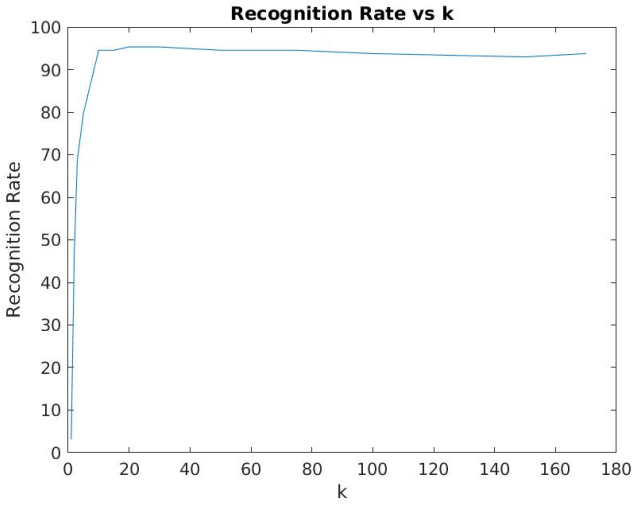
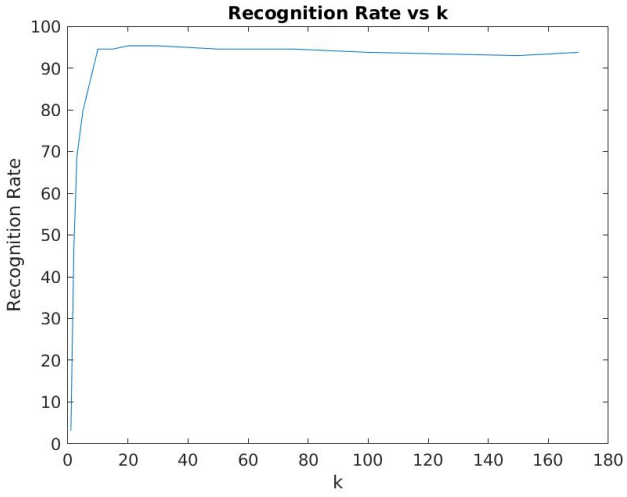
Q1. Part A - ORL database

k	Recognition rate
1	3.1250
2	46.8750
3	68.7500
5	79.6875
10	94.5312
15	94.5312
20	**95.3125**
30	**95.3125**
50	94.5312
75	94.5312
100	93.7500
150	92.9688
170	93.7500

It can be seen that in both the methods - svd and L matrix, we achieve same recognition rate as expected. Maximum rate can be seen for **k =20, 30.**

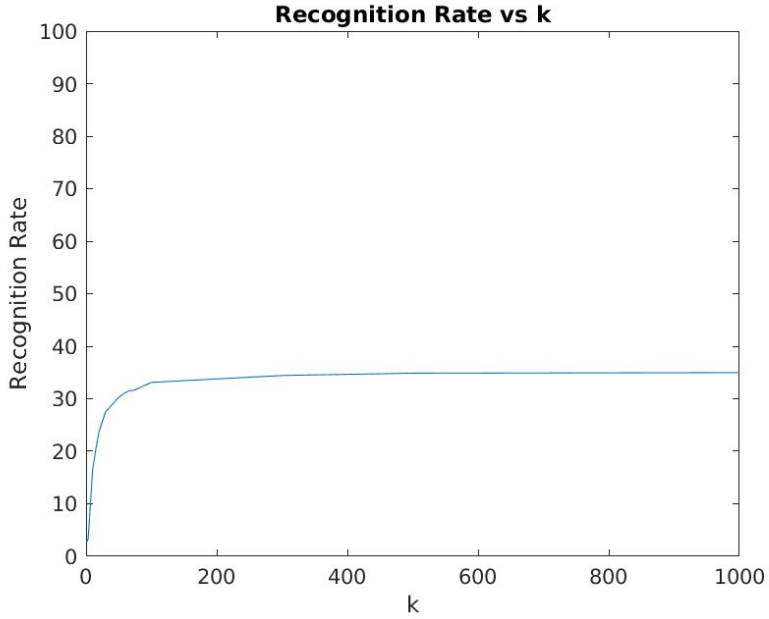


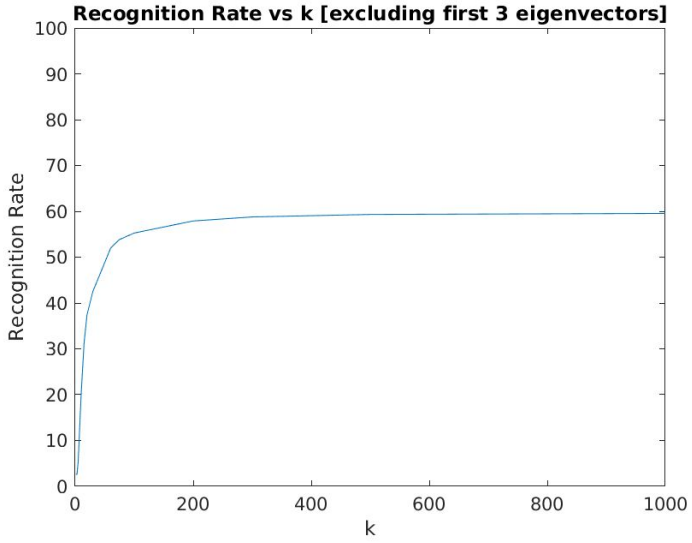


Part B - Yale Database

k	Recognition rate	Rate excluding first 3 eigencoeffs
1	2.6316	2.6316
2	3.1798	2.6316
3	3.0702	2.6316
5	6.5789	5.2632
10	16.4474	19.8465
15	20.3947	31.2500
20	23.7939	37.3904
30	27.5219	42.5439
50	30.2632	48.7939
60	31.1404	51.9737
65	31.4693	52.6316
75	31.6886	53.8377
100	33.1140	55.2632
200	33.7719	57.8947
300	34.4298	58.7719
500	34.8684	59.3202
1000	34.9781	59.5395

The recognition rate is more in case when the first 3 eigencoeffients (as they correspond to lighting changes) are dropped in the second graph. The result matches with the expectation.


Recognition Rate vs k
Recognition Rate
k
0
10
20
30
40
50
60
70
80
90
100
0
200
400
600
800
1000


Recognition Rate vs k [excluding first 3 eigenvectors]
Recognition Rate
k
0
10
20
30
40
50
60
70
80
90
100
0
200
400
600
800
1000