*“Machine Learning: A computer is able to learn from experience without being specifically programmed.”*

Arthur Samuel, a pioneer in the field of artificial intelligence and computer gaming, coined the term “Machine Learning ”. He defined machine learning as – “Field of study that gives computers the capability to learn without being explicitly programmed”.

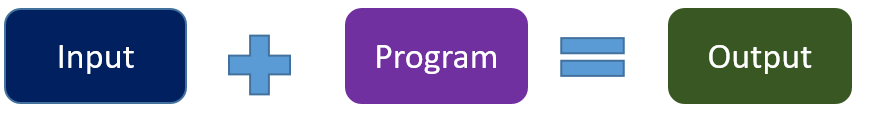
In a very layman manner, Machine Learning(ML) can be explained as automating and improving the learning process of computers based on their experiences without being actually programmed i.e. without any human assistance. The process starts with feeding good quality data and then training our machines(computers) by building machine learning models using the data and different algorithms. 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 which makes it more similar to humans.

**Machine Learning vs Traditional Programming**

Traditional computer programming has been around for more than a century, with the first known computer program dating back to the mid 1800s. Traditional Programming refers to any manually created program that uses input data and runs on a computer to produce the output.But for decades now, an advanced type of programming has revolutionized business, particularly in the areas of intelligence and embedded analytics. In Machine Learning, also known as augmented analytics, the input data and output are fed to an algorithm to create a program. This yields powerful insights that can be used to predict future outcomes.

**Traditional Programming**

Traditional programming is a manual process — meaning a person (programmer) creates the program. But without anyone programming the logic, one has to manually formulate or code rules. We have the input data, and someone (programmer) coded a program that uses that data and runs on a computer to produce the desired output.



**Machine Learning**

Machine Learning, on the other hand, the input data and output are fed to an algorithm to create a program.



This is the basic difference between traditional programming and machine learning. Without anyone programming the logic, In Traditional programming one has to manually formulate/code rules while in Machine Learning the algorithms automatically formulate the rules from the data, which is very powerful.

## The Importance Of Machine Learning

Machine learning has several very practical applications that drive the kind of real business results – such as time and money savings – that have the potential to dramatically impact the future of your organization. At Interactions in particular, we see tremendous impact occurring within the customer care industry, whereby machine learning is allowing people to get things done more quickly and efficiently. Through Virtual Assistant solutions, machine learning automates tasks that would otherwise need to be performed by a live agent – such as changing a password or checking an account balance. This frees up valuable agent time that can be used to focus on the kind of customer care that humans perform best: high touch, complicated decision-making that is not as easily handled by a machine. At Interactions, we further improve the process by eliminating the decision of whether a request should be sent to a human or a machine: unique Adaptive Understanding technology, the machine learns to be aware of its limitations, and bail out to humans when it has a low confidence in providing the correct solution.

**Application of ML :**

1.Machine Learning algorithms is being used currenlty in many areas of reserach like

2.Health Predictions

3.Data Security

4.Fraud Detection specially in banking & insurance sectors

5.Financial Trading & Analysis specially in predicting which listed stocks will perform better

6.Smart Searches

7.Writing recommendations engine specially in e-commerce sectors and financial sectors.

**Limitations of Machine Learning**

**1.Machine Learning Algorithms Require Massive Stores of Training Data:**

AI systems are ‘trained’, not programmed. This means that they require enormous amounts of data to perform complex tasks at the level of humans. Despite the fact that data is being created at an accelerated pace and the robust computing power needed to efficiently process it is available; massive data sets are not simple to create or obtain for most business use cases.

**2. Machines Cannot Explain Themselves**

Researchers at MIT hypothesize that the human brain has an intuitive physics engine. This basically means that the information we are able to collect via our sense is noisy and imprecise; however, we make conclusions about what we think will likely happen. For decades, common sense has been the most difficult challenge in the field of Artificial Intelligence. A large majority of AI-based models currently deployed is based on statistical machine learning that relies on tons of training data to build a statistical models.

## ****3. There is Bias in the Data****

As AI and machine learning algorithms are deployed, there will likely be more instances in which potential bias finds its way into algorithms and data sets. In some instances, models that are seemingly performing well maybe actually picking up noise in the data. As much as transparency is important, unbiased decision making builds trust.