
Face Matching

Computer Vision

University of Barcelona

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Author:

CAMPS SEREIX, Julià

1 Exercise 1

- 1 Explain which is the result showed in the Matlab Figures in Figure 1 and Figure 2 below.
- 2 Explain how the ‘Number of Shape Modes’ and the ‘Number of Appearance Modes’ are computed in the function `build_model_2d.m`.

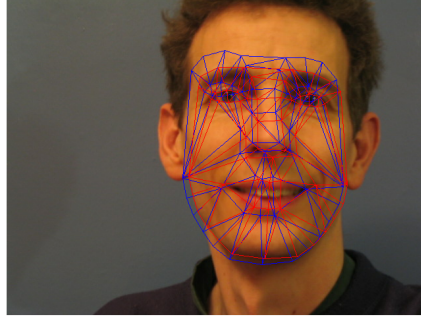


Figure 1: Resulting from the script `fit2d_test_complete.m` once changed the image number to be 10, instead of 3

In figure 1 we can observe:

- A testing face image selected from the training set, this image is the one displayed as the background.
- A blue mesh, that corresponds to a random shape generated with the trained model from the variances from one random image in the training set.
- A red mesh, that corresponds to this same blue shape, but once has been fitted to the testing image shown as background.

in blue the .



Figure 2: Resulting from the script `fit2d_test_complete.m` once changed the image number to be 10, instead of 3

In figure 2 we can observe the appearance of the testing image selected, which expresses the variance within respect to the mean of all patches chopped from the shapes computed and fitted over the training images.

2 Exercise 2

- 1 In the script `fit2d_test_complete.m`, change the selected test image from '3' to '10' and save the resulted figures.
- 2 In the function `build_model_2d.m`, build two images with all the training shapes before and after the alignment using Procrustes Analysis.

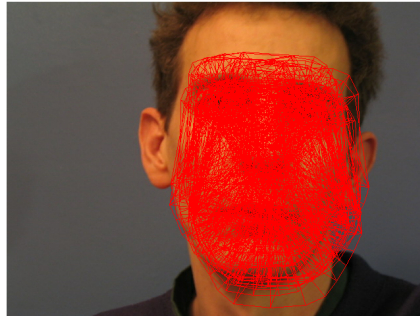


Figure 3: Resulting from the script `fit2d_test_complete.m` once changed to show the plot of all shapes on the testing image face.

In figure 3 we can observe all the shapes generated by all the images in the training set using the model trained.



Figure 4: Resulting from the script `fit2d_test_complete.m` once changed to show the plot of all shapes on the testing image face aligned.

In figure 4 we can observe all the shapes generated by all the images in the training set using the model trained aligned correctly. So we can appreciate better the information that are explaining this shapes together, which is all possible deformations on the faces trained (always than they appear on the training set, ex: if no training image with glasses, we wont be able to explain glasses, but still we will know where the eyes should be).