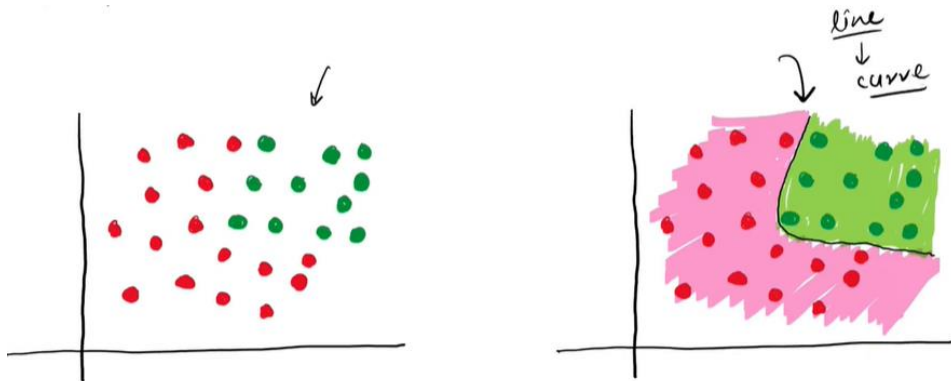


# Multi-Layer Perceptron or Artificial Neural Network.

## Problem With Perceptron

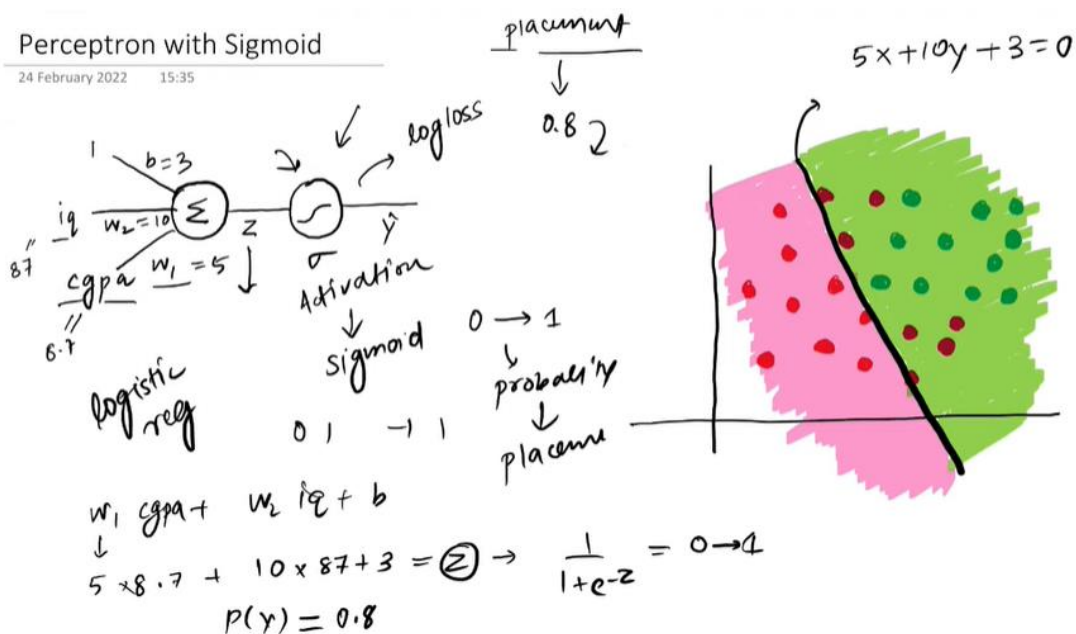


We need an Algo which can capture any thing that is non linearity. So here is MLP.

## Intuition.

### Perceptron with Sigmoid

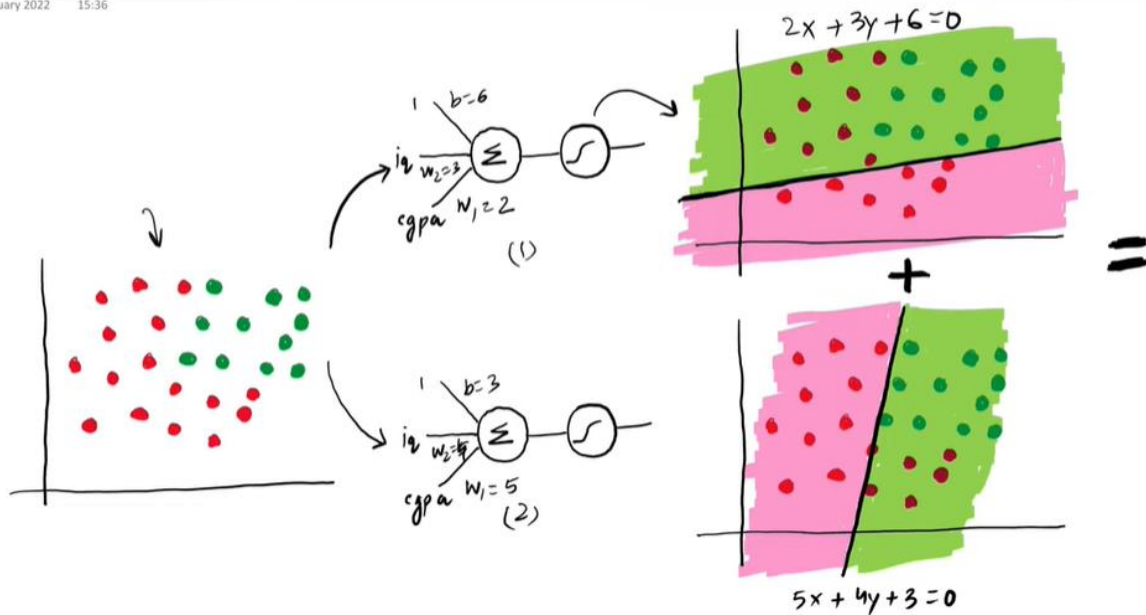
24 February 2022 15:35



# Abstract Idea of MLP

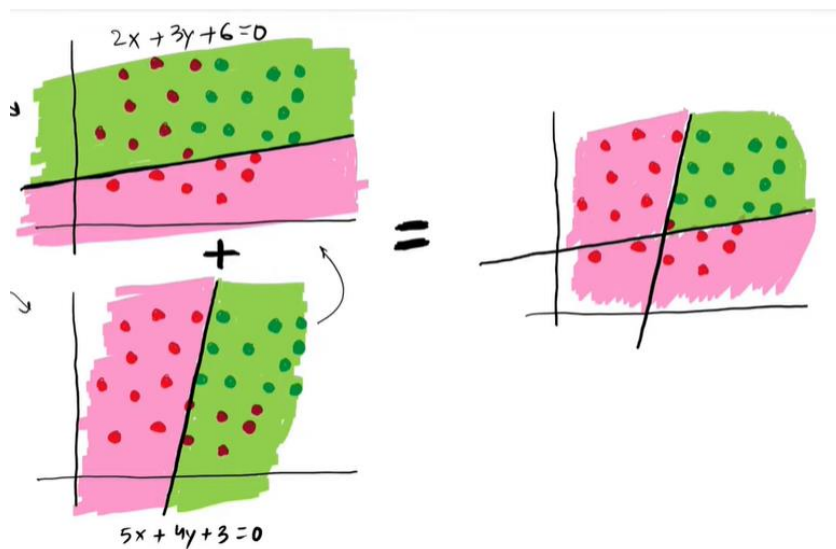
## 2 Perceptron for the data

1 February 2022 15:36

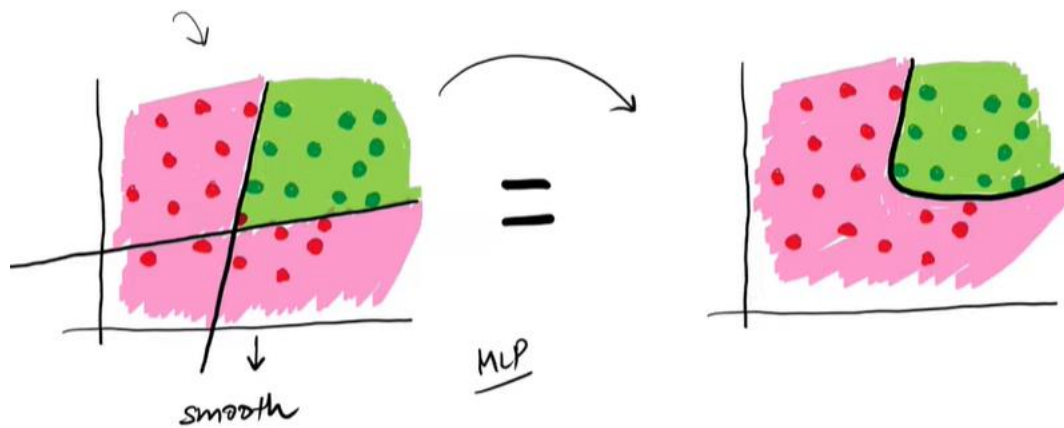


What if we Add both this decision Boundary together?

=



Now what we will do is , We will do smoothing(smoothing we will discuss later on. ):



So this is abstract Idea of MLP.

Humare idea mai

2 perceptron hai

Dono ka decision Boundary alag alag hai

Hum Superimposition krrhe mtlb Dono ko Add krrhe

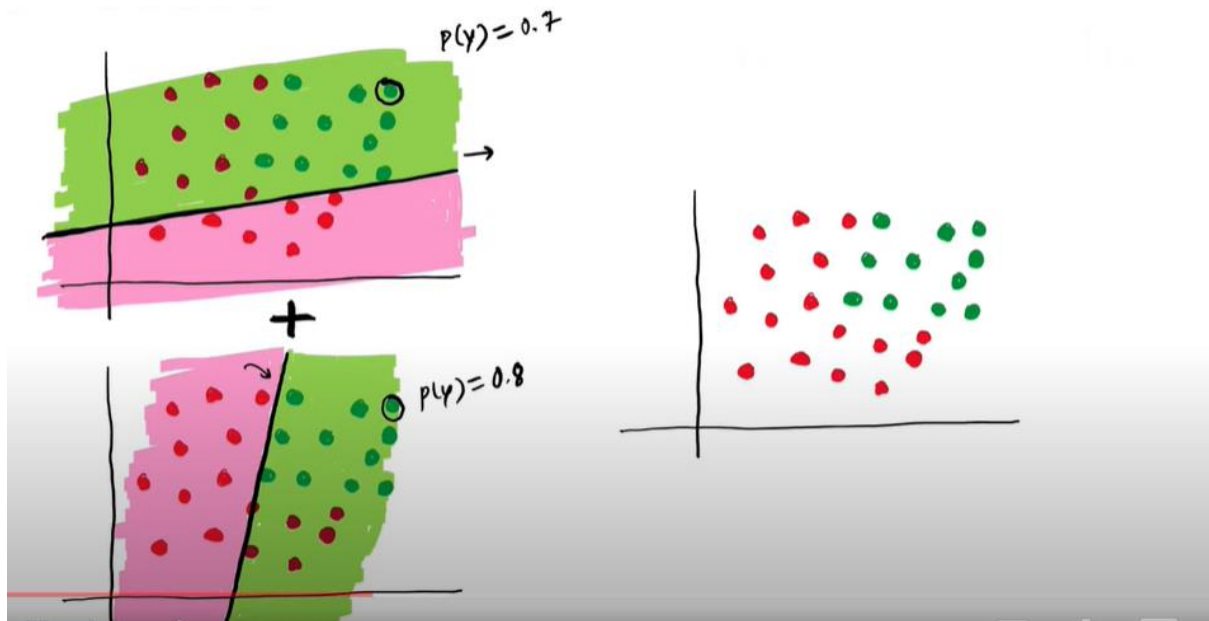
& then Dono ko Add karnekebaad Smoothing krrhe fir hume at the end

Proper decision boundary millraha

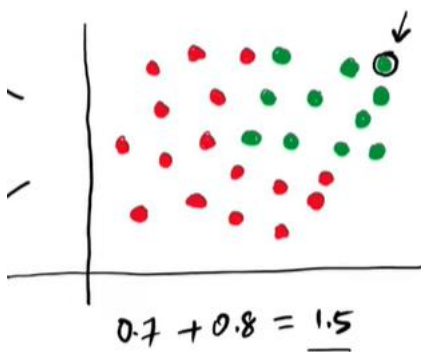
This was abstract idea.

## Mathematical Idea

Student hai vo marked data point



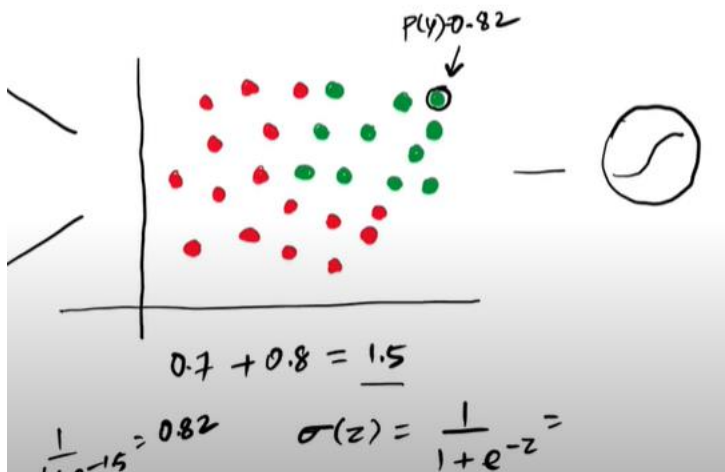
Dono ko Add kr diya humne



Dono perceptron ke probability ko add krne pe yeah Result aaraha

As Probability ka Range 0 se 1 hota hai, So this is not acceptable.

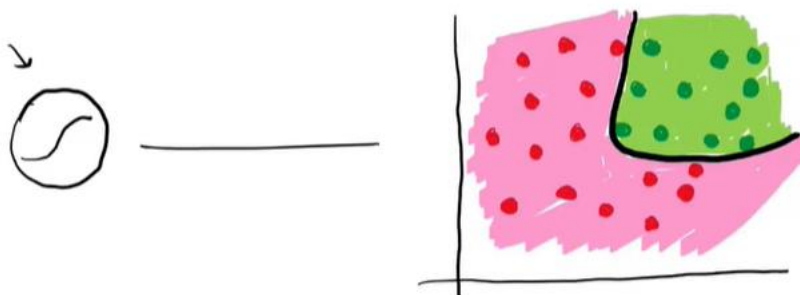
So we will use Sigmoid here.



By Applying sigmoid,

We got the probability of yes is 0.82

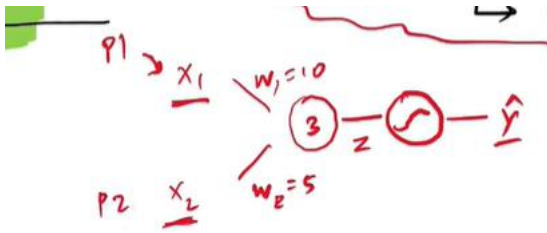
That is how we achieve the Below Model.



We are basically finding Linear Combination to find out a new probability.

## ***In simple & Short:***

Saare Perceptron ko Joddd krrr as Input pass krrhe hai  
1 Perceptron mai



**P1 – Perceptron 1**

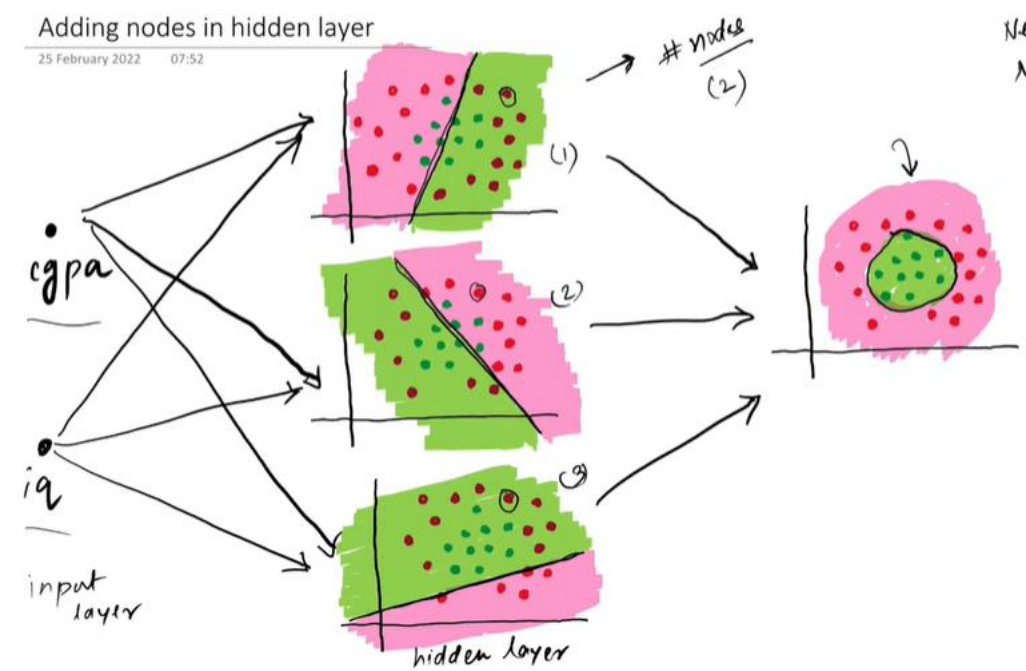
**P2 – Perceptron 2**

**We just make linear Combinations of Multiple Perceptron.**

# How to Add Changes in our Neural Network's Architecture?

## 1<sup>st</sup> Way Add Nodes in Hidden Layer

Isme No. of Perceptron or Nodes badaskte hai hum,

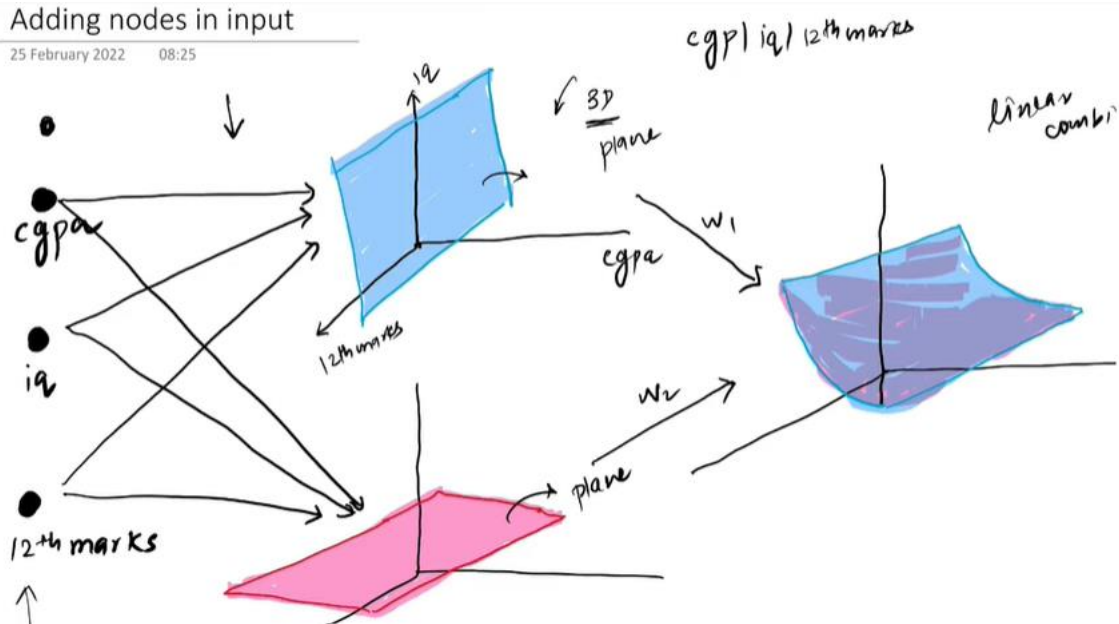


## 2<sup>nd</sup> Way: Input Layer

Input layer mai no. of perceptron or nodes badade, But esa tbhi kro jbh aapke data mai input columns badhjaaye I mean features badhjaaye.

Adding nodes in input

25 February 2022 08:25



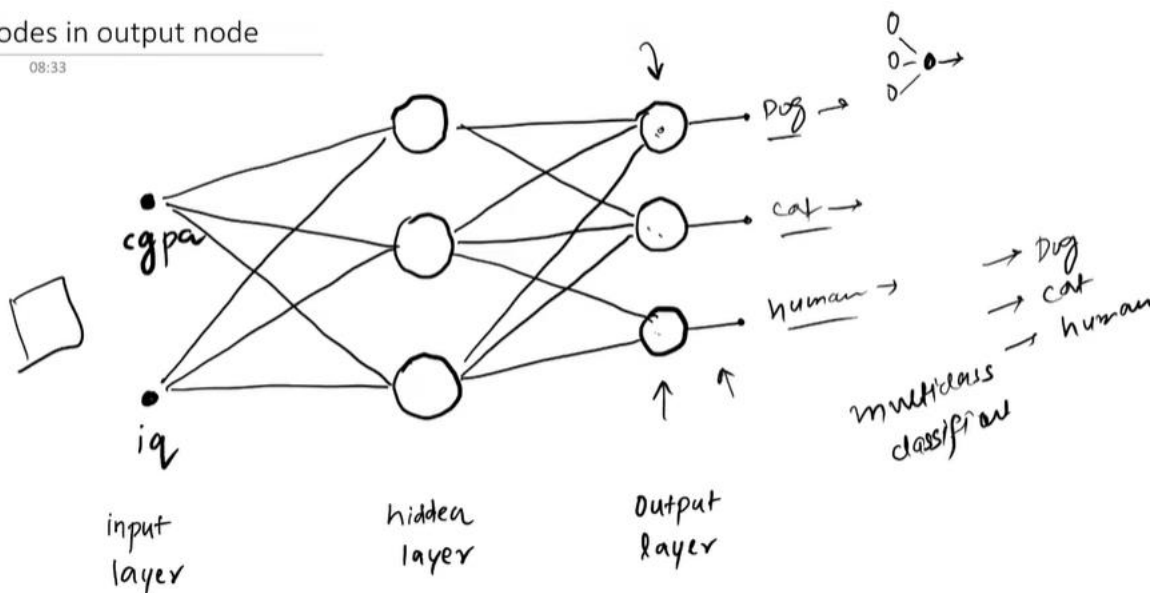


### 3<sup>rd</sup> Way: Output Layer

Output Layer mai Number of Nodes or Perceptron badado,  
Generally Hum esa tbh karte hai jbh hum multiclass  
classification krte hai.

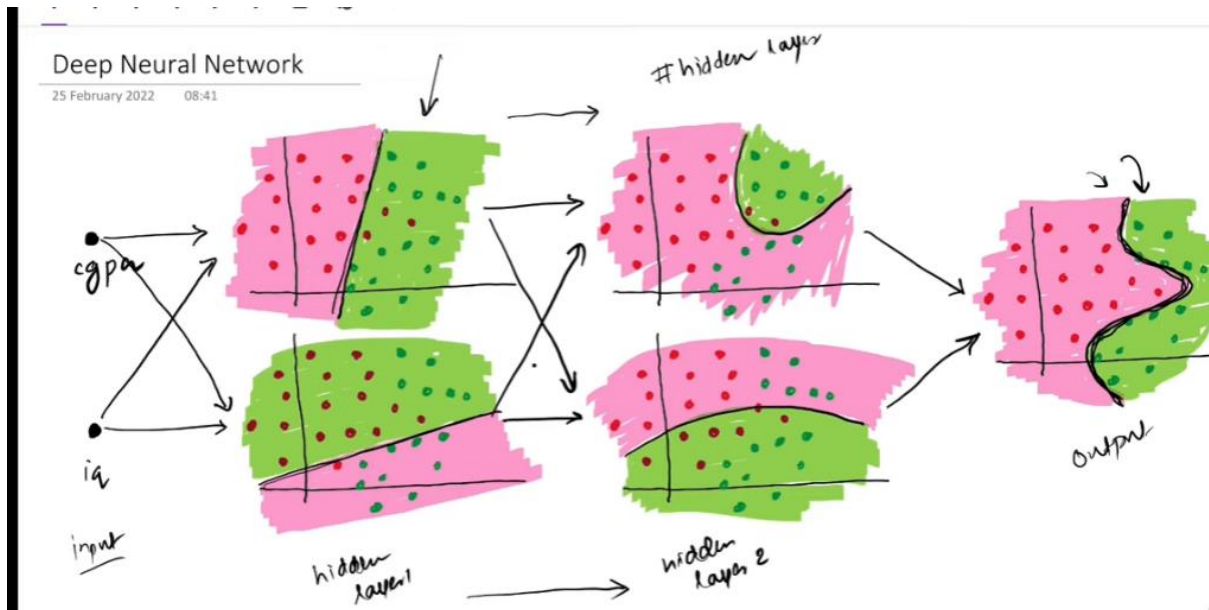
3 nodes in output node

2022 08:33



## 4<sup>th</sup> Way: Add Hidden Layer (Deep Neural Network)

Number of Hidden Layers badado.



Iska Benefits yeah hai ki Complex Non Linearity ko decode krsktte ishse

As you can see in image.

