

In The Name of God, The Compassionate, The Merciful

Name:

Student ID#:

Statistical Pattern Recognition (CE-725)
Department of Computer Engineering
Quiz #3 (Feature Extraction) - Spring 2012

Consider 2D data points in 2 classes depicted below:

$$C_1 = \{(0,-1)^T, (1,0)^T, (2,1)^T\}$$

$$C_2 = \{(1,1)^T, (-1,1)^T, (-1,-1)^T, (-2,-1)^T\}$$

- a. (30 points)** Compute principal components for all data points.
- b. (15 points)** Compute the projected data points on the first principal component.
- c. (15 points)** Compute the coordinates of projected data points on the first principal component, in the original feature space.
- d. (30 points)** Find the best vector based on LDA and project data points on this vector.
- e. (10 points)** Find the border of two classes in the LDA space.