

Back-Proagation Network

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In [1]: import numpy as np
x1 = float(input("Enter X1: "))
print(x1)
x2 = float(input("Enter X2: "))
print(x2)
b1 = float(input("Enter bias 1: "))
b2 = float(input("Enter bias 2: "))
b3 = float(input("Enter bias 3: "))
alpha = float(input("Enter alpha: "))
t = float(input("Enter target: "))

a = [0.6,0.3,-0.1,-0.3,0.4,0.5,0.4,0.1,-0.2]
print('phase 1')
zin1 = float(b1*a[1]+x1*a[0]+x2*a[2])
print('zin1=',zin1)
zp1 = 1/(1+np.exp(-zin1))
print('z1=',zp1)
fzin1= zp1*(1-zp1)
print('fzin1=',fzin1)

zin2= float(a[3]*x1+a[4]*x2+a[5]*b2)
print('zin2=',zin2)
zp2 = 1/(1+np.exp(-zin2))
print('z2=',zp2)
fzin2= zp2*(1-zp2)
print('fzin2=',fzin2)

yin=float(zp1*a[6]+zp2*a[7]+b3*a[8])
print('yin=',yin)
y = 1/(1+np.exp(-yin))
print('y=',y)
fyin= y*(1-y)
print('fyin=',fyin)

print('phase 2')
dell1=(t-y)*fyin
print('dell1=',dell1)
delta_w11=alpha*dell1*zp1
print('delta_w11=',delta_w11)
delta_w21=alpha*dell1*zp2
print('delta_w21=',delta_w21)

dellin1=dell1*a[6]
print('dellin1=',dellin1)
dellin2 = dell1*a[7]
print('dellin2=',dellin2)

delta1=dellin1*fzin1
print('delta1=',delta1)
delta2=dellin2*fzin2
print('delta2=',delta2)
delta_w01=alpha*dell1
print('delta_w01=',delta_w01)

print('phase 3')
delta_v11=alpha*delta1*x1

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print('delta_v11=',delta_v11)
delta_v12=alpha*delta2*x1
print('delta_v12=',delta_v12)
delta_v21=alpha*delta1*x2
print('delta_v21=',delta_v21)
delta_v22=alpha*delta2*x2
print('delta_v22=',delta_v22)

delta_v01 = alpha*delta1
print('delta_v01=',delta_v01)
delta_v02 = alpha*delta2
print('delta_v02=',delta_v02)

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Enter X1: 0
0.0
Enter X2: 1
1.0
Enter bias 1: 1
Enter bias 2: 1
Enter bias 3: 1
Enter alpha: 0.25
Enter target: 1
phase 1
zin1= 0.19999999999999998
z1= 0.549833997312478
fzin1= 0.24751657271185995
zin2= 0.9
z2= 0.7109495026250039
fzin2= 0.2055003073422635
yin= 0.09102854918749159
y= 0.5227414361305817
fyin= 0.24948282708271868
phase 2
dell1= 0.11906781576358075
delta_w11= 0.01636688327313882
delta_w21= 0.021162801098940833
dellin1= 0.0476271263054323
dellin2= 0.011906781576358076
delta1= 0.011788503071235473
delta2= 0.002446847273398785
delta_w01= 0.029766953940895187
phase 3
delta_v11= 0.0
delta_v12= 0.0
delta_v21= 0.0029471257678088682
delta_v22= 0.0006117118183496963
delta_v01= 0.0029471257678088682
delta_v02= 0.0006117118183496963

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In []: