## horizontal line

What is a Perceptron ? (class3)

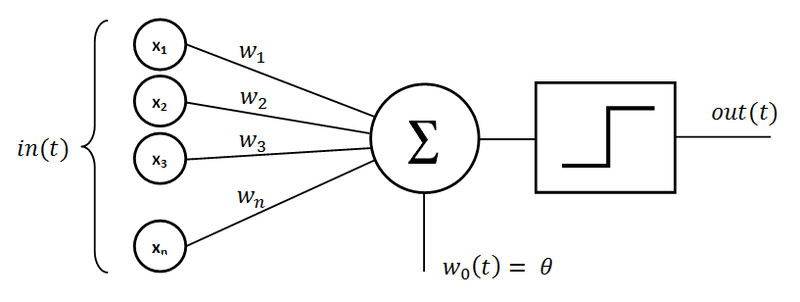
04.01.2025

[The google collaboratory file](https://colab.research.google.com/drive/1AToMSozsVkW1Q3aY2TBOdqbYLPxWEQWu#scrollTo=x66C67GqDfhu)

# Perceptron

Fundamental building block of ANN .

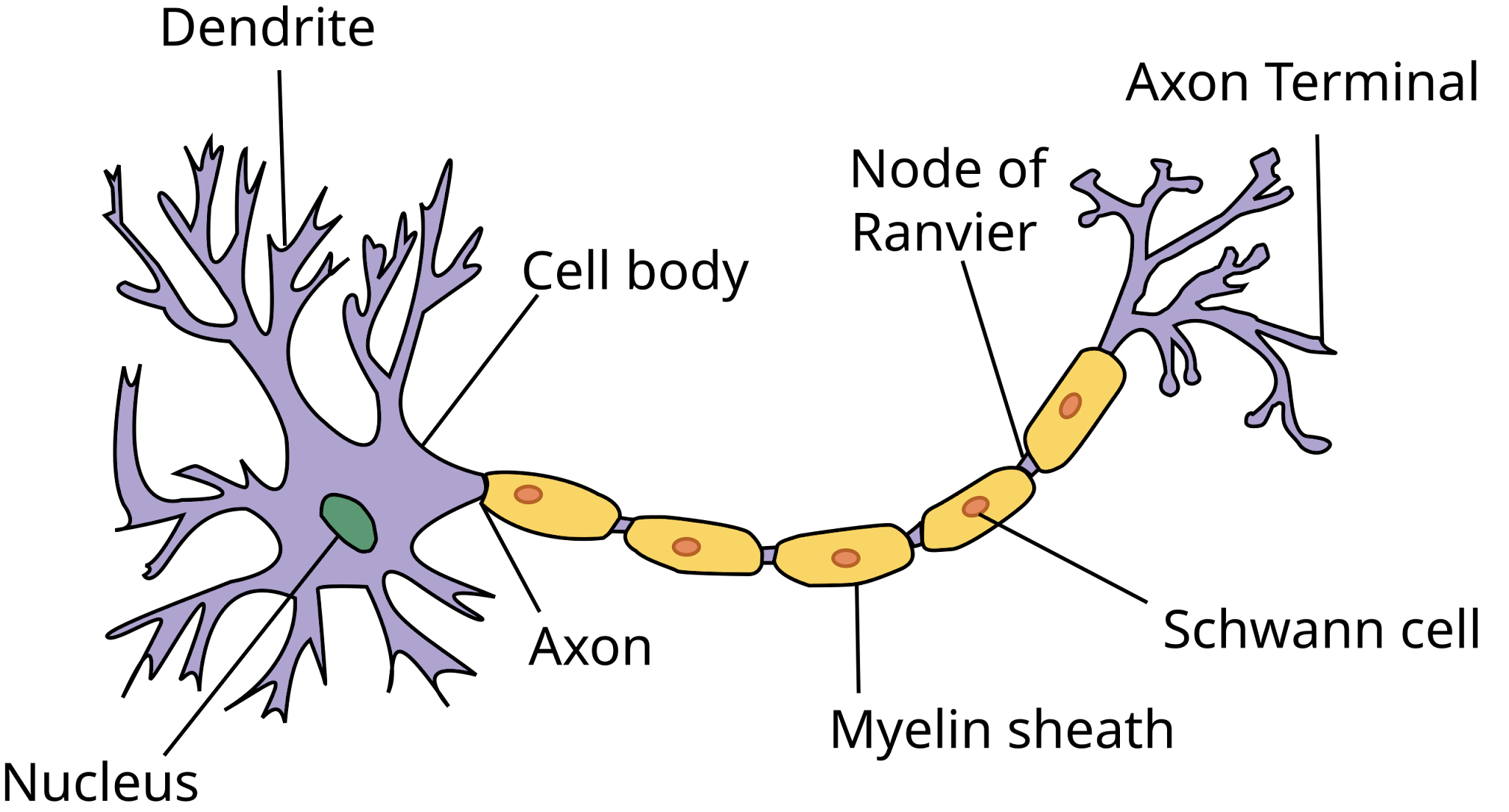
Perceptron is an algorithm /mathematical model / function , used for supervised ML .



Activation function brings Z in range.

First a perceptron is trained . Values of w1 , w2 , —- wn and b are calculated . Now test cases will be predicted .

# Neuron Vs Perceptron



# 

Perceptron inspired by the structure of a neuron .

## Comparison

1. Neuron is complex
2. Neuroplasticity (Dendrites may vary)
3. Internal processing is hidden in nucleus

# Interpretation

Weights actually interpret the strength of the feature .

If for e.g. w1 = 4 , w2 = 2 it implies feature x1 matters more than feature x2 . Thus results depend more on x1 than on x2.

# Geometric Intuition

# 

y= f(z) = { 1 z>=0

0 z<0 }

Where , z = w1x1 +w2x2 +b

It is of the type “Ax+By+c” which is the equation of a line .

So, if Ax+By+c >=0 o/p is 1 (selected)

If Ax+By+c <0 o/p is 0 (not selected).

So, it is also known as binary classifier.

In 2D it’s a line , in 3D it’s a plane , 4D it's a hyperplane and so on.

## Limitation

Cannot classify non linear data .