

Results



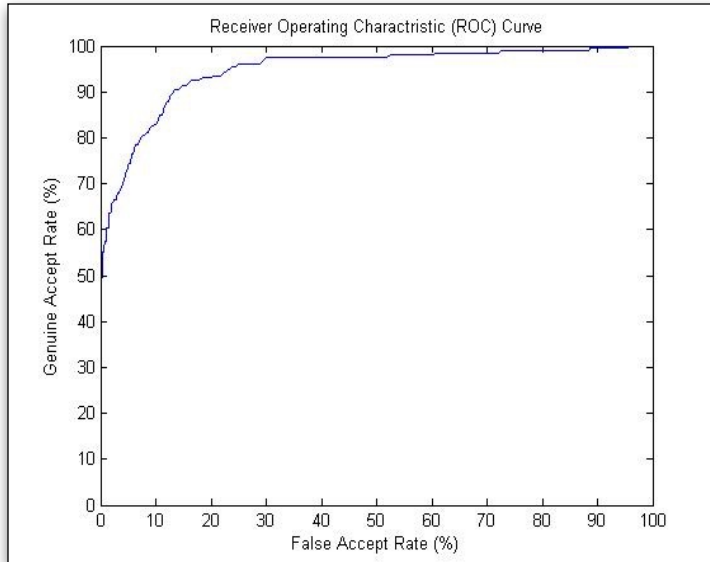
Mean Face



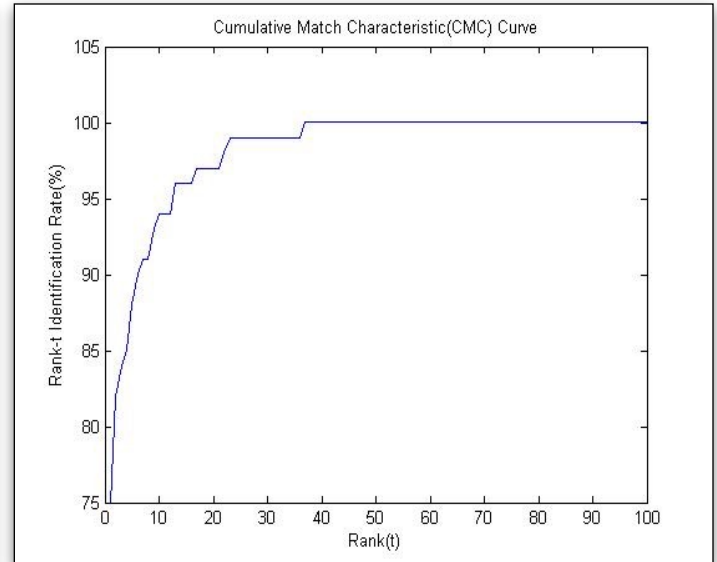
Top 10 Eigen Faces

Distance Measure 1 : Euclidean Distance

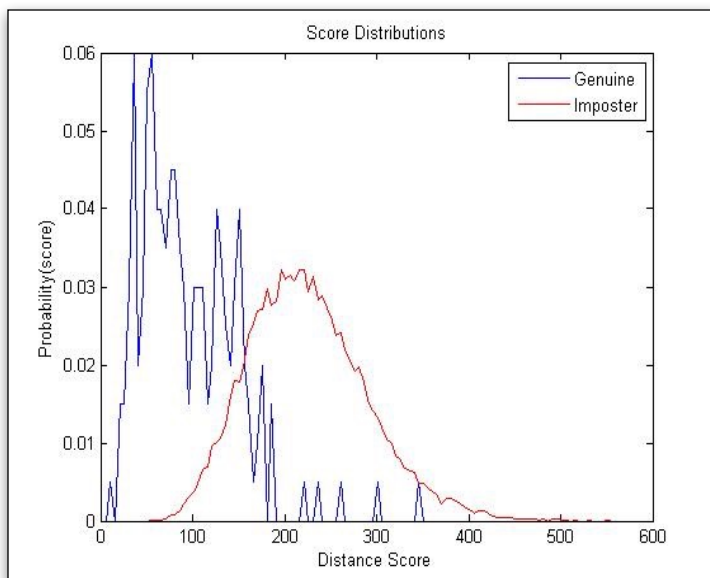
$$d(\mathbf{p}, \mathbf{q}) = \sqrt{(q_1 - p_1)^2 + (q_2 - p_2)^2}. \quad \text{.....Reference - Wikipedia}$$



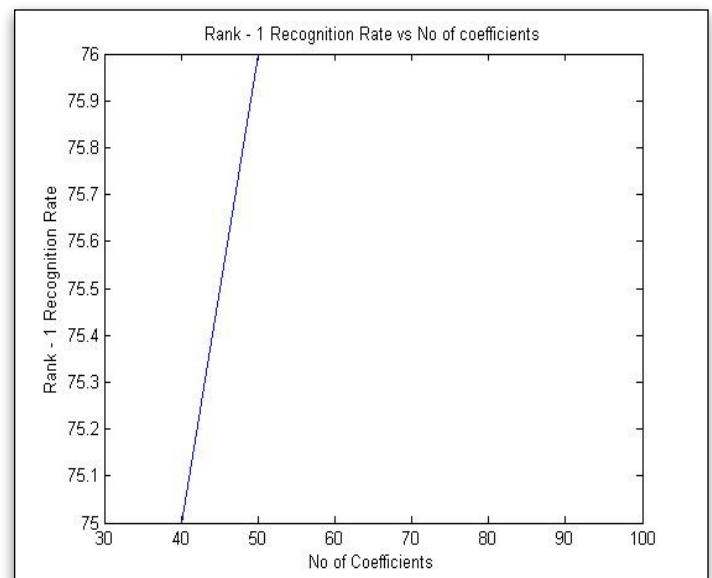
ROC



CMC



Score Distributions



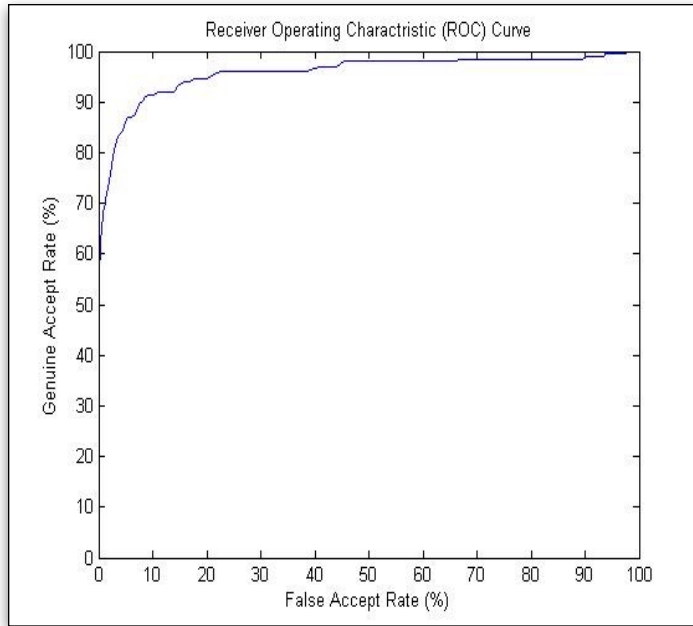
Rank 1 Recognition Rate Vs No.of Coefficients

Number of utilized features such that the recognition rate no longer increase = 50

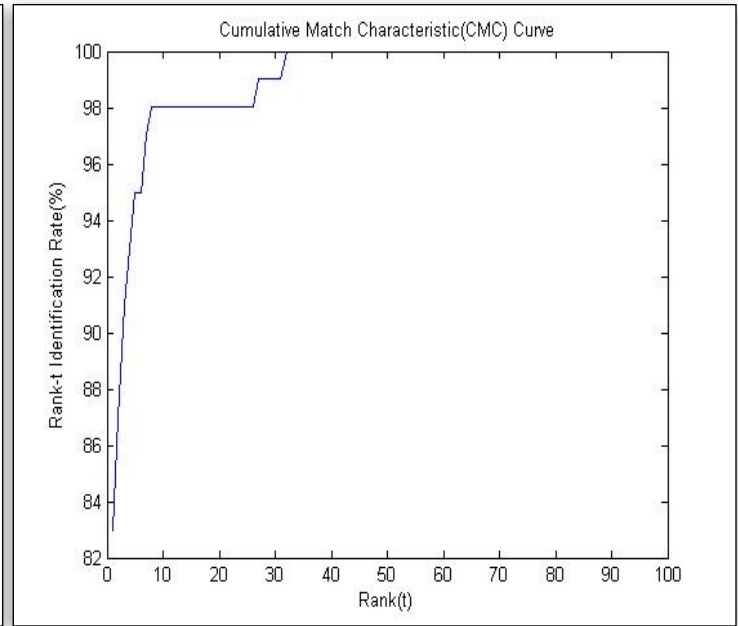
Distance Measure 2 : Mahalanobis Distance

$$\|\Omega - \Omega^k\| = \sum_{i=1}^K \frac{1}{\lambda_i} (w_i - w_i^k)^2$$

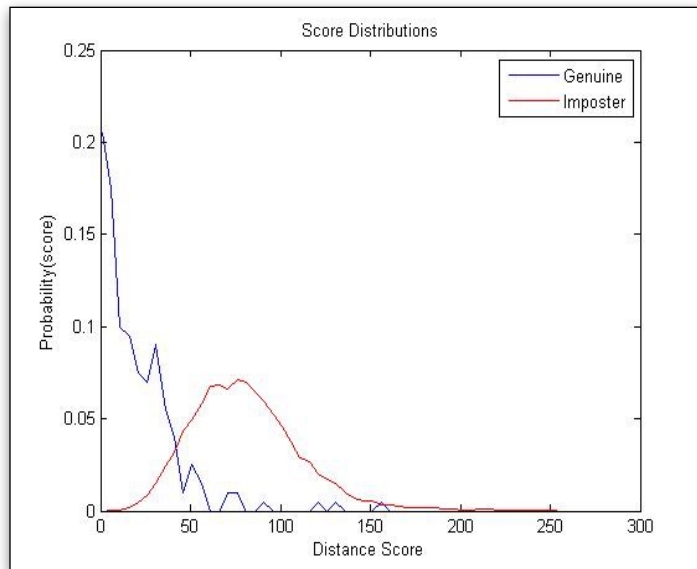
(variations along all axes are treated as equally significant)



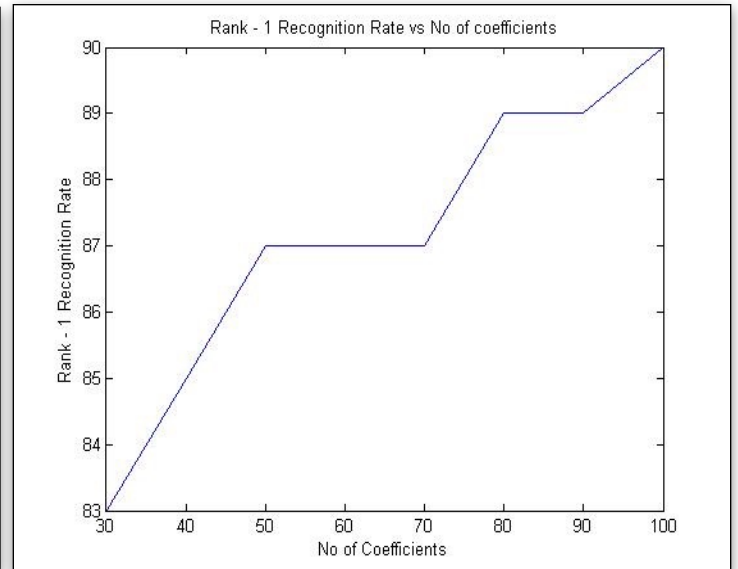
ROC



CMC



Score Distributions



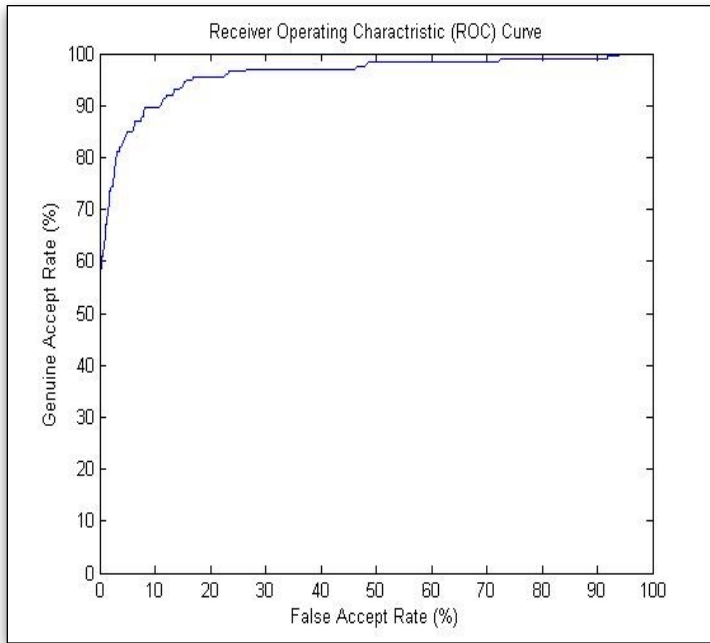
Rank 1 Recognition Rate Vs No. of Coefficients

Number of utilized features such that the recognition rate no longer increase = 100

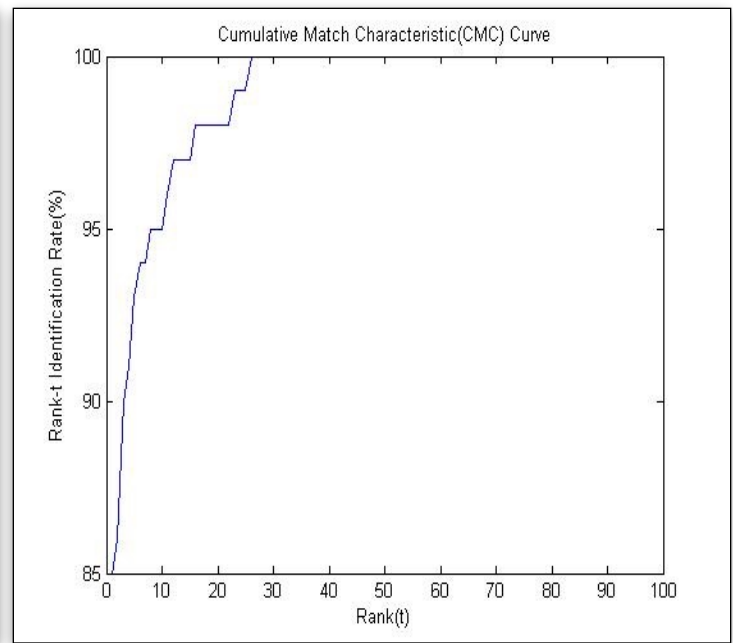
Distance Measure 3 : Manhattan Distance

$$d_1(\mathbf{p}, \mathbf{q}) = \|\mathbf{p} - \mathbf{q}\|_1 = \sum_{i=1}^n |p_i - q_i|,$$

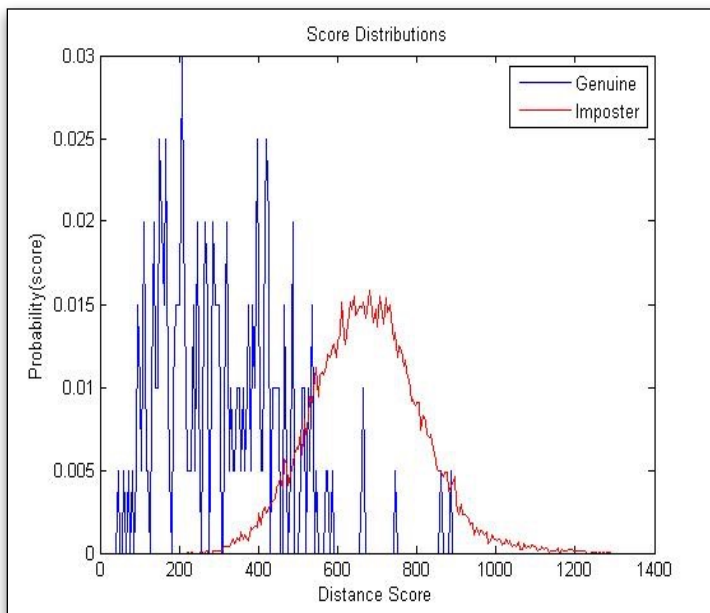
.....Reference - Wikipedia



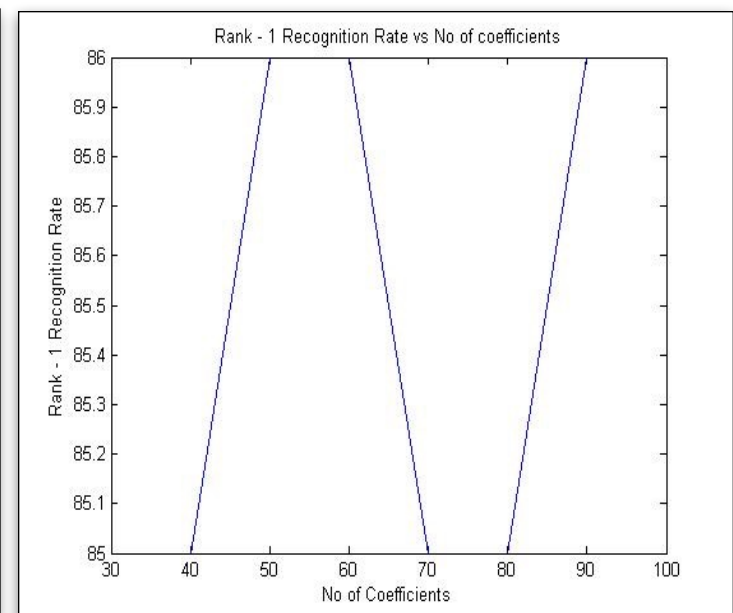
ROC



CMC



Score Distributions

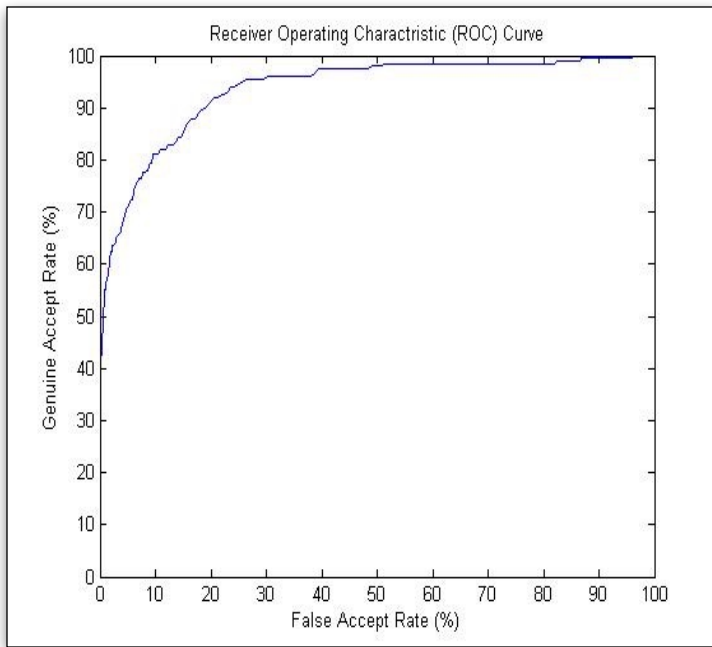


Rank 1 Recognition Rate Vs No. of Coefficients

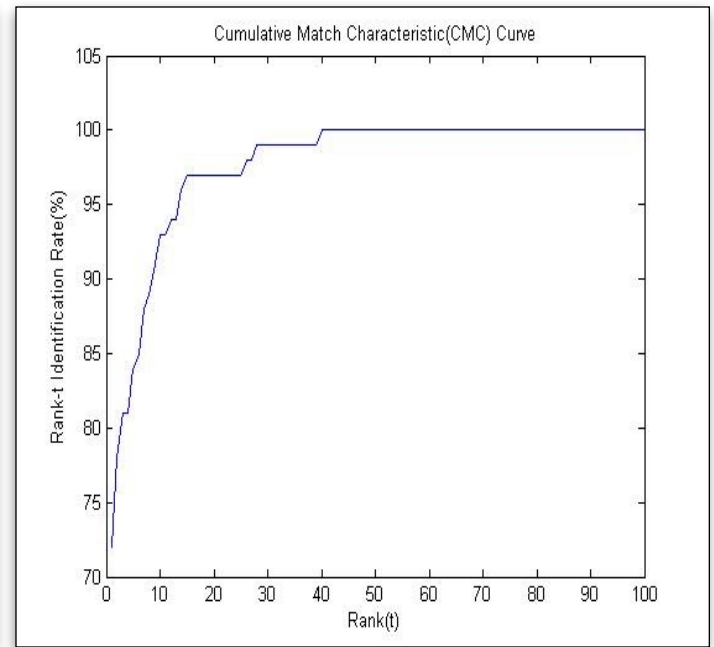
Number of utilized features such that the recognition rate no longer increase = 90

Distance Measure 4 : L_m distance (m = 3)

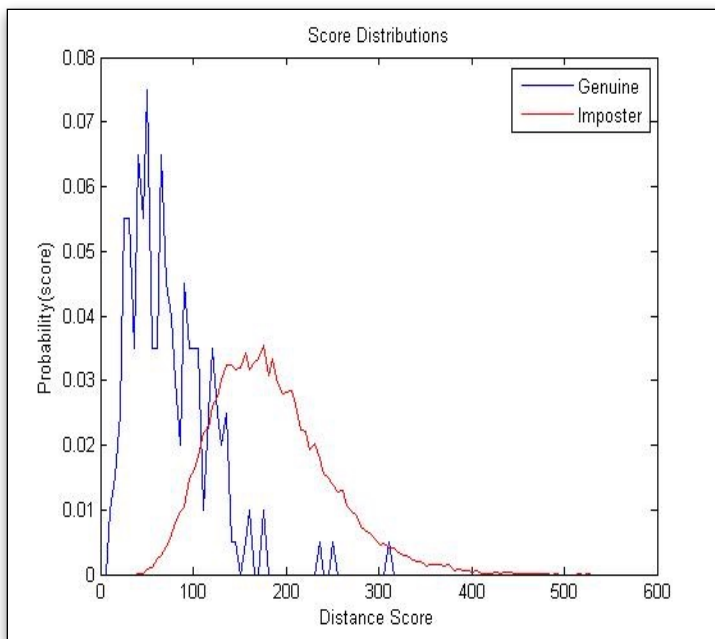
The generalized distance between two points. In a plane with point p_1 at (x_1, y_1) and p_2 at (x_2, y_2) , it is $(|x_1 - x_2|^m + |y_1 - y_2|^m)^{1/m}$Reference - <https://xlinux.nist.gov/dads/HTML/lmdistance.html>



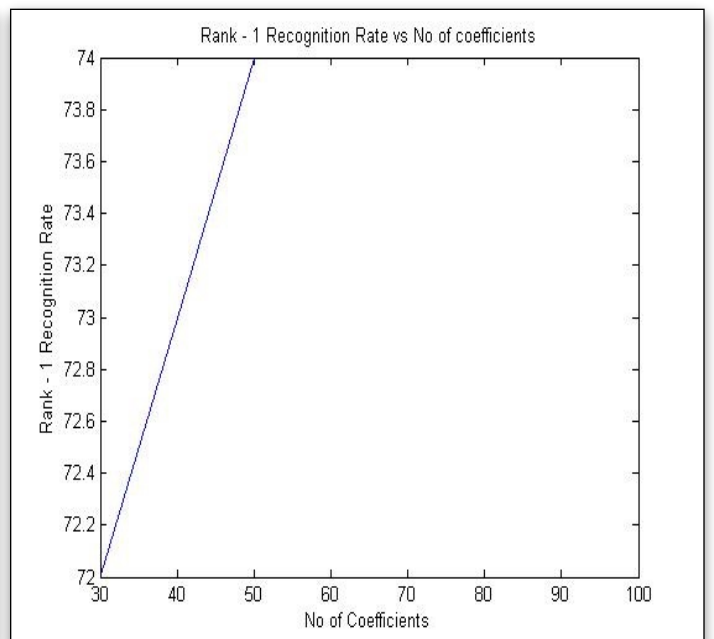
ROC



CMC



Score Distributions



Rank 1 Recognition Rate Vs No.of Coefficients

Number of utilized features such that the recognition rate no longer increase = 50

Best Distance Measure : Manhattan Distance

The recognition rate of the system is more with Manhattan distance than compared to others distance measures. Hence, Manhattan distance is best distance measure for provided database.