# Difference between AI and Machine Learning

Artificial Intelligence (AI) refers to a term for simulated intelligence in machines. These machines are programmed to mimic the way human thinks and reacts. AI is implemented on a system. It is a intelligence where we want to add all the capabilities to machine that human contain.

The goals of artificial intelligence include learning, reasoning and perception, and machines are wired using a cross-disciplinary approach based in mathematics, computer science, linguistics, psychology and more.

Examples of machine which imbibe AI includes self driving cars, computers that play chess etc.  
  
**Machine Learning**:

Machine learning is the learning in which machine can learn by its own without being explicitly programmed. It is also defined as computer program which is said to learn from experience E with respect to some task T and some performance measure P , if its performance on T , as measured by P , improves with experience E. It focus on development for

Machine learning algorithm are classified as Supervised and Unsupervised algorithm.

**Convolutions.**

convolution is a mathematical operation on two functions (f and g) to produce a third function, that is typically viewed as a modified version of one of the original functions, giving the integral of the [pointwise](https://en.wikipedia.org/wiki/Pointwise) multiplication of the two functions as a function of the amount that one of the original functions is translated.

Convolution is the act of taking the original data, and creating feature maps from it.

It is mainly referred as convolution neural network and is base for the image classification.

As in regular neural networks with three layers, Input,Hidden and output layer, the convolution neural network share this parameters. Imagine an image . If we take a patch on the image and run a small neural network on it, we get say K output and represent them vertically. On sliding the patch on image , we get another image of different length,breadth and height.This operation is refrerred as convolution.

* Convolution layers consist of a set of learnable filters (patch in the above image). Every filter has small width and height and the same depth as that of input volume (3 if the input layer is image input).
* for example, if we have to run convolution on an image with dimension 34x34x3. Possible size of filters can be axax3, where ‘a’ can be 3, 5, 7, etc but small as compared to image dimension.
* During forward pass, we slide each filter across the whole input volume step by step where each step is called stride (which can have value 2 or 3 or even 4 for high dimensional images) and compute the dot product between the weights of filters and patch from input volume.
* As we slide our filters we’ll get a 2-D output for each filter and we’ll stack them together and as a result, we’ll get output volume having a depth equal to the number of filters. The network will learn all the filters.

