

In The Name of God, The Compassionate, The Merciful

Name:

Student ID#:

Statistical Pattern Recognition (CE-725)
Department of Computer Engineering
Quiz #7 (Artificial Neural Networks) - Spring 2012

1. (50 points) Consider data points in two classes:

S1: {(1,2) (3,1) (4,2) (1,3)}

S2: {(1,1) (2,1) (3,2)}

Design an NN classifier with the fewest number of layers to classify data points. What's the prediction of NN for data point (2,2) and (3,3).

2. (50 points) Consider a neural network with inputs x_1, x_2, \dots, x_n , which are either 0 (zero) or 1 (one). This network is specified by giving the weights on the links and the activation function g at the nodes. Design a network that computes the "majority function" for n input nodes. A majority function should output 1 (one) if at least half the inputs are 1, and 0 (zero) otherwise.