Basics Of CNN

What is a neuron?
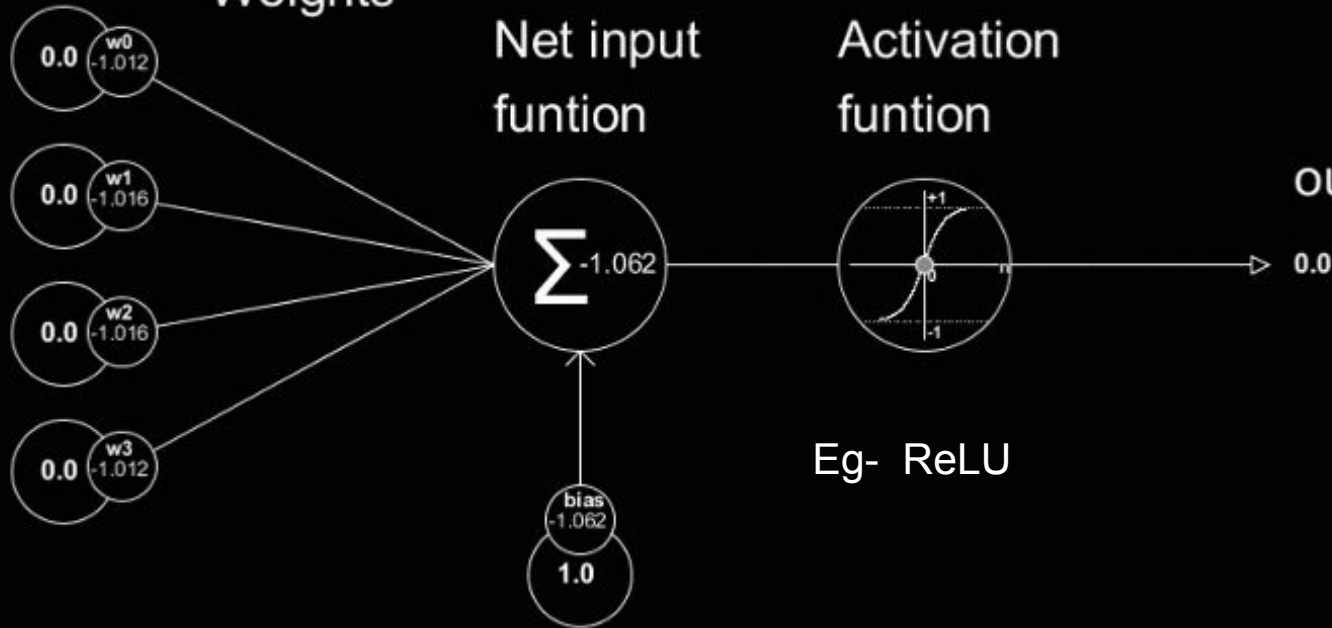
Inputs

Weights

Net input funtion

Activation funtion
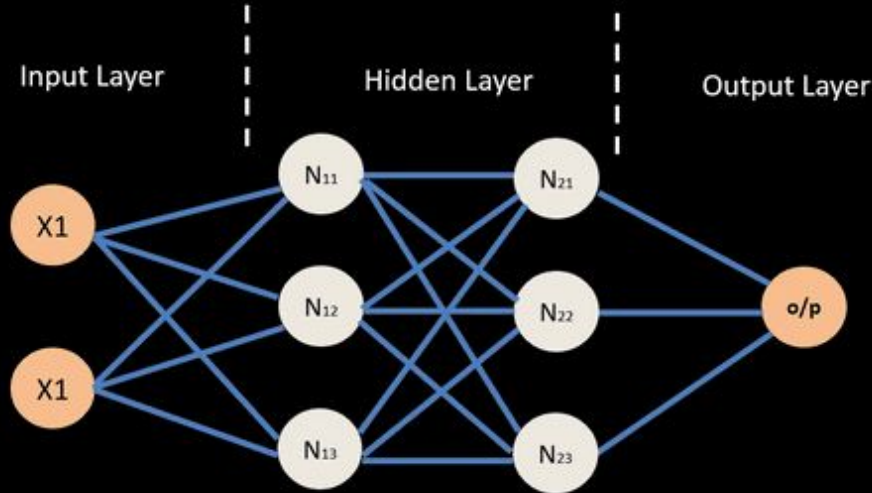
output

$w0$ -1.012

$w1$ -1.016

$w2$ -1.016

$w3$ -1.012

0.0

0.0

0.0

0.0

Σ -1.062

0.0

bias -1.062

1.0

Eg- ReLU

$y1 = x1w1 + x2w2 + x3w3 + x4w4$

# What is a neural network?

Neural Network – Backpropagation

A neural network is like a big group of little calculators called neurons. These neurons work together to do some really big and complicated calculations. The network is like a big brain that can learn and get better at doing things over time. It does this by adjusting the strength of the connections between the neurons, which are called weights.

What is a Convolutional neural network?

A Convolutional Neural Network (CNN) is a type of neural network commonly used for image recognition and computer vision tasks. It uses a process called convolution, which involves applying a set of filters to an image in order to extract important features. These features are then fed through a series of layers that progressively reduce the dimensionality of the data, eventually producing a prediction or classification for the image. CNNs have been used to achieve state-of-the-art results on a wide range of visual recognition tasks, including image classification, object detection, and image segmentation.
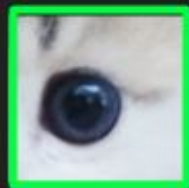
What is an image?

b/w
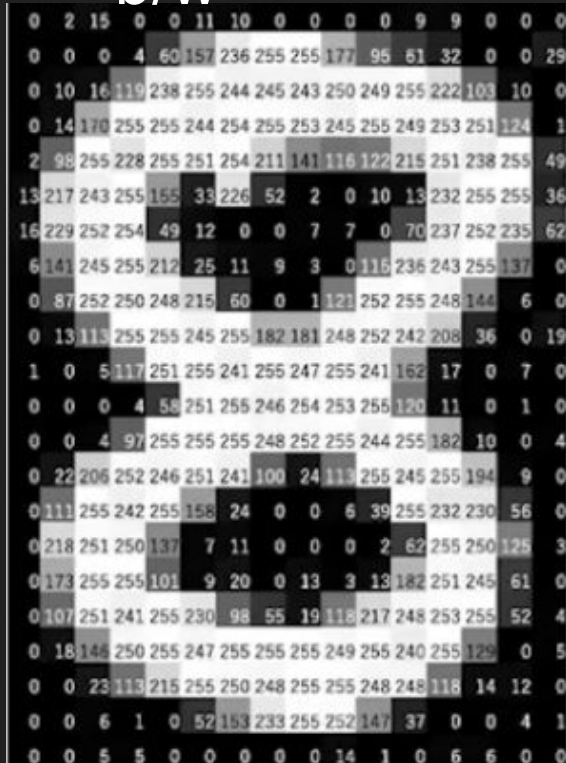
Color
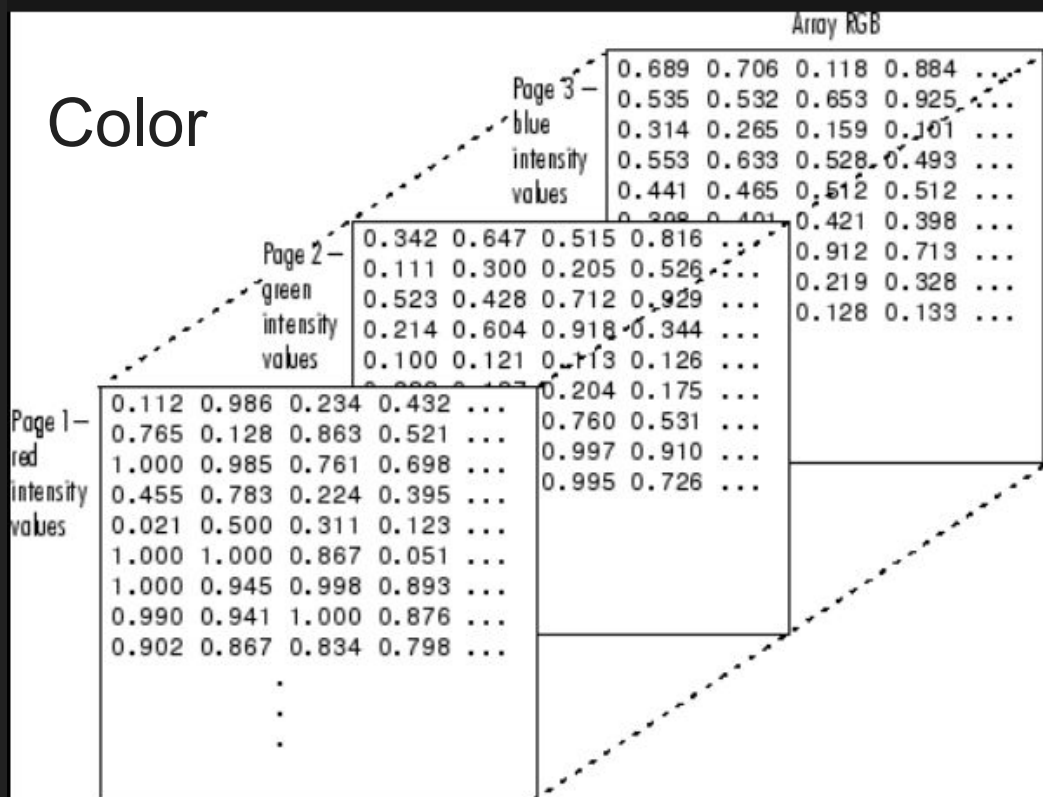
CNN always contains two basic operations, namely convolution and pooling

Convolution operation

Image × Filter/kernel = Feature Map!

Convolution Operation

Whats the work of neural network?

Pooling Operation

Padding and stride

To sum it all up……

A Typical Convolutional Neural Network (CNN)