Artificial Intelligence Lab Task 11

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Section: 6C

Task 1:

# Input data  
inputs = [[0, 0], [0, 1], [1, 0], [1, 1]]  
targets = [0, 1, 1, 1]  
  
# Initialize weights  
weight\_1 = 0.9  
weight\_2 = 0.9  
bias = -1  
  
learning\_rate = 0.5  
  
for epoch in range(100):  
 for i in range(4):  
 weighted\_sum = inputs[i][0] \* weight\_1 + inputs[i][1] \* weight\_2 + bias  
  
 if weighted\_sum >= 0.5:  
 output = 1  
 else:  
 output = 0  
  
 if output != targets[i]:  
 weight\_1 += learning\_rate \* (targets[i] - output) \* inputs[i][0]  
 weight\_2 += learning\_rate \* (targets[i] - output) \* inputs[i][1]  
 bias += learning\_rate \* (targets[i] - output)  
  
 print("------------------------------------------------------------------------------------------------------------")  
 print("epoch:",epoch)  
 print("-> weight 1: ",weight\_1)  
 print("-> weight 2: ",weight\_2)  
 print("-> bias: ", bias)  
 print("-> outputs: ")  
 for j in range(4):  
 weighted\_sum = inputs[j][0] \* weight\_1 + inputs[j][1] \* weight\_2 + bias  
 if weighted\_sum >= 0.5:  
 output = 1  
 else:  
 output = 0  
 print(inputs[j][0], inputs[j][1], output, "(-> actual : ",targets[j], ")")

Screenshots:





