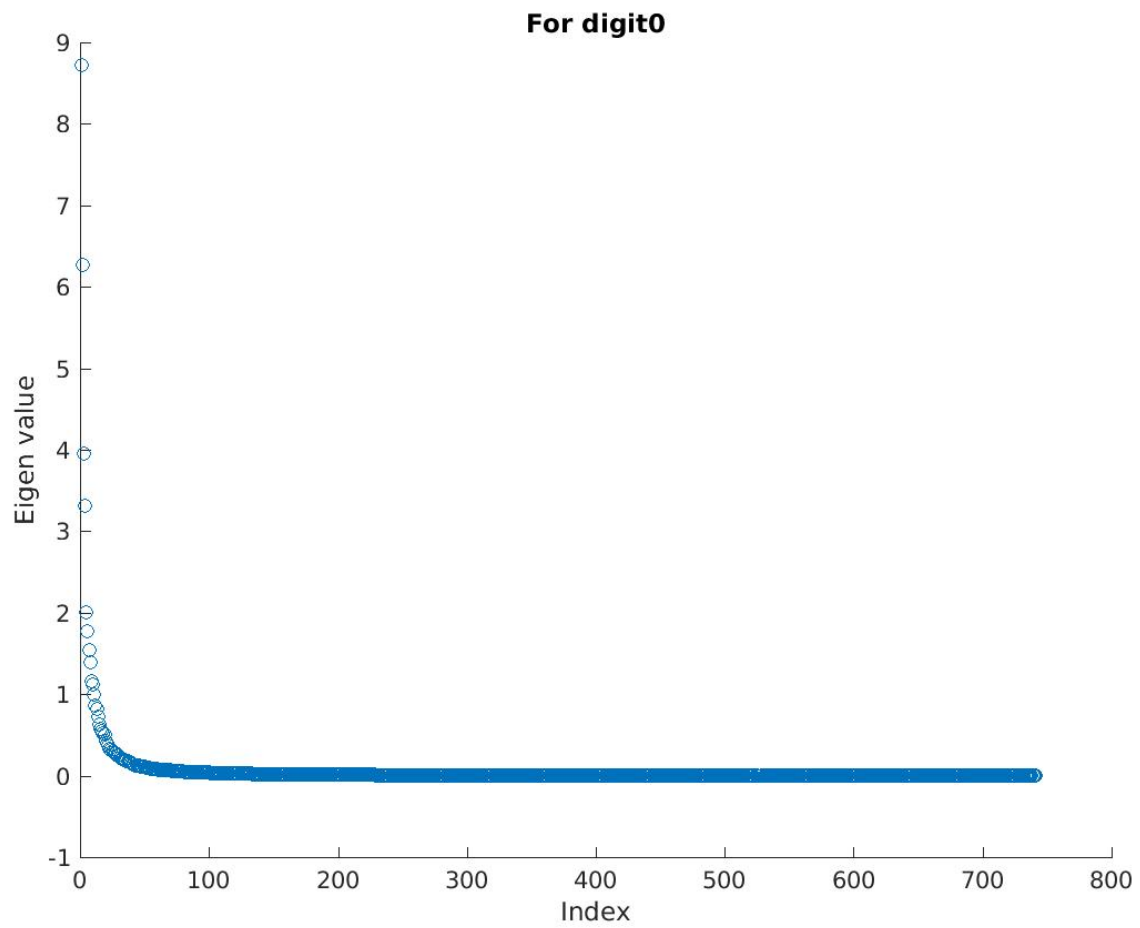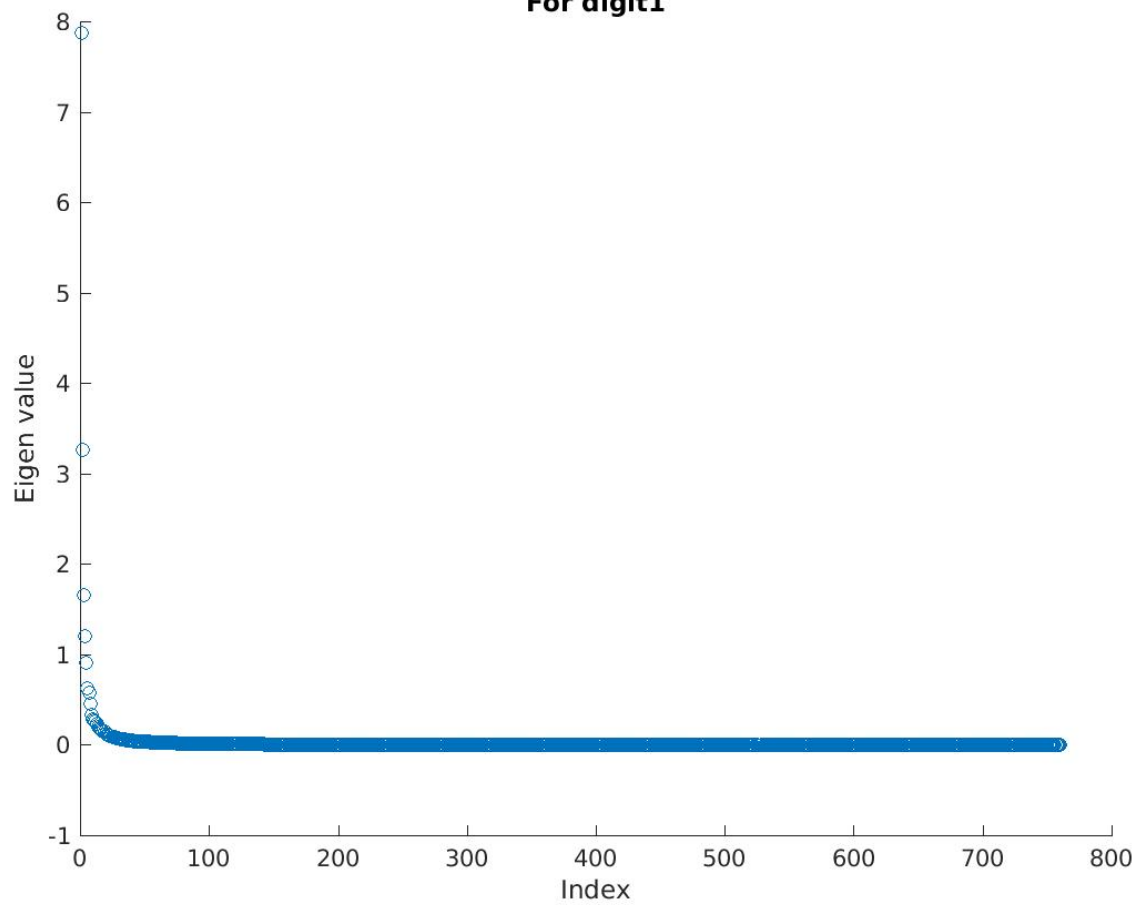The results of the PCA are attached in the folder.

A few representative results are shown here-

For digit0

For digit1

The above plot is for all digits, and starts from zero to ten.

There are only about 100 values of lambda which are 'significant', which cover about 95% of the variance. This is much less than 28^2, a result expected due to the fact that several of the features in the image are corelated to each other.

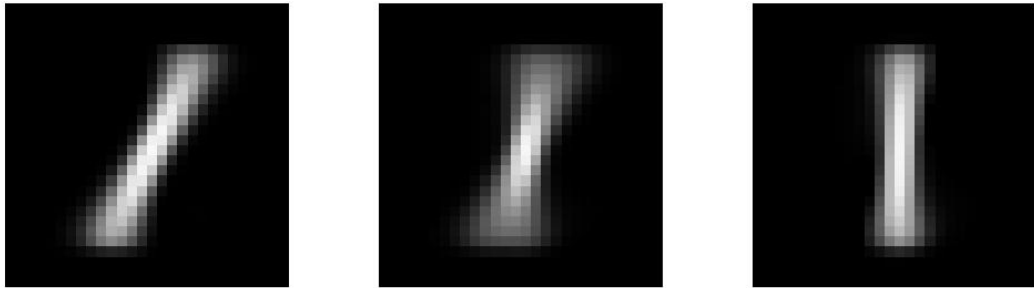B-   Representative results of the second part, the other images are attached in the folder.

The dataset contains several rotations (i.e. ways of writing) of the digit 1. PCA extracts the feature along one direction, and subtracting/adding that to the mean image gives a strong rotation along one direction. The images on the right tells how the majority of people write 1, and the left one how the image would look like if the most dominant images were removed. Hence, most people write one as a straight line.