# DEEP LEARNING



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# Introduction

Deep Learning is a subset of Artificial Intelligence, with the plethora of machine learning algorithms which stands out in terms of having the capability to self-learn/train with little or no human intervention as it is fed with more data over a period.

Deep learning uses a computing model that mimics the structure of brain, hence giving the name 'Artificial Neural Networks'. A typical deep learning framework comprises of multiple neurons just like a brain, which is trained and the learned information is transmitted ahead for the whole framework to learn and abstract out relevant information.

A deep learning network's efficiency increases with the data as opposed to traditional machine learning algorithms whose efficiency and accuracy peaks and does not improve after a certain amount of data.





## **Automatic Signature Verification**

This could be a good use case for Tellers wherein they will be able to verify the customer's signature with better precision and detect any fraudulent customer.

We have built an Apparel Recommendation System using the similar model which recognizes the similar looking images using Deep Learning (neural networks)



#### **Personal Finance Advisor**

Machine learning capabilities integrated with budget management apps can benefit the customers with highly targeted recommendations. It can help tracking the customers spending pattern and provide valuable data on every facet of consumer behaviour.

## **Next Best Action**

Being able to help customer identify his next best action would help improve customer satisfaction and increase investments by recommending products that a customer is most likely to buy. It would also help in cross selling and up selling of products.



#### **Fraud Detection**

Any fraudulent behaviour shown by a customer in any transaction or even any fraudulent claim can be detected in real-time which will help in taking appropriate action well before hand.



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## **Trading Opportunity Detection**

Current market conditions can be studied and analysed to find new opportunities of trading in the market to introduce new products and enhance market share.

Algorithmic trading involves use of complex Al systems to make extremely fast trading decisions. This is from where "high frequency trading" (HFT) term has been coined, which is a subset of Algorithmic trading.

Though the AI approaches used by the financial companies is not disclosed openly but machine learning and deep learning are playing an increasingly important role in calibrating trading decisions in real time



#### Loan/Insurance Underwriting

Automating the underwriting process to an extent that underwriters get to focus on more relevant work would help speed up the process. Data from various sources can be combined to create a customer profile which can then be employed to assess the risk beforehand helping to lower the probability of damage to the insured and insurer.

# How is Deep Learning Different from Machine Learning?

Deep Learning is a more accurate, sophisticated subset of machine learning that has the capability of analysing partial data and make complete sense out of that partial data, just the way the brain deciphers and makes decisions from the previous information that it has learned over a period.

Deep learning is known to improve and enhance its knowledge with an increase in data whereas traditional algorithms like Linear Regression, Random Forest, Time Series, etc tend to stagnate on accuracy at a certain point as the data is increased.

A typical deep learning model mimics the brain with a network of neurons that transport information to each other back and forth whereas the other algorithms are based on Bayesian statistics with little or no capability of back propagation of learned information.



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