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4th year

CSE-BDA

Section C1

**Objective: Implementation of AND Logic Gate using MP Neuron**

**Code:**

#importing the library

import numpy as np

#initializing

x=np.array([[1,1],[1,0],[0,1],[0,0]])

t=np.array([[1],[0],[0],[0]])

w=np.array([[0],[0]])

theta=1

yin=np.zeros(shape=(4,1))

y=np.zeros(shape=(4,1))

yin=np.dot(x,w)

i=0

found=0

#logic

while(found==0):

  i=0

  yin=np.dot(x,w)

  print("Y is initiallised\n",yin)

  while(i<4):

    if yin[i]>=theta:

      y[i]=1

      i=i+1

    else:

      y[i]=0

      i=i+1

  print("Calculated y\n",y)

  print("Expected Target t\n",t)

  if (y==t).all():

    print("MODEL IS TRAINED ")

    print("\nOutput : \n",y)

    print("\nweights : ",w,"\n")

    print("theta : ",theta)

    found=1

  else:

    print("MODEL IS NOT TRAINED")

    w=np.zeros(shape=(0,0))

    theta=int(input("Enter New Theta : "))

    for k in range(int(2)):

      w1=int(input("Enter Weight : "))

      w=np.append(w,w1)

**Output:**

Y is initiallised

[[0]

[0]

[0]

[0]]

Calculated y

[[0.]

[0.]

[0.]

[0.]]

Expected Target t

[[1]

[0]

[0]

[0]]

MODEL IS NOT TRAINED

Enter New Theta : 2

Enter Weight : 2

Enter Weight : 1

Y is initiallised

[3. 2. 1. 0.]

Calculated y

[[1.]

[1.]

[0.]

[0.]]

Expected Target t

[[1]

[0]

[0]

[0]]

MODEL IS NOT TRAINED

Enter New Theta : 2

Enter Weight : 1

Enter Weight : 1

Y is initiallised

[2. 1. 1. 0.]

Calculated y

[[1.]

[0.]

[0.]

[0.]]

Expected Target t

[[1]

[0]

[0]

[0]]

MODEL IS TRAINED

Output :

[[1.]

[0.]

[0.]

[0.]]

weights : [1. 1.]

theta : 2