README

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Demo for training the Gaussian Models.

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Simply call the 'demo\_skin\_Models' function in the enclosed folder named GaussianModelSkinDetection and a window will pop up allowing

you to browse your file system - pick a file.

A window will appear with the image displayed and ask you to define contours

that represent 'skin'. In order to do this, click once - the cursor should change.

You can then click again (but hold down the mouse) and draw a contour -

release the mouse button when you are satisfied with the contour. You can draw

multiple contours by clicking once more to activate the contour drawing tool and

then draw the contour just as before. Do this as many times as you want.

Press <enter> when you are done defining 'skin' contours.

Another image will open and ask you to define contours that represent

'non-skin' regions - draw contours as described before.

You will do this process TWICE (once to train the SGM and once to train the

GMM).

Once you've done this, the models may take a few minutes to be generated, but

when they are finished you will see a few images pop up that show the predicted

skin regions that the SGM and GMM identified.

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Available in this directory.

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> computeGaussianProb

Given the input image, and a Gaussian model (specified by u and cov),

this function computes the prob. of each pixel in x belonging to the gaussian

> getGaussianModelParams

Given skin/non-skin training data, this function generates a Single Gaussian Model

and outputs the mean and covariance of the model

> getROIColors(I, instructions)

This function allows the user to contour a figure and outputs the RGB values of the

contoured regions in a colorLookup table

> GMMEM

Initiate the Expectation-Maximization algorithm to compute

model parameters for the Gaussian Mixture Model.

> GMMExpectation

Assign each point in X a score for each Gaussian (cluster), k.

> GMMMaximization

Given a score for each point in X, adjust the mean, variance, and

mixture coefficient for each Gaussian (cluster), k.

> GMMLogLikelihood

Determine how "good" the current model parameters fit the data.

> normalizeRGB

Given an RGB color, compute the normalized value.

> testSkinModels

For an image, this function will use the stored SGM and GMM models to segment the

face in the image

> trainSkinNonSkin

This function opens up a figure where the user can contour the image and select

skin regions; to exit, the user presses any key on the keyboard

The function then presents a figure where the user has to select the non-skin

regions

> sgm\_using\_training\_data

Compute the model parameters for the skin and non-skin SGMs.

> gmm\_using\_training\_data

Compute the model parameters for the skin and non-skin GMMs.

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Testing the whole system: SIFT + GMM + SGM and classifiers

>test\_image\_against\_database()

When this file is run, you can select a photo from the database (navigate to lfw\_subset and go to a subfolder and pick one of the photos named 1.jpeg, 2.jpeg, 3.jpeg and 4.jpeg).

The script will compare the photo selected to all the photos in the database.

It will output saying which person the test subject was matched to in the database using the original image, SGM and GMM

Author contact information.

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