python nmf.py

Total DATASET size:

n\_samples: 1140

n\_features: 2914

n\_classes: 5

Extracting the top 50 eigenfaces from 855 faces

done in 0.220s

Projecting the input data on the eigenfaces orthonormal basis

done in 0.827s

Fitting the classifier to the training set

done in 25.278s

Best estimator found by grid search:

SVC(C=50000.0, break\_ties=False, cache\_size=200, class\_weight='balanced',

coef0=0.0, decision\_function\_shape='ovr', degree=3, gamma=0.1, kernel='rbf',

max\_iter=-1, probability=False, random\_state=None, shrinking=True,

tol=0.001, verbose=False)

Predicting people's names on the test set

done in 0.011s

precision recall f1-score support

Colin Powell 0.53 0.55 0.54 64

Donald Rumsfeld 0.38 0.47 0.42 32

George W Bush 0.73 0.65 0.69 127

Gerhard Schroeder 0.32 0.41 0.36 29

Tony Blair 0.39 0.33 0.36 33

accuracy 0.55 285

macro avg 0.47 0.48 0.47 285

weighted avg 0.56 0.55 0.55 285

[[35 8 11 6 4]

[ 4 15 5 6 2]

[20 9 83 9 6]

[ 2 3 7 12 5]

[ 5 4 8 5 11]]

python nmf.py

Total DATASET size:

n\_samples: 1140

n\_features: 2914

n\_classes: 5

Extracting the top 100 eigenfaces from 855 faces

done in 0.308s

Projecting the input data on the eigenfaces orthonormal basis

done in 1.233s

Fitting the classifier to the training set

done in 26.049s

Best estimator found by grid search:

SVC(C=100000.0, break\_ties=False, cache\_size=200, class\_weight='balanced',

coef0=0.0, decision\_function\_shape='ovr', degree=3, gamma=0.01,

kernel='rbf', max\_iter=-1, probability=False, random\_state=None,

shrinking=True, tol=0.001, verbose=False)

Predicting people's names on the test set

done in 0.022s

precision recall f1-score support

Colin Powell 0.70 0.69 0.69 64

Donald Rumsfeld 0.47 0.62 0.53 32

George W Bush 0.76 0.60 0.67 127

Gerhard Schroeder 0.45 0.45 0.45 29

Tony Blair 0.30 0.45 0.36 33

accuracy 0.59 285

macro avg 0.53 0.56 0.54 285

weighted avg 0.63 0.59 0.60 285

[[44 7 6 3 4]

[ 4 20 4 1 3]

[12 12 76 8 19]

[ 1 1 5 13 9]

[ 2 3 9 4 15]]

python nmf.py

Total dataset size:

n\_samples: 1140

n\_features: 2914

n\_classes: 5

Extracting the top 150 eigenfaces from 855 faces

done in 0.458s

Projecting the input data on the eigenfaces orthonormal basis

done in 4.447s

Fitting the classifier to the training set

done in 25.999s

Best estimator found by grid search:

SVC(C=50000.0, break\_ties=False, cache\_size=200, class\_weight='balanced',

coef0=0.0, decision\_function\_shape='ovr', degree=3, gamma=0.1, kernel='rbf',

max\_iter=-1, probability=False, random\_state=None, shrinking=True,

tol=0.001, verbose=False)

Predicting people's names on the test set

done in 0.025s

precision recall f1-score support

Colin Powell 0.62 0.59 0.61 64

Donald Rumsfeld 0.26 0.31 0.29 32

George W Bush 0.68 0.80 0.73 127

Gerhard Schroeder 0.44 0.14 0.21 29

Tony Blair 0.36 0.30 0.33 33

accuracy 0.57 285

macro avg 0.47 0.43 0.43 285

weighted avg 0.56 0.57 0.55 285

[[ 38 12 11 1 2]

[ 6 10 12 0 4]

[ 9 9 101 2 6]

[ 5 2 12 4 6]

[ 3 5 13 2 10]]

python nmf.py

Total DATASET size:

n\_samples: 1140

n\_features: 2914

n\_classes: 5

Extracting the top 200 eigenfaces from 855 faces

done in 0.811s

Projecting the input data on the eigenfaces orthonormal basis

done in 9.185s

Fitting the classifier to the training set

done in 35.411s

Best estimator found by grid search:

SVC(C=50000.0, break\_ties=False, cache\_size=200, class\_weight='balanced',

coef0=0.0, decision\_function\_shape='ovr', degree=3, gamma=0.01,

kernel='rbf', max\_iter=-1, probability=False, random\_state=None,

shrinking=True, tol=0.001, verbose=False)

Predicting people's names on the test set

done in 0.046s

precision recall f1-score support

Colin Powell 0.61 0.69 0.65 64

Donald Rumsfeld 0.40 0.53 0.46 32

George W Bush 0.75 0.59 0.66 127

Gerhard Schroeder 0.41 0.48 0.44 29

Tony Blair 0.46 0.52 0.49 33

accuracy 0.59 285

macro avg 0.53 0.56 0.54 285

weighted avg 0.61 0.59 0.59 285

[[44 9 7 1 3]

[ 7 17 3 3 2]

[16 15 75 12 9]

[ 2 0 7 14 6]

[ 3 1 8 4 17]]