**MACHINE LEARNING**

Machine learning is a field of computer science that gives computer the ability to learn without being explicitly programmed. ML and AI are two distinct but they are connected.

**“A computer program is said to learn from experience ‘E’, with respect to some class of Tasks ‘T’ and performance measure ‘P’ if its performance at tasks ‘T’ as measured by ‘P’ improves with experience ‘E’.”**

Machine learning is closely related to (and often overlaps with) [computational statistics](https://en.wikipedia.org/wiki/Computational_statistics), which also focuses on prediction-making through the use of computers. It has strong ties to [mathematical optimization](https://en.wikipedia.org/wiki/Mathematical_optimization), which delivers methods, theory and application domains to the field. Machine Learning is further classified into two categories they are:

1. Supervised Learning – It is a task of finding a function from a labeled Data. Where labeled data is a dataset which has independent variable and dependent variables.

Examples: Classification, Regression

1. Unsupervised Learning – It is a task of exploring the data to derive some inferences or insights from the dataset. Here the Independent variable/ Target Variable is unknown.

Examples: Dimension Reduction, Techniques (PCA, Factor Analysis), Clustering, Association Analysis

Machine learning is sometimes conflated with [***data mining***](https://en.wikipedia.org/wiki/Data_mining), where the latter subfield focuses more on exploratory data analysis and is known as [***unsupervised learning***](https://en.wikipedia.org/wiki/Unsupervised_learning). Machine learning can also be unsupervised and be used to learn and establish baseline behavioral profiles for various entities and then used to find meaningful anomalies.

Within the field of [data analytics](https://en.wikipedia.org/wiki/Data_analytics), machine learning is a method used to devise complex models and algorithms that lend themselves to prediction; in commercial use, this is known as [***predictive analytics***](https://en.wikipedia.org/wiki/Predictive_analytics). These analytical models allow researchers, [data scientists](https://en.wikipedia.org/wiki/Data_science), engineers, and analysts to "produce reliable, repeatable decisions and results" and uncover "hidden insights" through learning from historical relationships and trends in the data.