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CPTS 434

Introduction to Neural Networks Design & Applications

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Homework 7

1.

f1 = exp(-|X – [1,1]|2)

f2 = exp(-|X – [0,0]|2)

X f1 f2

(1,1) 1 0.1353

(0,1) 0.3678 0.3678

(0,0) 0.1353 1

(1,0) 0.3678 0.3678

Decision boundary is f1+f2=0.94

Use wT=[1,1] to calculate bias and margins

r = 1

2.

Coordinates of features z1 = sigmoid(x1-x2-0.5)

in the hidden layer z2 = sigmoid(-x1+x2-0.5)

x1 x2 arg1 z1 arg2 z2 r

0 0 -0.5 0.38 -0.5 0.38 0

0 1 -1.5 0.18 0.5 0.62 1

1 0 0.5 0.62 -1.5 0.18 1

1 1 -0.5 0.38 -0.5 0.38 0

Bias

Decision Boundary

Verification

**They are indeed, equal**