**Machine Learning**

**Ex: 05 McCulloch-Pitts Neural Network**

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**Code:**

def convert\_0(x):

for i in range(len(x)):

if x[i]==0:

x[i]=-1

return(x)

#Gate Inputs and Output

x1=[0,0,1,1]

x2=[0,1,0,1]

y=[1,0,0,0]

#And [0,0,0,1]

#OR [0,1,1,1]

#Nand [1,1,1,0]

#Nor [1,0,0,0]

print("x1: "+str(x1))

print("x2: "+str(x2))

print("y: "+str(y))

#convert 0 to -1

x1=convert\_0(x1)

x2=convert\_0(x2)

y=convert\_0(y)

#weights

w1=-2

w2=-2

wb=0

# for AND gate w= 2, 2, 0

# for OR gate w= 2, 2, 0

# for NAND gate w= -2, -2, 0

# for NOR gate w= -2, -2, 0

#b values

b=[1,1,1,1]

th=0

# for AND gate th=0

# for OR gate th=-1

# for NAND gate th=-1

# for NOR gate th=0

yout=[] #initialize yout..

#f(x)

for i in range(4):

fx= (x1[i]\*w1)+(x2[i]\*w2)+(b[i]\*wb)

print(fx)

if fx>th:

yout.append(1)

else:

yout.append(0)

print("yout: "+str(yout))

**Output:**

