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ANN – SL 2

Prac 4

Code –

import numpy as np

import matplotlib.pyplot as plt

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

Y = np.array([-1, -1, -1, 1])

w = np.zeros(X.shape[1])

b = 0

for \_ in range(6):

for i in range(X.shape[0]):

y\_pred = np.sign(np.dot(X[i], w) + b)

if y\_pred != Y[i]:

w += 0.3 \* Y[i] \* X[i]

b += 0.3 \* Y[i]

x\_min, x\_max = X[:, 0].min() - 1, X[:, 0].max() + 1

y\_min, y\_max = X[:, 1].min() - 1, X[:, 1].max() + 1

xx, yy = np.meshgrid(np.arange(x\_min, x\_max, 0.01), np.arange(y\_min, y\_max, 0.01))

Z = np.sign(np.dot(np.c\_[xx.ravel(), yy.ravel()], w) + b)

Z = Z.reshape(xx.shape)

plt.contourf(xx, yy, Z, alpha=0.8)

plt.scatter(X[:, 0], X[:, 1], c=Y)

plt.xlabel('X1')

plt.ylabel('X2')

plt.title('Perceptron Decision Regions')

plt.show()

Output –

