Practicum Computational Vision: Face Matching

Tuesday, January 12 , 2016

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Contents

Abstract

In this session, we work with Active Shape Models and Active Appearance Models to find faces in images. You can download from the Campus Virtual all the material you will need for this practicum.

Face matching

The folder "CV Face matching/icaam-1.0-r17" contains some matlab code of Inverse compositional Active Appearance Models (ICAAM)[1]. This code correspond to the implementation of ICAAM described in paper [1].

Exercise 1

The file fit2d_test_complete.m (in icaam/examples/) corresponds to a script for building a 2D shape model from some training face images and use it for testing the fitting of the model over a new test image. Open this file, read carefully the script, run it and answer the following questions:

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

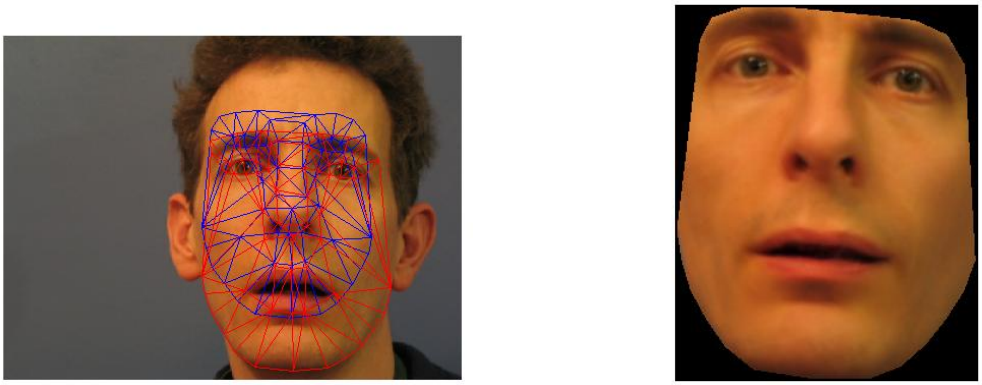

Figure 1: Figure 1 and Figure 2 resulting from the script fit2d_test_complete.m

Exercise 2

Implement the following changes in the code:

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. As it is done in the Figure 2 below. Use the function triplot.m with the matrix 'shape_triangles' as the first argument.

[1] www.mathworks.com/matlabcentral/fileexchange/32704-icaam-inverse-compositional-active-appearance-models

Figure 2: Training shapes before and after the alignment using Procrustes Analysis.

Note: The code folder used here is not the complete version with all codes and databases available. For the complete and last version of the code visit: http://sourceforge.net/projects/icaam/files/

Practicum submission

Deadline: 12 of December, 23:55h by Campus Vitual.
The material to submit is a file "StudentName_CV_LabFaceMatching.zip" containing:

- A report entitled "Face Matching" containing the answers to the posed questions and the figures requested in the exercises.
- The files fit2d_test_complete.m and build_model_2d.m where code should be changed according to the statement.

References

[1] Iain Matthews and Simon Baker: Active Appearance Models Revisited. IJCV 2004