

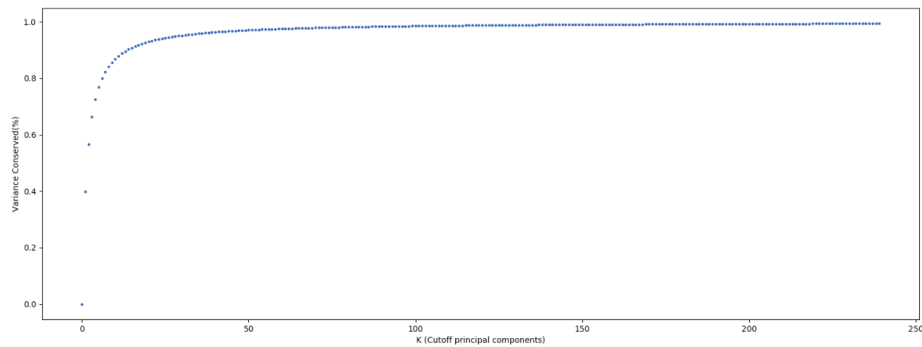
Assignment 5

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PCA

K vs Covariances



cutoff principal components vs covariances preserved

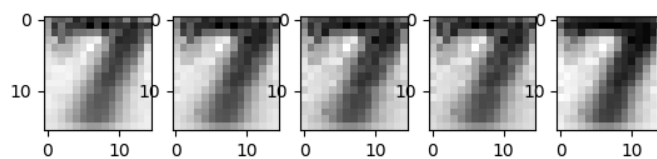
The plot above is the plot of equation 15 in the lecture notes for values of m (cutoff principal components) ranging from 0 to 240 using python. From the figure above, we have determined the following k of PC's needed for corresponding variances conserved.

Covariances(in %)	k
50	2
80	6
95	28
99	152
100	no k found

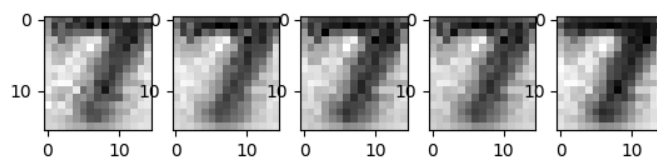
From the plot, for 100% reconstruction, we can see that the limit of the function is 1 as k tends to infinity. So, no k is found for 100% reconstruction. The images of reconstruction for each of the cases are in the following pages.

Reconstructed Images

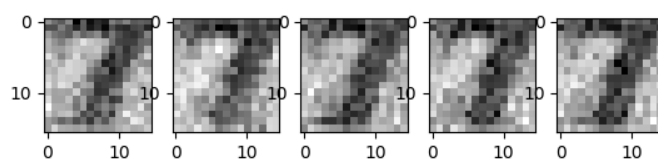
$k = 2$



$k = 6$



$k = 28$



$k = 152$

