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Practical 8: AND AND OR PERCEPTRON

Google colab link: <https://colab.research.google.com/drive/1kx2fQ-NvedFtb05ITteRVziiPhTm8OGM#scrollTo=3TiXACHqOwMy&line=4&uniquefier=1>

Theory:



▼ Practical 8 :AND AND OR PERCEPTRON

Aim: AND AND OR PERCEPTRON

A Perceptron is an Artificial Neuron. It is the simplest possible Neural Network. Neural Networks are the building blocks of Artificial Intelligence. Perceptron is one of the earliest—and most elementary—artificial neural network models. The perceptron is extremely simple by modern deep learning model standards. However the concepts utilised in its design apply more broadly to sophisticated deep network architectures. The perceptron is a supervised learning binary classification algorithm, originally developed by Frank Rosenblatt in 1957. It categorises input data into one of two separate states based a training procedure carried out on prior input data.

Code:

```

▶ import numpy as np
def unitStep(v):
    if v>=0:
        return 1
    else:
        return 0

def perceptronModel(x,w,b):
    v=np.dot(w,x)+b
    y=unitStep(v)
    return y

def OR_logicfunction(x):
    w=np.array([1,1])
    b=-0.5
    return perceptronModel(x,w,b)

def AND_logicFunction(x):
    w = np.array([1, 1])
    bAND = -1.5
    return perceptronModel(x, w, bAND)

```

```

▶ test1=np.array([0,0])
test2=np.array([0,1])
test3=np.array([1,0])
test4=np.array([1,1])
print("OR({},{})={}".format(0,0,OR_logicfunction(test1)))
print("OR({},{})={}".format(0,1,OR_logicfunction(test2)))
print("OR({},{})={}".format(1,0,OR_logicfunction(test3)))
print("OR({},{})={}".format(1,1,OR_logicfunction(test4)))

print("AND({},{})={}".format(0,1,AND_logicFunction(test1)))
print("AND({},{})={}".format(1,1,AND_logicFunction(test2)))
print("AND({},{})={}".format(0,0,AND_logicFunction(test3)))
print("AND({},{})={}".format(1,0,AND_logicFunction(test4)))

```

Output:

$$\text{OR}(0,0)=0$$

$$\text{OR}(0,1)=1$$

$$\text{OR}(1,0)=1$$

$$\text{OR}(1,1)=1$$

$$\text{AND}(0,1)=0$$

$$\text{AND}(1,1)=1$$

$$\text{AND}(0,0)=0$$

$$\text{AND}(1,0)=0$$