FACE RECOGNITION USING PCA ALGORITHM

CODE:

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%% Load Image Information from ATT Face Database Directory

faceDatabase = imageSet('FaceDatabaseATT','recursive');

%% Simple Face Recognition Example

%% Display Montage of First Face

figure;

montage(faceDatabase(1).ImageLocation);

title('Images of Single Face');

personToQuery = 1;

galleryImage = read(faceDatabase(personToQuery),1);

figure;

for i=1:size(faceDatabase,2)

imagelist(i) = faceDatabase(i).ImageLocation(5);

end

subplot(1,2,1);imshow(galleryImage);

subplot(1,2,2);montage(imageList);

diff = zeros(1,9);

[training,test] = partition(faceDatabase,[0.8 0.2]);

person = 5;

[hogFeature, visualization]= ...

extractHOGFeatures(read(training(person),1));

figure;

subplot(2,1,1);imshow(read(training(person),1));title('Input Face');

subplot(2,1,2);plot(visualization);title('HoG Feature');

trainingFeatures = zeros(size(training,2)\*training(1).Count,4680);

featureCount = 1;

for i=1:size(training,2)

for j = 1:training(i).Count

trainingFeatures(featureCount,:) = extractHOGFeatures(read(training(i),j));

trainingLabel{featureCount} = training(i).Description;

featureCount = featureCount + 1;

end

personIndex{i} = training(i).Description;

end

faceClassifier = fitcecoc(trainingFeatures,trainingLabel);

person = 1;

queryImage = read(test(person),1);

queryFeatures = extractHOGFeatures(queryImage);

personLabel = predict(faceClassifier,queryFeatures);

% Map back to training set to find identity

booleanIndex = strcmp(personLabel, personIndex);

integerIndex = find(booleanIndex);

subplot(1,2,1);imshow(queryImage);title('Query Face');

subplot(1,2,2);imshow(read(training(integerIndex),1));title('Matched Class');

figure;

figureNum = 1;

for person=1:5

for j = 1:test(person).Count

queryImage = read(test(person),j);

queryFeatures = extractHOGFeatures(queryImage);

personLabel = predict(faceClassifier,queryFeatures);

booleanIndex = strcmp(personLabel, personIndex);

integerIndex = find(booleanIndex);

subplot(2,2,figureNum);imshow(imresize(queryImage,3));title('Query Face');

subplot(2,2,figureNum+1);imshow(imresize(read(training(integerIndex),1),3));title('Matched Class');

figureNum = figureNum+2;

end

figure;

figureNum = 1;

end

OUTPUT:

