**CSCI 5521: Homework 2 Solution**

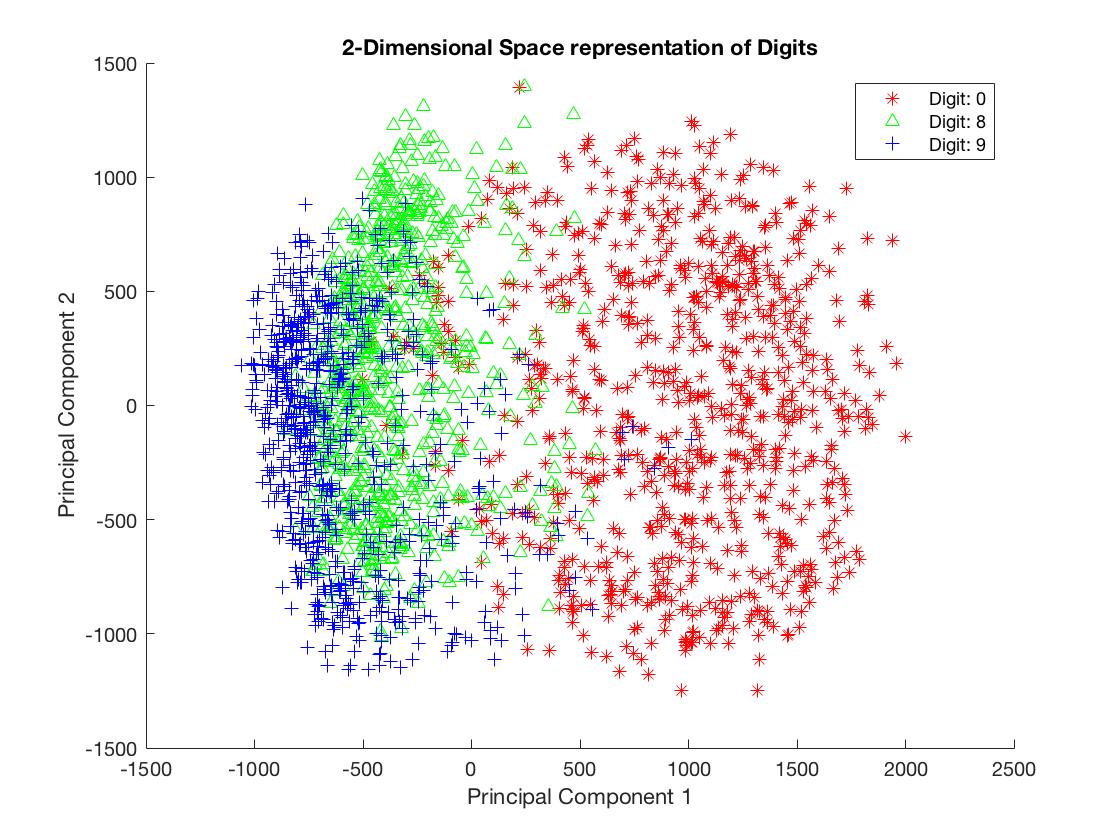
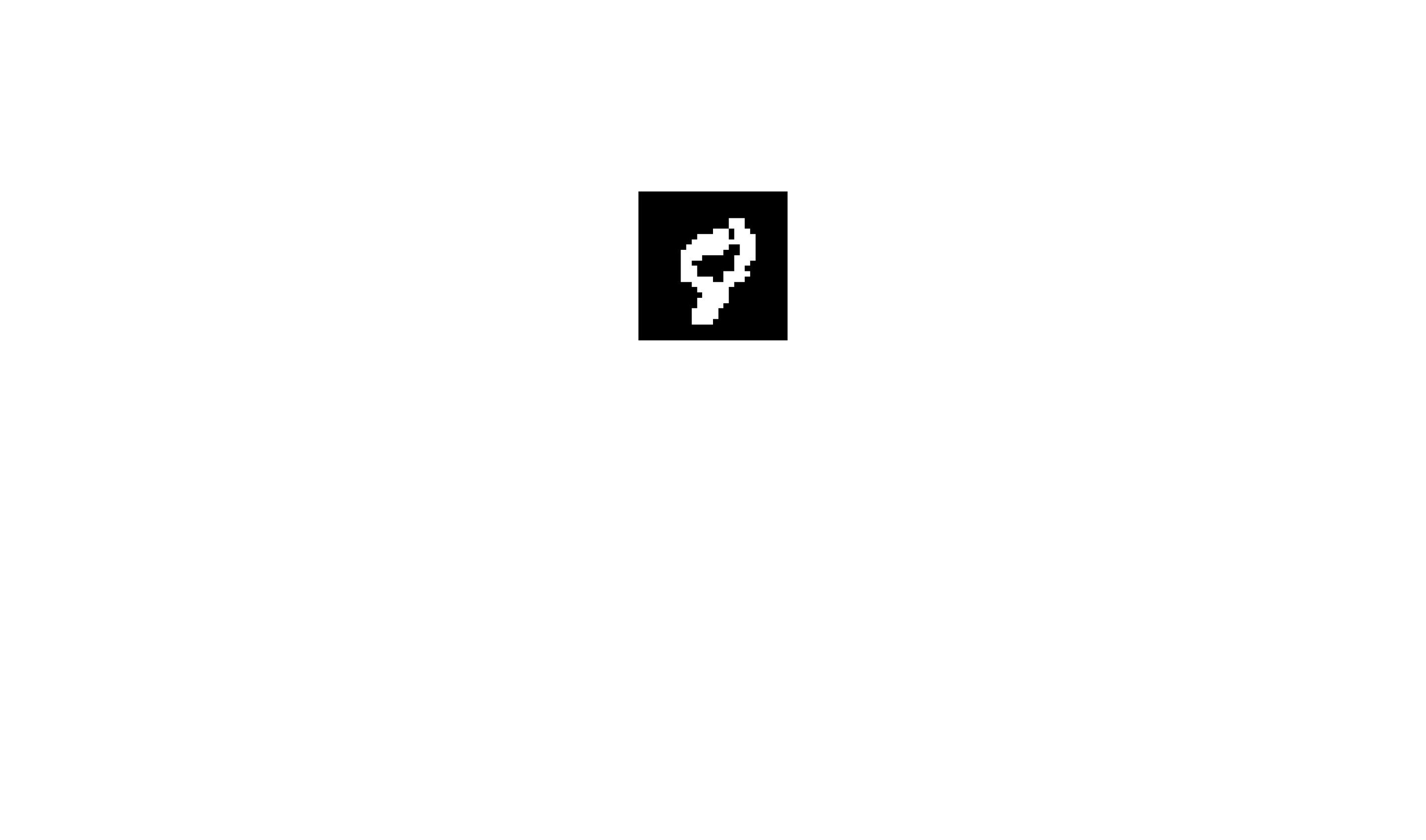
1.  For the solution to our first problem, we build a MATLAB script that implements PCA on the MNIST data set. We implement the following functions to plot features from class 8 or 9 in a 2-D space using PCA.

Figure 1: Scatter plot of the Principal Components of class 0, 8 and 9

1. 

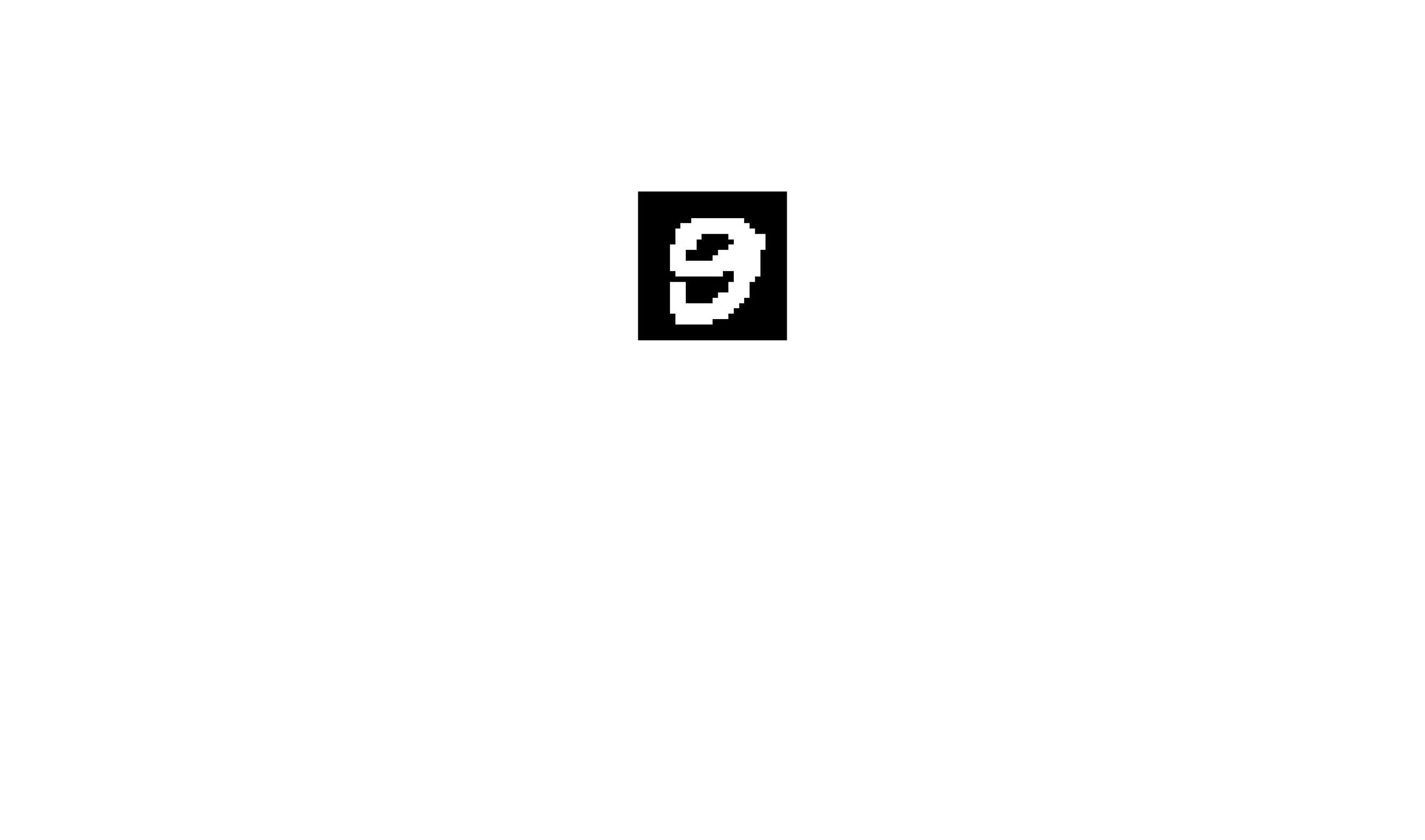


Figure 2: Most misclassified 8 -2D - LDA classifier

Figure 3: Most misclassified 9 -2D - LDA classifier

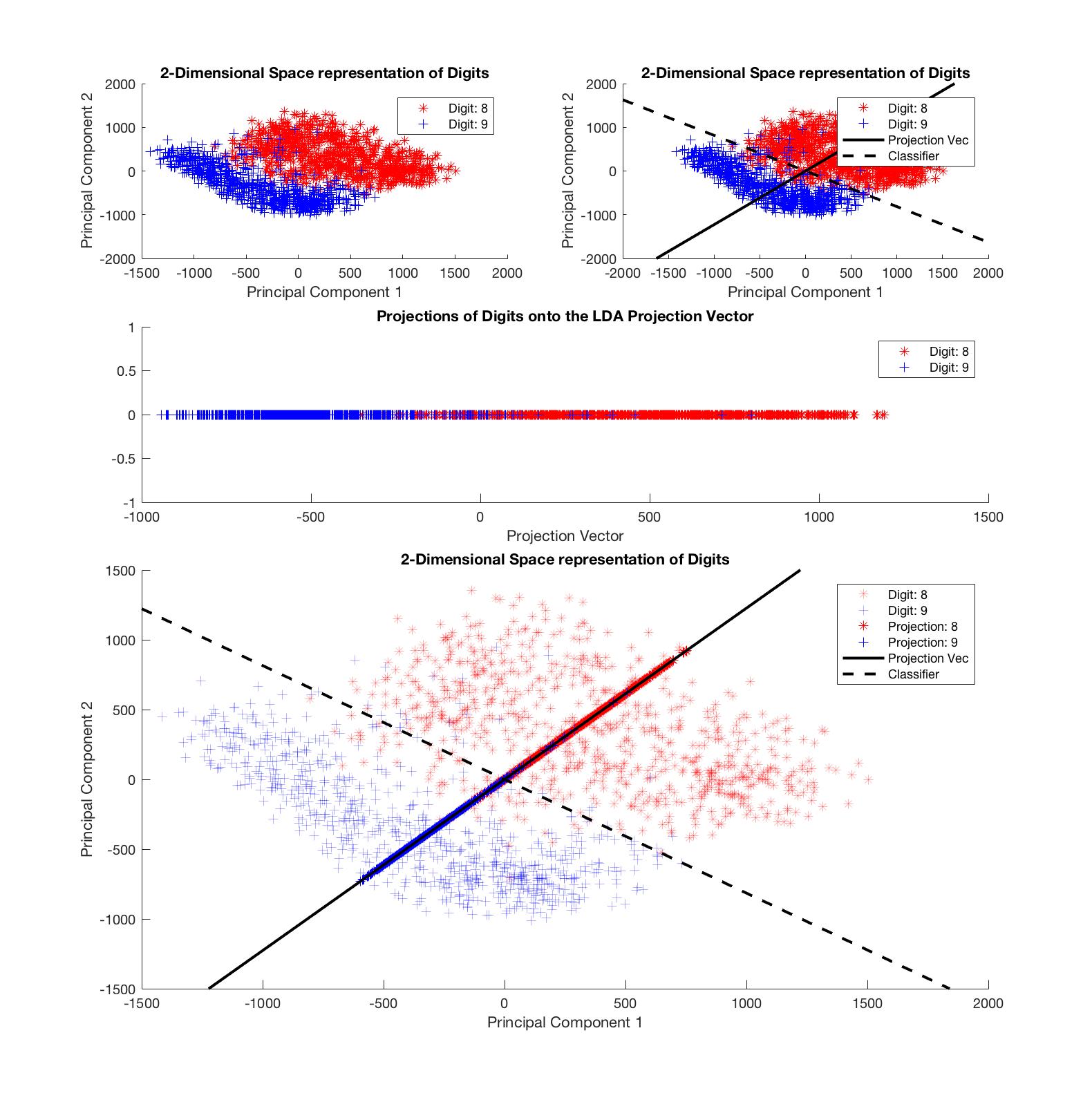


Figure 4: Scatter plot with LDA vector and classifier vector

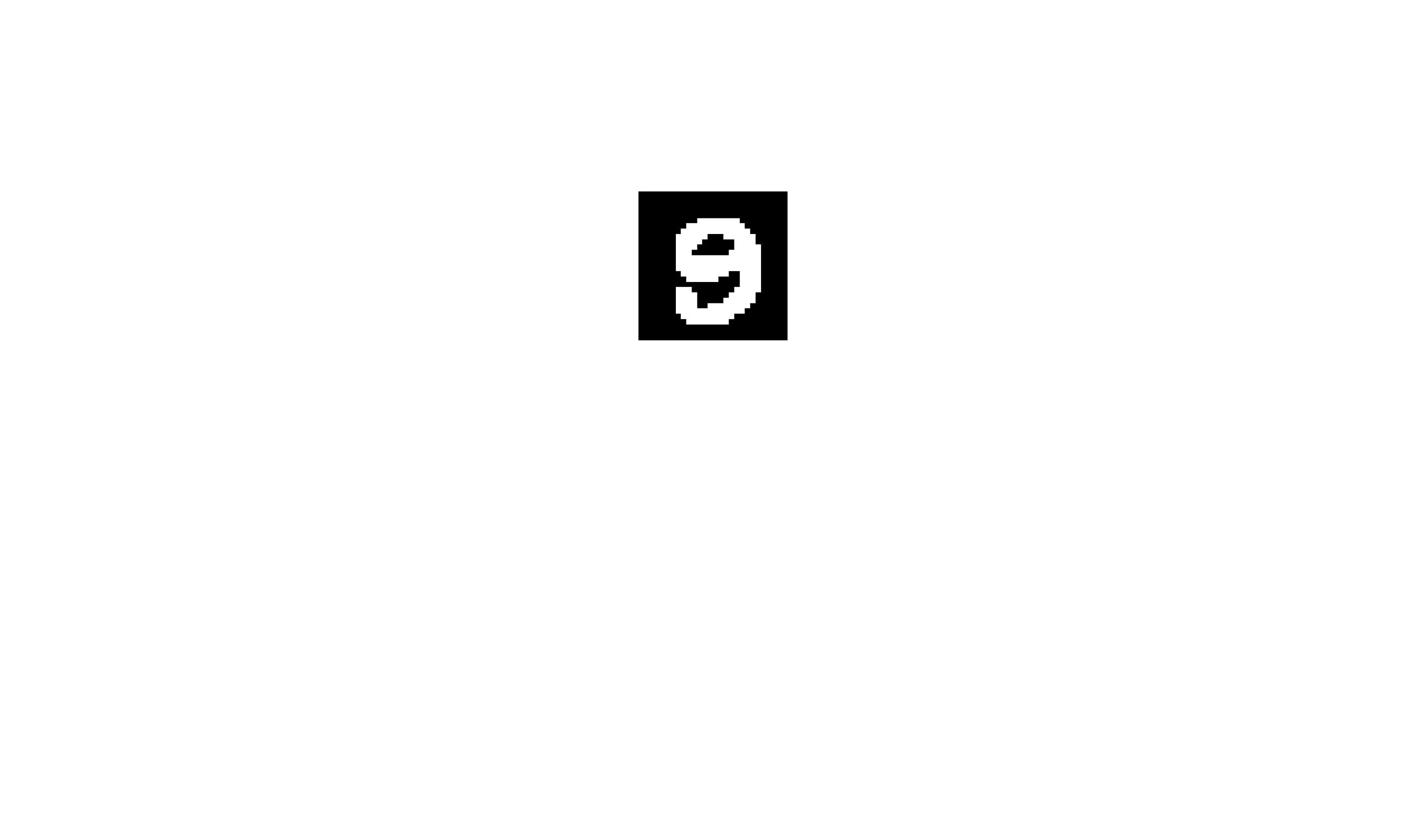


Figure 6: Most misclassified nine - multidimensional LDA

Figure 5: Most misclassified eight - multidimensional LDA