

# Newsletter 2020 Issue 1



**Bharati Vidyapeeth's  
Institute of Management and Information Technology  
Navi Mumbai**

**BHARATI VIDYAPEETH'S  
INSTITUTE OF MANAGEMENT AND INFORMATION TECHNOLOGY  
NAVI MUMBAI**



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BVIMIT fortifies student's intellectual awaking and social transformation in different spheres that makes them to contribute to the organization and world as well. We strengthen student's hard work and commitments towards knowledge.

BVIMIT provides MCA, VI semester course enables overall development of students and give a different perspective towards corporate life.

Current newsletter entitled "**PRABHAT-exploring tech rising star**" is a combined effort of students and staff members that commences articles on emerging technologies with theme as "**MACHINE LEARNING**" provides articles for the same.

I hope "**PRABHAT**" will take you to the world of prominent technologies.

## Editorial Desk



**Prof. Pratibha Deshmukh**  
**Editor-in-chief**

It is indeed a great honor to be the Newsletter Editor for me and also an immense pleasure to launch the first edition of BVIMIT Newsletter “PRABHAT- exploring tech rising star”.

As we are living in the technological era, we have selected the topic for the article as “**MACHINE LEARNING**” to make students aware about this emerging technology. It aims to be a truly interdisciplinary platform seeking to bring together a range of diverse voices on the topic in order to stimulate discussion.

A huge thank you to all the students who contributed writing the articles, without which there wouldn't have been this newsletter.

I appreciate PRABHAT student members for their everlasting support throughout the creation of this edition.

I hope “**PRABHAT**” will convey some technical knowledge to you.

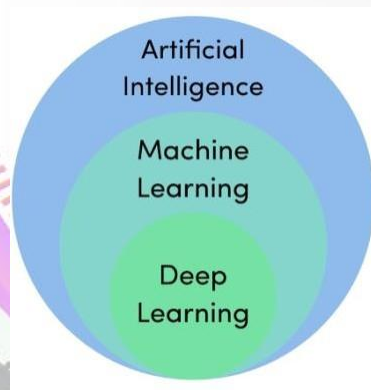


**SWAPNALI S SHINDE**

**STUDENT MCA**

## **MACHINE LEARNING**

Machine Learning is the field of study that gives computers the capability to learn without being explicitly programmed. ML is one of the most exciting technologies that one would have ever come across. As it is evident from the name, it gives the computer that makes it more similar to humans: The ability to learn. Machine learning is actively being used today, perhaps in many more places than one would expect.



A subset of artificial intelligence (AI), machine learning (ML) is the area of computational science that focuses on analyzing and interpreting patterns and structures in data to enable learning, reasoning, and decision making outside of human interaction. Simply put, machine learning allows the user to feed a computer algorithm an immense amount of data and have the computer analyze and make data-driven recommendations and decisions based on only the input data. If any corrections are identified, the algorithm can incorporate that information to improve its future decision making

## How has machine learning evolved?

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.

1847 – George Boole creates Boolean logic, a form of algebra in which all values can be reduced to the binary values of true or false.

1936 – English logician and cryptanalyst Alan Turing proposes a universal machine that could decipher and execute a set of instructions. His published proof is considered the basis of computer science.

1952 – Arthur Samuel creates a program to help an IBM computer get better at checkers the more it plays.

1959 – MADALINE becomes the first artificial neural network applied to a real-world problem: removing echoes from phone lines.

1985 – Terry Sejnowski's and Charles Rosenberg's artificial neural network taught itself how to correctly pronounce 20,000 words in one week.

1997 – IBM's Deep Blue beat chess grandmaster Garry Kasparov.

1999 – A CAD prototype intelligent workstation reviewed 22,000 mammograms and detected cancer 52% more accurately than radiologists did.

2006 – Computer scientist Geoffrey Hinton invents the term deep learning to describe neural network research.

2012 – An unsupervised neural network created by Google learned to recognize cats in YouTube videos with 74.8% accuracy.

2014 – A chatbot passes the Turing Test by convincing 33% of human judges that it was a Ukrainian teen named Eugene Goostman.

2014 – Google's AlphaGo defeats the human champion in Go, the most difficult board game in the world.

2016 – LipNet, DeepMind's artificial intelligence system, identifies lip-read words in video with an accuracy of 93.4%.

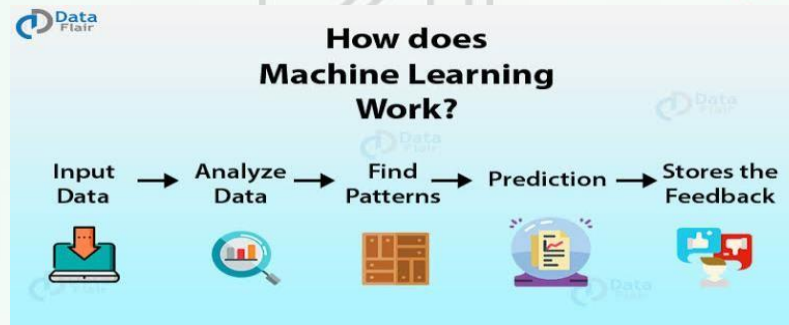


## How Does Machine Learning Work?

Machine learning is made up of three parts:

The computational algorithm at the core of making determinations. Variables and features that make up the decision.

Base knowledge for which the answer is known that enables (trains) the system to learn.



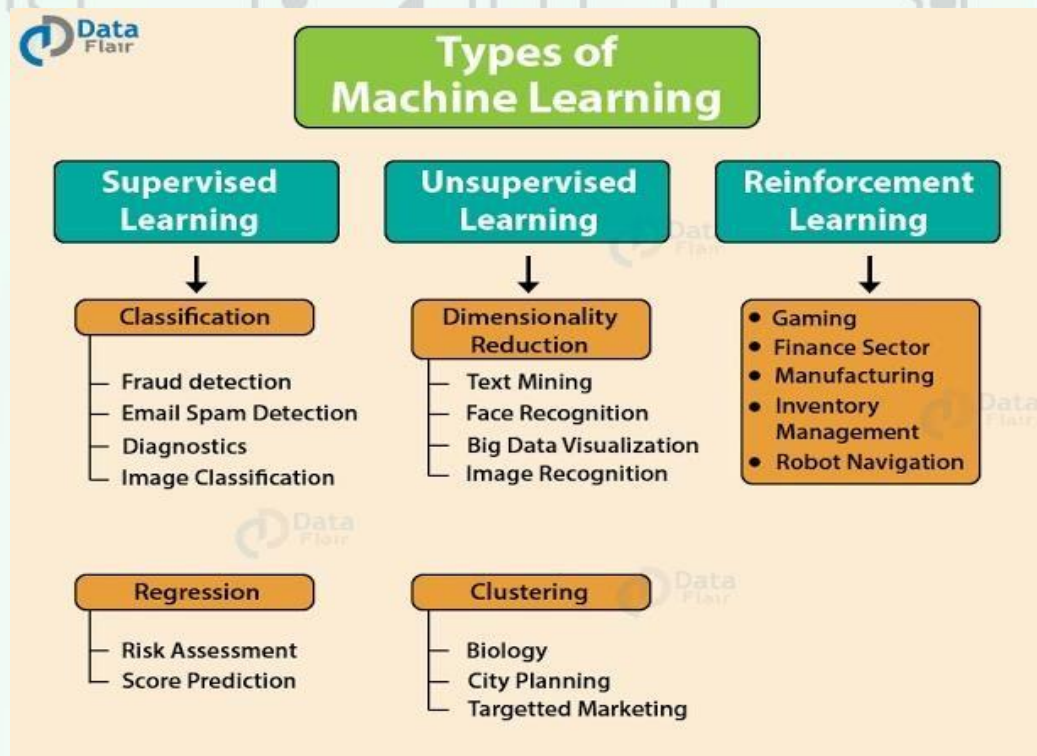
## Why is machine learning important?

Machine learning is important because it gives enterprises a view of trends in customer behavior and business operational patterns, as well as supports the development of new products. Many of today's leading companies, such as Facebook, Google and Uber, make machine learning a central part of their operations. Machine learning has become a significant competitive differentiator for many companies.

## What are the different types of machine learning?

Classical machine learning is often categorized by how an algorithm learns to become more accurate in its predictions. There are four basic approaches: supervised learning, unsupervised learning, semi-supervised learning and reinforcement learning. The type of algorithm data scientists choose to use depends on what type of data they want to predict.

1. **Supervised learning:** In this type of machine learning, data scientists supply algorithms with labeled training data and define the variables they want the algorithm to assess for correlations. Both the input and the output of the algorithm is specified.
2. **Unsupervised learning:** This type of machine learning involves algorithms that train on unlabeled data. The algorithm scans through data sets looking for any meaningful connection. The data that algorithms train on as well as the predictions or recommendations they output are predetermined.
3. **Reinforcement learning:** Data scientists typically use reinforcement learning to teach a machine to complete a multi-step process for which there are clearly defined rules. Data scientists program an algorithm to complete a task and give it positive or negative cues as it works out how to complete a task.



## Top 10 programming languages for machine learning

- Python
- R Programming
- JavaScript/Java
- Julia
- Lisp
- Scala
- C/C++
- TypeScript
- GO
- Shell

## Advantages and Disadvantages of machine learning

### Advantages Of Machine Learning:

1. Identifies trends and patterns easily- Machine learning involves reviewing large volumes of data to discover specific trends and patterns that would most often not be apparent to humans. For example, machine learning will be useful for an e-commerce website like Amazon, to understand purchase histories and browsing behaviors of its users to cater to the right deals, products, and reminders that are relevant to them.

2. Automation- Machine learning does not require human intervention. It gives machines the ability to learn. It helps machines make predictions and improve the algorithms by themselves. Anti-virus software is a common example of this as they automatically filter new threats as & when they are recognized.
3. Continuous improvement- Machine learning algorithms improve in accuracy and efficiency as they gain experience. This helps them take better decisions.

### **Disadvantages Of Machine Learning:**

1. Time and resources- Machine learning requires massive resources to function. It may demand additional computing power. Machine learning requires enough time to let the algorithms learn & develop to fulfill their intended purpose with a considerable amount of accuracy and relevancy.
2. Interpretation of results- Accurately interpreting the results generated by the algorithms is a challenging task. One needs to exercise caution while choosing algorithms for their specific purpose.
3. Data acquisition- Machine learning needs massive datasets to train on. These must be unbiased/inclusive and of good quality. In certain situations, they may need to wait for new data to be generated.

### **Machine Learning Use Cases**

Machine learning has applications in all types of industries, including manufacturing, retail, healthcare and life sciences, travel and hospitality, financial services, and energy, feedstock, and utilities. Use cases include:

- Manufacturing- Predictive maintenance and condition monitoring
- Retail- Upselling and cross-channel marketing
- Healthcare and life sciences- Disease identification and risk satisfaction
- Travel and hospitality- Dynamic pricing
- Financial services- Risk analytics and regulation
- Energy- Energy demand and supply optimization

### **Future scope for Machine Learning**

The scope of Machine Learning is not limited to the investment sector. Rather, it is expanding across all fields such as banking and finance, information technology, media & entertainment, gaming, and the automotive industry. As the Machine Learning scope is very high, there are some of the areas where researchers are working toward revolutionizing the world for the future.