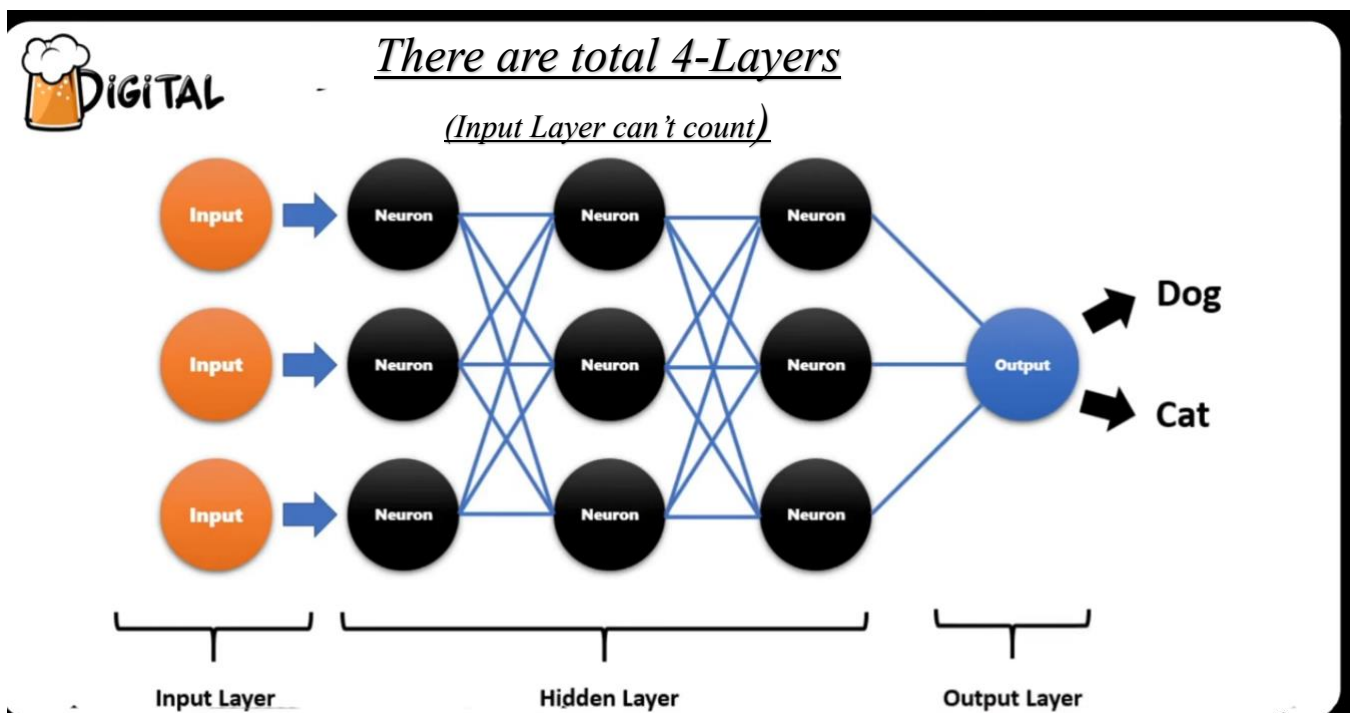
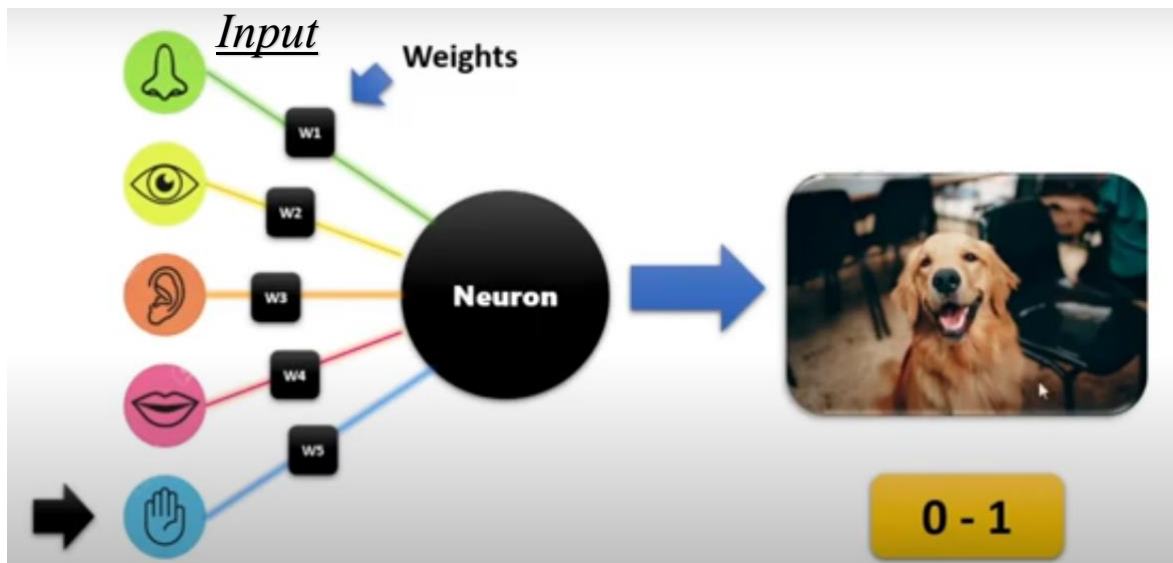


Neuron In Deep Learning

1. <https://www.youtube.com/watch?v=shsA0ZnaaBs>



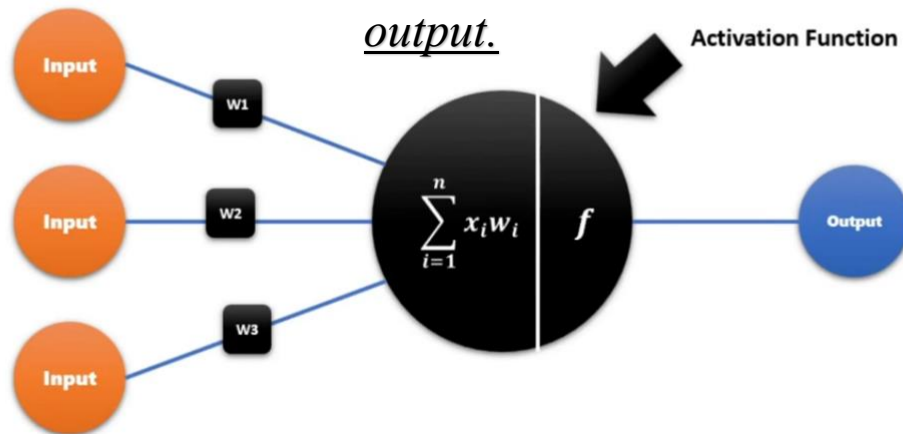
What is Activation Function in Deep Learning?



DIGITAL

How actually Neuron Works?

*This is neuron formula, it decide for
output.*



DIGITAL

Formula



$$\text{Activation Function} \left(\sum_{i=1}^n x_i w_i + b \right)$$

Activation
Types



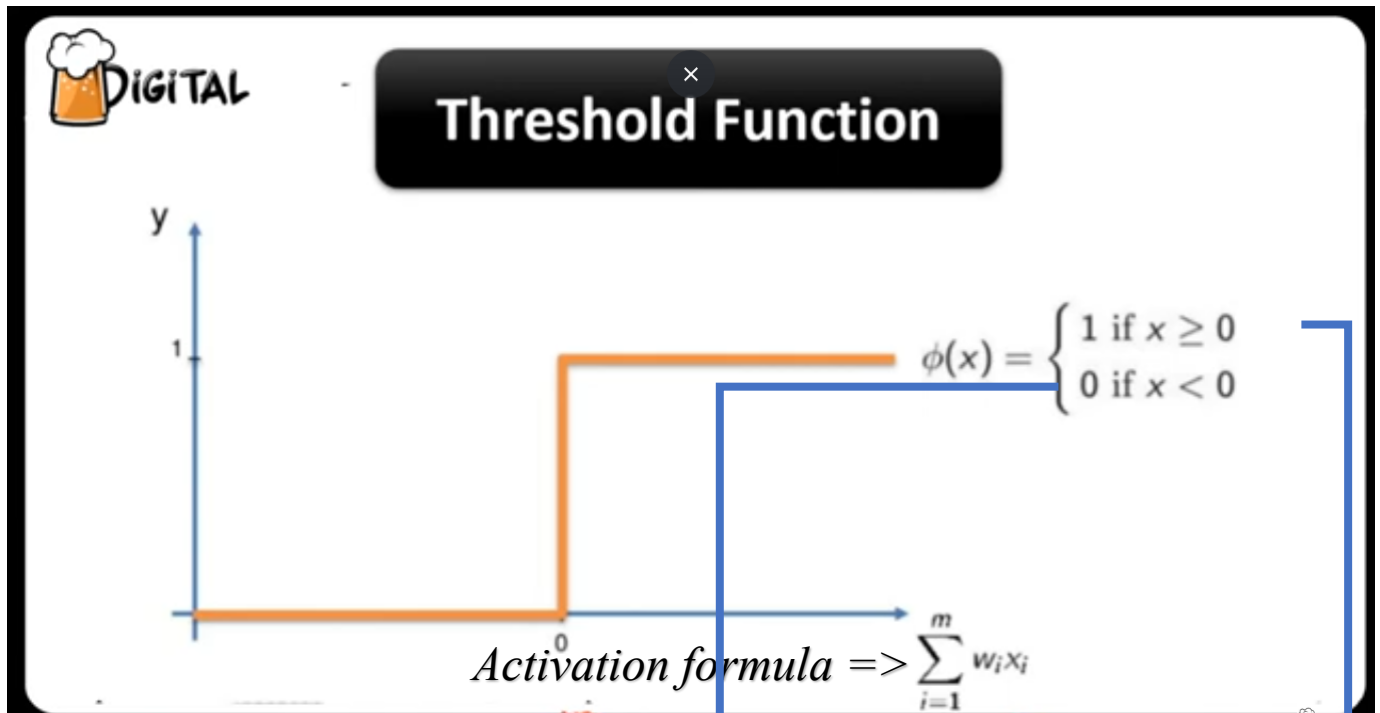
Linear and Non - Linear



Linear is a straight line that
separate into two classes

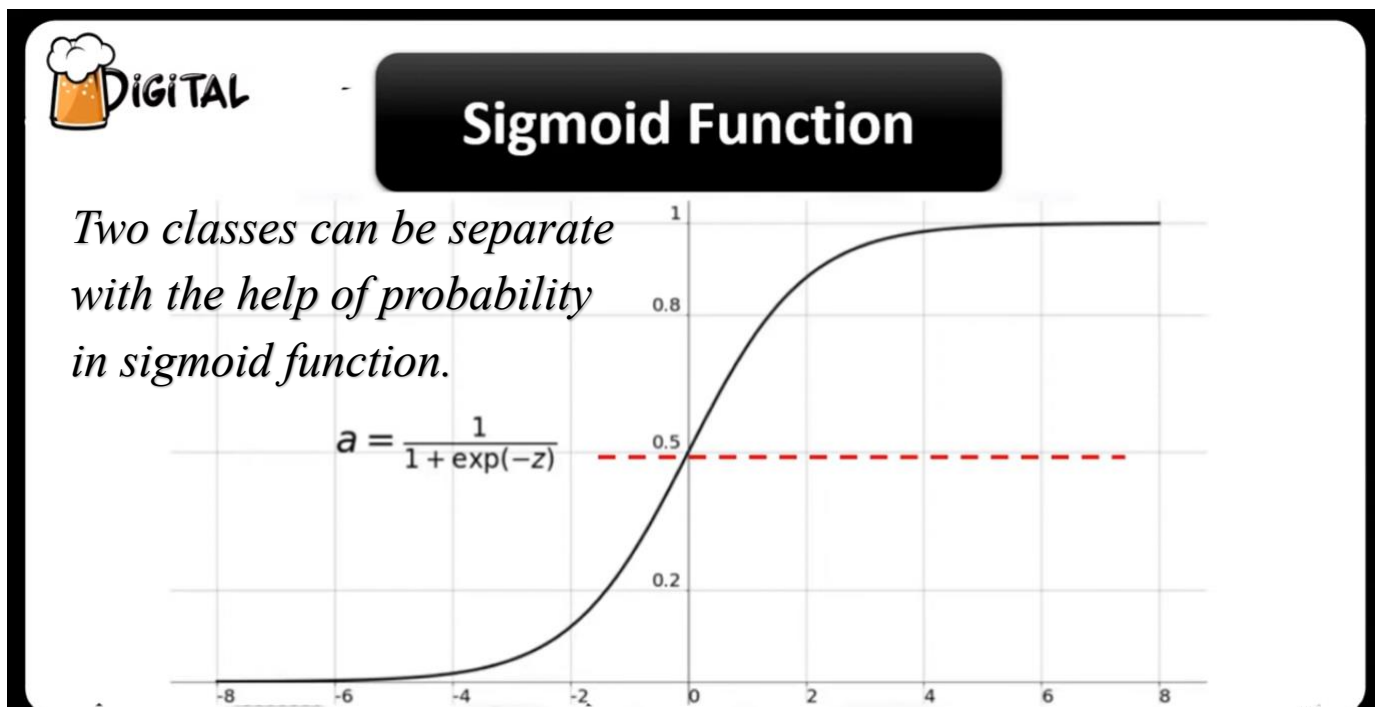
Non-Linear is not a straight
line it is in the form of
cause

Threshold Function: 1st Activation Function



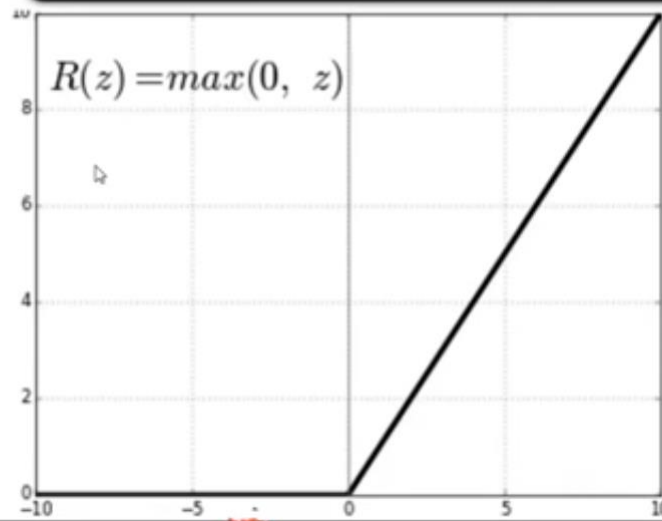
If the result of Activation formula is ≤ 0 then consider "0" (Cat)

If the result of Activation formula is ≥ 0 then consider "1" (Dog)





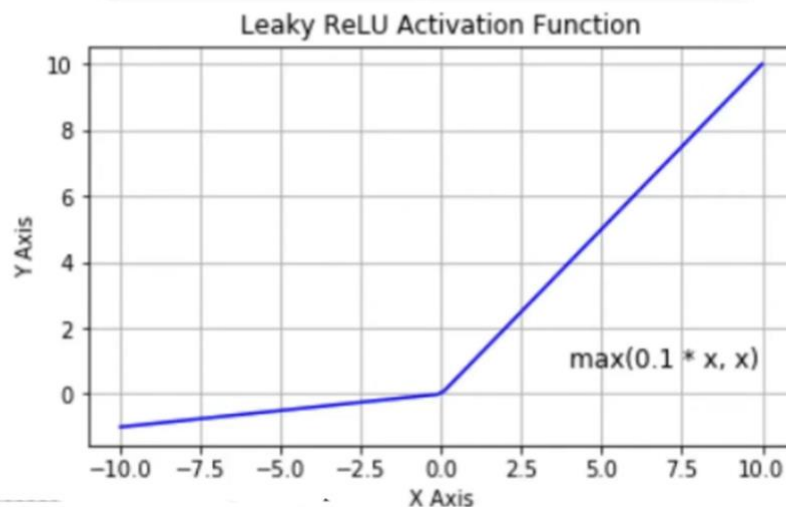
Rectifier(Relu) Function



By default activation function is used is called Rectifier (Relu)Function.
1st we will find out the value of “z”



Leaky Relu Function

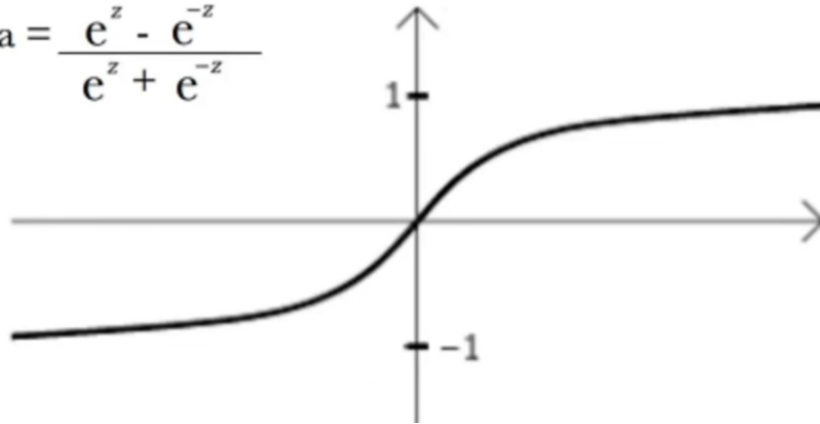




Hyperbolic Tangent(tanh) Function

Tanh Function

$$a = \frac{e^z - e^{-z}}{e^z + e^{-z}}$$

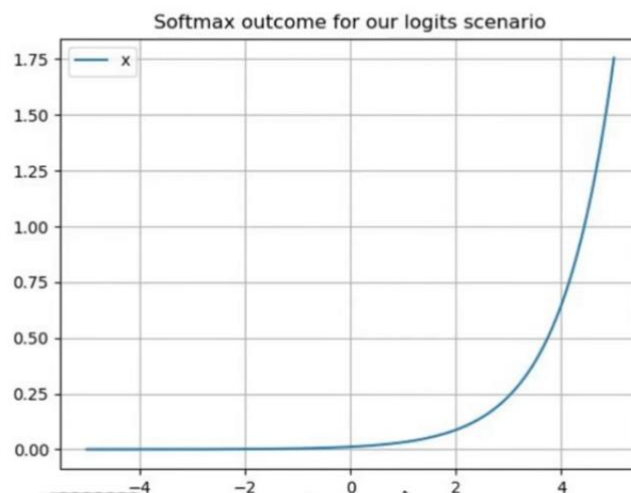


All above functions are use for differentiate b/w two classes of an object

If we have more than two classifications of an object then we will use “Softmax Function”



Softmax Function



$$f_i(\vec{a}) = \frac{e^{a_i}}{\sum_k e^{a_k}}$$



DIGITAL

Output
layer

$\begin{bmatrix} 1.3 \\ 5.1 \\ 2.2 \\ 0.7 \\ 1.1 \end{bmatrix}$

Softmax
activation function

$$\frac{e^{z_i}}{\sum_{j=1}^K e^{z_j}}$$

Probabilities

$\begin{bmatrix} 0.02 \\ 0.90 \\ 0.05 \\ 0.01 \\ 0.02 \end{bmatrix}$

Sum of Probability must come "1"

Max probability is a final Result. (here max prob. Is "0.90")

What is the Role of the Bias in Neural Networks? || Deep Learning in Hindi

