

Homework 1: Eigendigits

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1 Introduction

In this report, I apply principal components analysis on digits classification problem. 60000 training samples and 10000 testing samples are provided.

2 Experiments

On different size of data.

Using different number of eigenvectors.

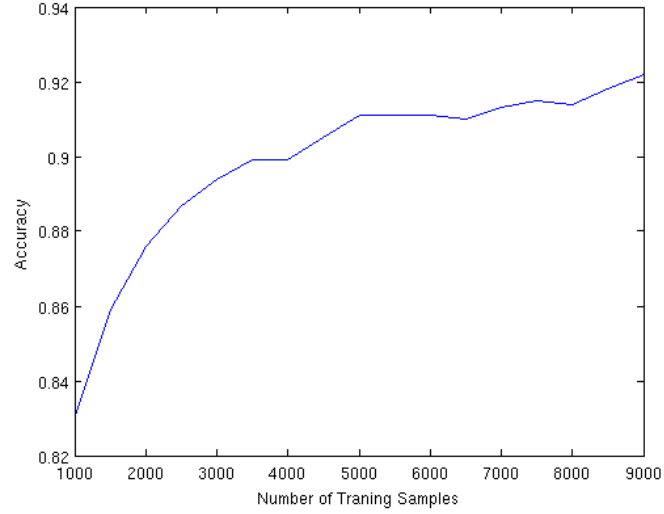


Figure 1: Comparison on using different number of training samples. Testing on first 1000 testing set. Using first 200 eigen-vectors. K for K-nearest-neighbors is 1.

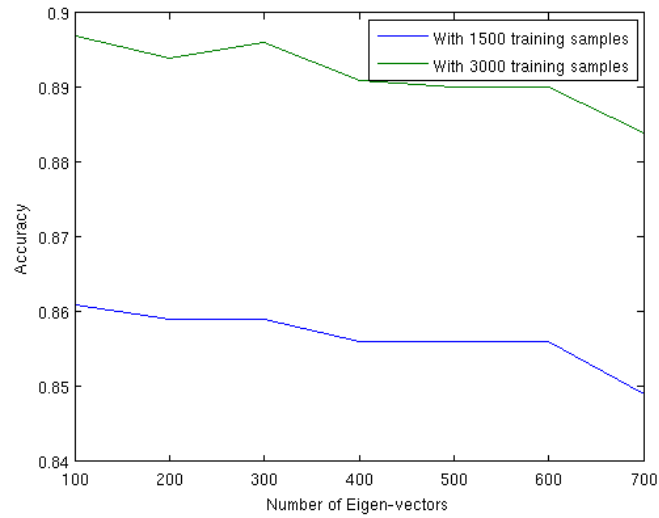


Figure 2: Comparison on using different number of eigenvectors. Testing on first 1000 testing set. Using first 1500 and 3000 training samples for each line. K for K-nearest-neighbors is 1.