method for estimating the

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connection among variables. Regression suggests that to predict the output values victimization coaching information.

b. *Classification* **:** Classification suggests that to cluster the output within a category. If the formula tries to label input into 2 distinct categories, it's known as binary classification. Choosing between over 2 categories is cited as multi class classification.

B. Unsupervised Machine Learning

Unsupervised learning, additionally called unsupervised machine learning, uses machine learning algorithms to research and cluster unlabeled datasets. These algorithms discover hidden patterns or information groupings while not the requirement for human intervention. Its ability to find similarities and variations in data creates it the best resolution for searching information analysis.

Types of Unsupervised Machine Learning

a. *Clustering* : Clustering is a method of grouping the objects into clusters such that objects with most similarities remains into a group and has less or no similarities with the objects of another group. Cluster analysis finds the commonalities between the data objects and categorizes them as per the presence and absence of those commonalities.

IV. APPLICATIONS OF MACHINE LEARNING

A. Speech Recognition

While using Google, we have a tendency to get Associate in Nursing choice of "Search by voice," it comes below speech recognition, and it is a well-liked application of machine learning. Speech recognition could be a method of changing voice directions into text, and it's additionally called "Speech to text", or "Computer speech recognition." at the moment, machine learning algorithms are wide used by various applications of speech recognition. Google assistant, Siri, Cortana, and Alexa are using speech recognition technology to follow the voice directions.

B Traffic Prediction:

If we wish to go to a new place, we take facilitate of Google Maps that shows United States the right path with the shortest route and predicts the traffic conditions .It predicts the traffic conditions like whether traffic is cleared, slow, or heavily full of the assistance of 2 ways: Real Time location of the vehicle kind Google Map app and sensors Average time has taken on past days at a similar time. Everyone WHO is using Google Map helps this app to create it better. It takes data from the user and sends back to its info to boost the performance.

C. Self-driving cars

One of the most exciting applications of machine learning is self-driving cars. Machine learning plays a big role in self-driving cars. Tesla, the most well-liked car producing company is functioning on self-driving automobile. It's victimization unsupervised learning methodology to coach the car models to find people and objects whereas driving.

D. Online Fraud Detection

Machine learning is creating our on-line dealings safe and secure by police work fraud dealings. Whenever we have a tendency to perform some on-line dealings, there could also be numerous ways in which a deceitful dealing will surface like faux accounts, fake ids, and steal cash within the middle of dealing. Thus to find this, Feed Forward Neural network helps United States by checking whether it's a real dealing or a fraud dealings. For each real dealing, the output is converted into some hash values, and these values become the input for future round. For every real transaction, there's a selected pattern that gets change for the fraud transaction thus, it detects it and makes our on-line transactions safer.

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V. BENEFITS AND DRAWBACKS

A. Benefits of Machine Learning

- Useful wherever giant scale knowledge is accessible Large scale readying of Machine
- Learning helpful in terms of improved speed and accuracy

B. Drawbacks of Machine Learning

- Limited understanding of the machinery of classifier(Black Box)
- Requires vital quantity of information

C. Benefits of Supervised Machine Learning

- You can have a precise plan concerning the categories within the coaching knowledge.
- Supervised learning may be a straightforward method for you to know within the case of unsupervised learning, we have a tendency to don't simply perceive what's happening within the machine, however it's learning, etc

D. Drawbacks of Supervised Machine Learning

- Supervised learning cannot offer you unknown data from the coaching knowledge like unattended learning do.
- It cannot cluster or classify knowledge by discovering its options on its own, in contrast to unattended learning.

E. Benefits of Unsupervised Machine Learning

- With unsupervised learning, it's doable to be told larger and additional advanced models than with supervised learning.
- Unlabeled: This knowledge may embody photos, videos, audio recordings etc. there's no clarification for every piece of unlabeled data-it simply contains the information.
- Labeled: This knowledge usually takes a patch of unlabeled knowledge and arguments every bit of that unlabeled knowledge with some form of meaning "tag".

F. Drawbacks of Unsupervised Machine Learning

- You cannot get terribly specific regarding the definition of the data sorting and thus the output. This is often actually because the data utilized in unattended learning is tagged and not grasp.
- The results of the analysis can't be determined there's no previous information among the unattended methodology of machine learning.
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VI. CONCLUSION

Machine Learning is quickly growing field in computing. It's applications in nearly each different field of study and is already being implemented normally because machine learning will solve issues to default or for time-consuming for human to solve. To explain machine learning generally terms, a verity models are used to learn patterns in information and create correct predictions based on the patterns it observes. The purpose of this seminar report is to review concerning the Machine learning that is so well-liked in currently days where Machine Learning may be a PC application that learns by itself without being programmed by a person's.

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