- Neural network

- The neural network of the computer is inspired by the brain system and neurons.The humans recognize all patterns of a single number similarly but these patterns recognition is complicated for the machines.For the input of a black and white picture all pixels have a number which is called activation ranging between 0 to 1 . if the activation value is nearly one then the pixel is white otherwise its black .these pixels are used as a neuron .The pixel grid recognized help of activation of pixels.In the neural network system there are many layer like input layer ,hidden layer and output layer .For the handwritten digits in the output layer there are 10 neurons and these neurons have some activation number .The activation number define the correct digit.In the hidden layer neurons use the subcomponents of a digits to recognize the components of digits . The activation of all neurons defines the activation of the next layer's neurons . Each neuron is connected to all neurons of the next layer.The activation of a neuron is defined by the sigmoid of weighted sum of the activation of previous layer neurons.the neural network use the 784 neuron as input for 28 * 28 pixel grid and give the output of 10 neurons

- Convolution

- Convolution is a mathematical operation that combines two functions to produce a third function.and to perform convolution for linear list essentially align one list with the other, multiply corresponding elements, and sum up the products .In the image processing we convolve image and kernel .A kernel is a small matrix of numbers that is used in image convolutions.A convolution is done by multiplying a pixel and its neighboring pixels color value by a kernel. For a pixel convolution value is the sum of multiplication of all color value matrices for a pixel and corresponding element of the kernel . The convolution is the process of moving a filter mask over the image and computing the sum of products of each location.After the convolution replace the central pixel value by calculated value.After convolution in image processing, we get a transformed image. This transformed image reflects the effects of the convolution operation applied to the original image using a specific kernel .