A LEARNING ALGORITHM FOR OPTIMAL FACE RECOGNITION IN DYNAMIC ENVIRONMENTS

By

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Table 1: Database : ORL

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	95.0	100.0	95.0	100.0	100.0	98.0
Locality Preserving Projections	40.0	50.0	70.0	56.67	56.67	54.67
Histogram Based Facerec-L1	97.5	100.0	97.5	97.5	95.0	97.5
Histogram Based Facerec-L2	97.5	97.5	92.5	95.0	95.0	95.5

Table 2: Database : YALE GIF

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	80.0	80.0	80.0	86.67	66.67	78.67
Locality Preserving Projections	Run1	Run2	Run3	Run4	Run5	Avg
Discerete Cosine Transform	Run1	Run2	Run3	Run4	Run5	Avg
Histogram Based Facerec-L2	73.33	86.67	73.33	100.0	73.33	81.332
Histogram Based Facerec-L2	73.33	73.33	66.67	80.0	80.0	74.67

Table 3: Database : YALE PGM

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	66.67	66.67	86.67	60.0	86.67	73.33
Locality Preserving Projections	Run1	Run2	Run3	Run4	Run5	Avg
Discerete Cosine Transform	Run1	Run2	Run3	Run4	Run5	Avg
Histogram Based Facerec-L1	80.0	80.0	73.33	73.33	80.0	77.33
Histogram Based Facerec-L2	86.67	86.67	53.33	66.67	60.0	70.69

Table 4: Database : YALE RESIZED

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	73.33	66.67	80.0	86.67	66.67	74.67
Locality Preserving Projections	Run1	Run2	Run3	Run4	Run5	Avg
Discerete Cosine Transform	Run1	Run2	Run3	Run4	Run5	Avg
Histogram Based Facerec-L1	73.33	86.67	66.67	86.67	73.33	77.33
Histogram Based Facerec-L2	93.33	73.33	66.67	80.0	53.33	73.33

Table 5: Database : Umist Database

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	80.0	80.0	80.0	86.67	100.0	85.33
Locality Preserving Projections	Run1	Run2	Run3	Run4	Run5	Avg
Discerete Cosine Transform	Run1	Run2	Run3	Run4	Run5	Avg
Histogram Based Facerec-L1	100.0	100.0	100.0	100.0	100.0	100.0
Histogram Based Facerec-L2	100.0	100.0	100.0	100.0	100.0	100.0

Table 6: Database : CALTECH ORIGINAL

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	25.0	0.0	8.33	33.33	16.67	16.67
Locality Preserving Projections	Run1	Run2	Run3	Run4	Run5	Avg
Discerete Cosine Transform	Run1	Run2	Run3	Run4	Run5	Avg
Histogram Based Facerec-L1	33.33	41.67	33.33	33.33	8.33	30.0
Histogram Based Facerec-L2	8.33	0.0	8.33	8.33	8.33	6.67

Table 7: Database : CALTECH (Cropped)

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	-	-	-	-	-	-
Locality Preserving Projections	-	-	-	-	-	-
Discerete Cosine Transform	-	-	-	-	-	-
Histogram Based Facerec-L1	38.46	38.46	38.46	34.61	34.61	36.92
Histogram Based Facerec-L2	7.69	0.0	3.85	0.0	3.85	3.08

Table 8: Database : Georgia Tech Database (Original)

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	100.0	100.0	100.0	100.0	100.0	100.0
Locality Preserving Projections	Run1	Run2	Run3	Run4	Run5	Avg
Discerete Cosine Transform	Run1	Run2	Run3	Run4	Run5	Avg
Histogram Based Facerec-L1	100.0	96.0	100.0	98.0	98.0	98.4
Histogram Based Facerec-L2	20.0	20.0	40.0	20.0	30.0	26.0

Table 9: Database : Georgia Tech Database (Cropped)

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	-	-	-	-	-	-
Locality Preserving Projections	-	-	-	-	-	-
Discerete Cosine Transform	-	-	-	-	-	-
Histogram Based Facerec-L1	90.0	96.0	92.0	84.0	92.0	90.8
Histogram Based Facerec-L2	84.0	92.0	78.0	86.0	90.0	86.0

Table 10: Database : DBase Males

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	66.67	50.0	86.36	58.33	83.33	68.94
Locality Preserving Projections	Run1	Run2	Run3	Run4	Run5	Avg
Discerete Cosine Transform	Run1	Run2	Run3	Run4	Run5	Avg
Histogram Based Facerec-L1	75.0	75.0	66.67	91.67	83.33	78.33
Histogram Based Facerec-L2	0.0	0.0	8.33	8.33	0.0	3.33

Table 11: Database : DBase Females

Algorithm	Run1	Run2	Run3	Run4	Run5	Avg
Principal Component Analysis	86.36	77.27	86.36	86.36	77.27	82.72
Locality Preserving Projections	Run1	Run2	Run3	Run4	Run5	Avg
Discerete Cosine Transform	Run1	Run2	Run3	Run4	Run5	Avg
Histogram Based Facerec-L1	77.27	81.82	81.82	81.82	81.82	80.91
Histogram Based Facerec-L2	9.09	4.54	4.54	0.0	4.54	4.54

Table 12: Algorithm : Principal Component Analysis

Database	Run1	Run2	Run3	Run4	Run5	Avg
ORL	95.0	100.0	95.0	100.0	100.0	98.0
YALE GIF	80.0	80.0	80.0	86.67	66.67	78.67
YALE PGM	66.67	66.67	86.67	60.0	86.67	73.33
YALE RESIZED	73.33	66.67	80.0	86.67	66.67	74.67
Umist	80.0	80.0	80.0	86.67	100.0	85.33
Caltech Original	25.0	0.0	8.33	33.33	16.67	16.67
Caltech Cropped	-	-	-	-	-	-
Georgia Tech Database (original)	100.0	100.0	100.0	100.0	100.0	100.0
Georgia Tech Database (Cropped)	-	-	-	-	-	-
DBase males	66.67	50.0	86.36	58.33	83.33	68.94
DBase Females	86.36	77.27	86.36	86.36	77.27	82.72

Table 13: Algorithm : Locality Preserving Projections

Database	Run1	Run2	Run3	Run4	Run5	Avg
ORL	Run1	Run2	Run3	Run4	Run5	Avg
YALE GIF	Run1	Run2	Run3	Run4	Run5	Avg
YALE PGM	Run1	Run2	Run3	Run4	Run5	Avg
YALE RESIZED	Run1	Run2	Run3	Run4	Run5	Avg
Umist	Run1	Run2	Run3	Run4	Run5	Avg
Caltech Original	Run1	Run2	Run3	Run4	Run5	Avg
Caltech Cropped	-	-	-	-	-	-
Georgia Tech Database (original)	Run1	Run2	Run3	Run4	Run5	Avg
Georgia Tech Database (Cropped)	-	-	-	-	-	-
DBase males	Run1	Run2	Run3	Run4	Run5	Avg
DBase Females	Run1	Run2	Run3	Run4	Run5	Avg

Table 14: Algorithm : Discrete Cosian Transform

Database	Run1	Run2	Run3	Run4	Run5	Avg
ORL	Run1	Run2	Run3	Run4	Run5	Avg
YALE GIF	Run1	Run2	Run3	Run4	Run5	Avg
YALE PGM	Run1	Run2	Run3	Run4	Run5	Avg
YALE RESIZED	Run1	Run2	Run3	Run4	Run5	Avg
Umist	Run1	Run2	Run3	Run4	Run5	Avg
Caltech Original	Run1	Run2	Run3	Run4	Run5	Avg
Caltech Cropped	-	-	-	-	-	-
Georgia Tech Database (original)	Run1	Run2	Run3	Run4	Run5	Avg
Georgia Tech Database (Cropped)	-	-	-	-	-	-
DBase males	Run1	Run2	Run3	Run4	Run5	Avg
DBase Females	Run1	Run2	Run3	Run4	Run5	Avg

Table 15: Algorithm : Histogram Based Facerec-L1

Database	Run1	Run2	Run3	Run4	Run5	Avg
ORL	97.5	100.0	97.5	97.5	95.0	97.5
YALE GIF	73.33	86.67	73.33	100.0	73.33	81.332
YALE PGM	80.0	80.0	73.33	73.33	80.0	77.33
YALE RESIZED	73.33	86.67	66.67	86.67	73.33	77.33
Umist	100.0	100.0	100.0	100.0	100.0	100.0
Caltech Original	33.33	41.67	33.33	33.33	8.33	30.0
Caltech Cropped	38.46	38.46	38.46	34.61	34.61	36.92
Georgia Tech Database (original)	100.0	96.0	100.0	98.0	98.0	98.4
Georgia Tech Database (Cropped)	90.0	96.0	92.0	84.0	92.0	90.8
DBase males	75.0	75.0	66.67	91.67	83.33	78.33
DBase Females	77.27	81.82	81.82	81.82	81.82	80.91

Table 16: Algorithm : Histogram Based Facerec-L2

Database	Run1	Run2	Run3	Run4	Run5	Avg
ORL	97.5	97.5	92.5	95.0	95.0	95.5
YALE GIF	73.33	73.33	66.67	80.0	80.0	74.67
YALE PGM	86.67	86.67	53.33	66.67	60.0	70.69
YALE RESIZED	93.33	73.33	66.67	80.0	53.33	73.33
Umist	100.0	100.0	100.0	100.0	100.0	100.0
Caltech Original	8.33	0.0	8.33	8.33	8.33	6.67
Caltech Cropped	7.69	0.0	3.85	0.0	3.85	3.08
Georgia Tech Database (original)	20.0	20.0	40.0	20.0	30.0	26.0
Georgia Tech Database (Cropped)	84.0	92.0	78.0	86.0	90.0	86.0
DBase males	0.0	0.0	8.33	8.33	0.0	3.33
DBase Females	9.09	4.54	4.54	0.0	4.54	4.54