



THE SCIENCE OF MACHINE LEARNING

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ABSTRACT

Machine learning is a very hot topic now-a-days. Machine Learning is a technology that allows our computer system or any machine to learn directly from examples, data and past experiences. Basically we try to teach machines or make them learn all the activities which are useful in day to day life. We can also consider machine learning as a part or application of Artificial Intelligence. It is the learning and developing algorithms that we can analyse by making predictions on data sets.

Making computers to work from its experiences in the same way that human beings do without explicitly performing direct programming. We can say that it's an algorithm or model that try to understand patterns in big data and then predicts in the same way or in a similar manner.

Machine learning is getting great significance in the present scenario. ML is implementing in various fields and business sectors, and it producing very large profit. This technique is extremely useful in helping us by performing complex and tedious task very easily and efficiently. Some of the tasks are predicting diseases, stock market evolution, self-driving cars, Amazon, Facebook, cyber fraud detection and many more applications are there.

WHAT IS MACHINE LEARNING?

We know that human learn from their experiences and machine follows instruction given by humans.....but what if human can train the machine to learn from their past experiences and learn from lot of example and act much faster than human. This we are going to learn in machine learning. So basically Machine Learning is a field of study that gives computers the capability to learn without without explicitly programmed.

If we teach our systems or machine how to work efficiently..that would be come under machine learning.

HOW WE COME TO THE CONCEPT OF MACHINE LEARNING

So our system or computer lacks intelligence, it can perform multiple and complex calculation but it lacks common sense.

For example if we show a portrait of a dog to computer it will not understand whether it is object, human or which animal is this If in case it recognises it but if we want to know breed of that dog here it fails.

We can understand it with some other example that if we show a flag to system it should recognise which country's flag is it.

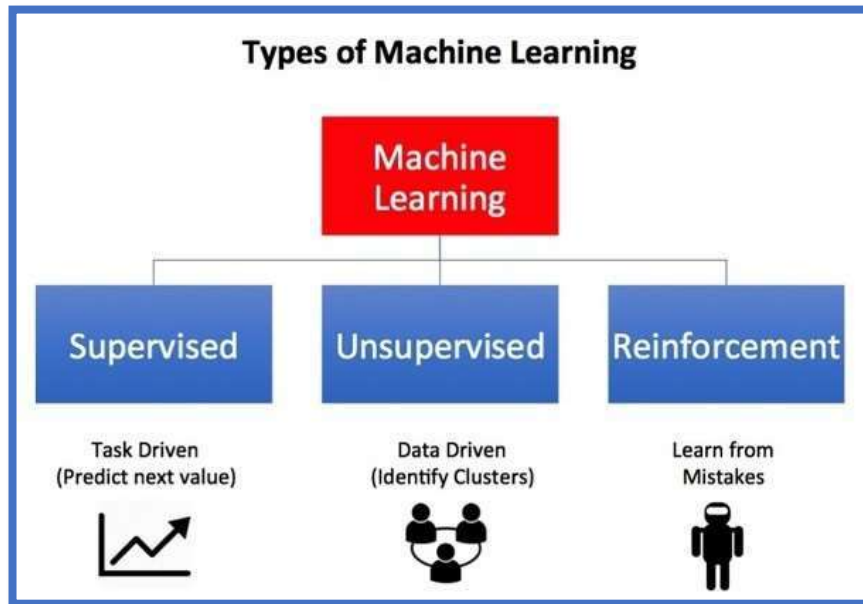
Generally we use to write programs and code in order to find solution of these problems but everything cannot be solved through

programming..there will always be certain restrictions. For example if we say that this is dog and this is cat..and if user wants to know its breed then our program will fail or if we click a photograph and say that it is dog and count how many dogs are there then what about those dogs who is half under pillow or behind the curtain.

If we try to include all the circumstances and conditions then our program will be highly complicated. So instead of writing program we collect a lot of examples and experiences related to that problem and try to teach it to our systems.

Machine learning is basically made up of three parts:

- The computational algorithm at the core of making assurances.
- Variables and features that contributes to the final outcome.
- Basic knowledge for which the answer is known that build up the system to learn.



TYPES OF MACHINE LEARNING
SUPERVISED LEARNING

- ▶ It is done under a supervisor
- ▶ Training data is labelled
- ▶ In this we train the machine using labelled data
- ▶ In this we give different types of inputs and corresponding outputs
- ▶ Here machine tries to find appropriate mapping function between input and output.

So whenever a new input is given it tries and recall and produces its corresponding output

• **UNSUPERVISED LEARNING**

- ▶ There is no supervisor.
- ▶ Training data is missing or it is unlabelled.
- ▶ Machine is given unlabelled inputs and then it perform the task on the basis of some similarities ,patterns, differences at its own without any help.

• **REINFORCEMENT LEARNING**

- ▶ This type of learning is based on reward and penalty.
- ▶ Machine perform certain actions in environment and receives some feedback

either positive or negative in the form of reward and penalty.

Accordingly improves itself according to the requirements.

APPLICATIONS OF MACHINE LEARNING

Have you all ever noticed about

- How google mails differentiate between spam and non spams mails.
- How self driving cars are made..Nowadays Tesla is working hard on it.
- How Siri the intelligent voice assistant of Apple iphones answers everything correctly.
- How shopping sites like Flipkart and Amazon recommends us products.
- How google can translate in more than 100 languages.
- How youtube recommends us videos of our interests.

These all happens because of concept of machine learning.

FUTURE SCOPE & CONCLUSION

Machine learning proofs to be advantageous to any company including top MNC or a start-up or government offices are making things currently

working in a proper manner and been done manually will be accomplished by machines.

In our future time, there will be much more demand of employees that they should have in depth knowledge of machine learning in reputed companies like Google, Twitter, Facebook etc. With the huge population crossing the world, machine learning have such a vast and wider scope of making human life easy by helping them in a very fast and efficient manner. There will be advanced machines and robotic vision and pre-predict that can predict upcoming crisis and future.

Though humans have already been replaced by advanced machines in so many household chores, industries, army and many more and it will be tremendously increasing in later years.

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