Chris Kasper

CS 383-002

Homework #1

Theory Questions

1a.   
Group data together

Compute information gain for feature 1

Split into subsets

Entropy of Initial System

Entropy of subsets

Compute information gain for feature 2

Split into subsets

Entropy of Initial System

Entropy of subsets

1b. Feature 1 is more discriminating then Feature 2 because Feature 1 has more information gain.

2. Using equation:

Take derivative with respect to w

Use rule:

Split into 2 sections

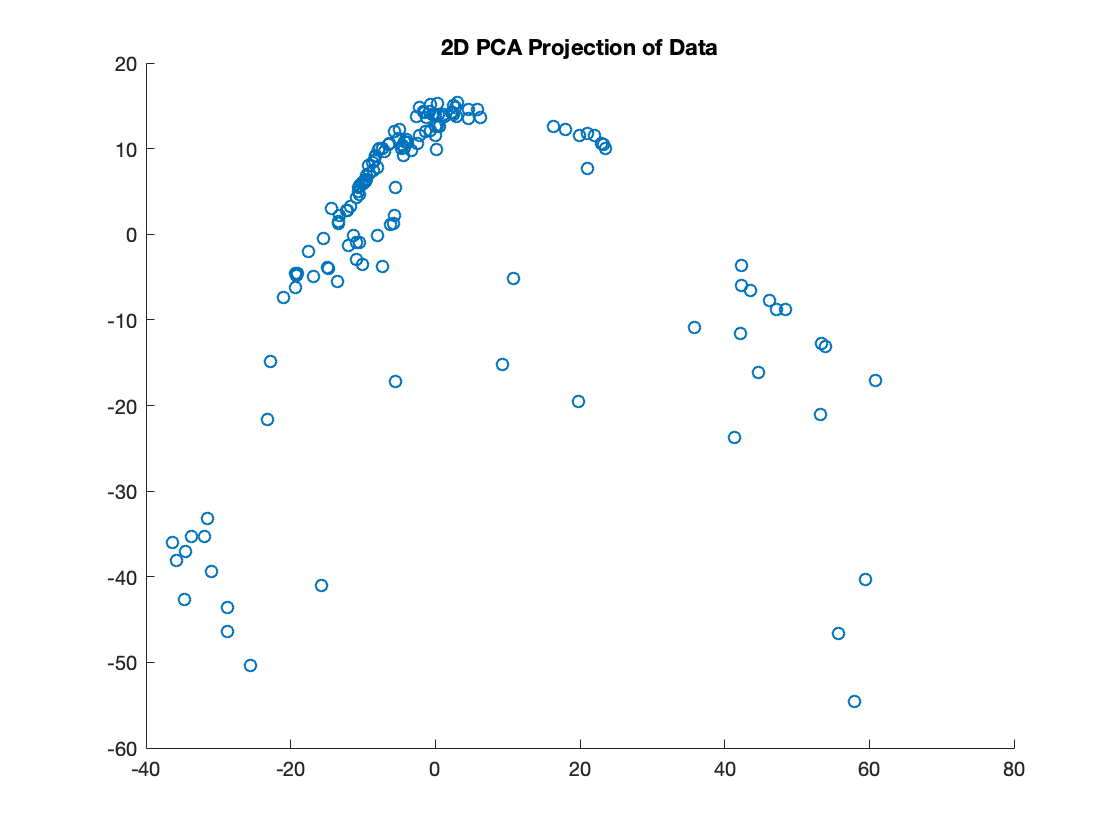
Left section:

Right section:

Combine both:

Which is in the form of...

Part 2: Dimensionality Reduction via PCA



Part 3: Eigenfaces

Number of principle components needed to represent 95% of information, k = 37

