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# SP19-BCS-089
# Section B

import numpy as np
import random



class Neuron():
    def __init__(self,no_of_inputs):
        self.bias = 0.2
        self.weights = [0.65,0.30]
        self.learning_rate = 0.1

    def predict(self,input1,input2):
        summation = input1*self.weights[0] + input2*self.weights[1] + self.bias
        if summation >= 0 :
            return 1
        else:
            return 0

    def train(self,training_ex,actual_label):
        predicted_label = self.predict(training_ex[0],training_ex[1])
        print("Predicted_label is:",predicted_label,",Bias is",self.bias)
        if(predicted_label != actual_label):
            error = actual_label - predicted_label
            delta_W = self.learning_rate * error
            self.weights[0] += delta_W
            self.weights[1] += delta_W
            self.bias += delta_W
            print("Error is:",error,"\nNew bias:",self.bias,",Predicted label is:",predict
            self.train(training_ex,actual_label)
        return actual_label

epoch = range(20)

Inputs = [[0,1,1],[1,1,1]]


neuron = Neuron(2)

for ep in epoch:

    for data in Inputs:
        Inputs = np.array([data[0],data[1]])
        decision = neuron.train(Inputs,data[2])
        print("decision is:",decision)

    Inputs = [[random.randint(0,1),random.randint(0,1),random.randint(0,1)],[random.randin
print("Number of Epoches" ,ep)
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Error is: 1
New bias: -0.20000000000000004 ,Predicted label is: 0
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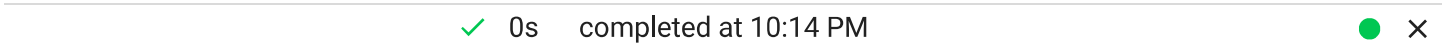
Predicted_label is: 1 ,Bias is -0.20000000000000004
decision is: 1
Predicted_label is: 0 ,Bias is -0.20000000000000004
Error is: 1
New bias: -0.10000000000000003 ,Predicted label is: 0
Predicted_label is: 1 ,Bias is -0.10000000000000003
decision is: 1
Predicted_label is: 1 ,Bias is -0.10000000000000003
Error is: -1
New bias: -0.20000000000000004 ,Predicted label is: 1
Predicted_label is: 0 ,Bias is -0.20000000000000004
decision is: 0
Predicted_label is: 0 ,Bias is -0.20000000000000004
Error is: 1
New bias: -0.10000000000000003 ,Predicted label is: 0
Predicted_label is: 0 ,Bias is -0.10000000000000003
Error is: 1
New bias: -2.7755575615628914e-17 ,Predicted label is: 0
Predicted_label is: 1 ,Bias is -2.7755575615628914e-17
decision is: 1
Predicted_label is: 1 ,Bias is -2.7755575615628914e-17
Error is: -1
New bias: -0.10000000000000003 ,Predicted label is: 1
Predicted_label is: 1 ,Bias is -0.10000000000000003
Error is: -1
New bias: -0.20000000000000004 ,Predicted label is: 1
Predicted_label is: 1 ,Bias is -0.20000000000000004
Error is: -1
New bias: -0.30000000000000004 ,Predicted label is: 1
Predicted_label is: 0 ,Bias is -0.30000000000000004
decision is: 0
Predicted_label is: 0 ,Bias is -0.30000000000000004
Error is: 1
New bias: -0.20000000000000004 ,Predicted label is: 0
Predicted_label is: 0 ,Bias is -0.20000000000000004
Error is: 1
New bias: -0.10000000000000003 ,Predicted label is: 0
Predicted_label is: 0 ,Bias is -0.10000000000000003
Error is: 1
New bias: -2.7755575615628914e-17 ,Predicted label is: 0
Predicted_label is: 0 ,Bias is -2.7755575615628914e-17
Error is: 1
New bias: 0.09999999999999998 ,Predicted label is: 0
Predicted_label is: 1 ,Bias is 0.09999999999999998
decision is: 1
Predicted_label is: 1 ,Bias is 0.09999999999999998
Error is: -1
New bias: -2.7755575615628914e-17 ,Predicted label is: 1
Predicted_label is: 1 ,Bias is -2.7755575615628914e-17
Error is: -1
New bias: -0.10000000000000003 ,Predicted label is: 1
Predicted_label is: 1 ,Bias is -0.10000000000000003
Error is: -1
New bias: -0.20000000000000004 ,Predicted label is: 1
Predicted_label is: 0 ,Bias is -0.20000000000000004
decision is: 0
Number of Epoches 19
```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