Department of Computer Science and Engineering (CSE)

Pattern Recognition Lab

Experiment No 1

"Designing a minimum distance to class mean classifier"

A. Sessional Task:

Given the following two-class set of prototypes

ω_1 = {(2,2), (3,1), (3,3), (-1,-3), (4,2), (-2,-2)}
ω_2 = {(0,0), (-2,2), (-1,-1), (-4,2), (-4,3), (2,6)}

1. Plot all sample points from both classes, but samples from the same class should have the same color and marker.
2. Using a minimum distance classifier with respect to 'class mean', classify the following points by plotting them with the designated class-color but different marker.

X_1 = (-1,-1)
X_2 = (3, 2)
X_3 = (-2, 1)
X_4 = (8, 2)

$$g_i(X) = X^T {}_i\bar{Y} - \frac{1}{2} {}_i\bar{Y}^T {}_i\bar{Y}$$

Linear Discriminant Function:

3. Draw the decision boundary between the two-classes.

Note: Useful Matlab functions: plot, mean, sqrt, hold.