

How to use Rtrdf

Image acquisition : check in “Format” that the image is RGB 24 bit and image is 320x240. If the format was not 320x240 RGB24, please change it and **RESTART** the application.

Image recording (and computation of Fourier 1 descriptors)

Take a name in the “Object name” edit box.

Put an object in the camera scope.

Click on “Learning Fourier 1”. Wait for a while (the number of recorded images can be changed in the corresponding edit box).

Repeat the process for a few objects (at least 3).

Check in the folder named “Work folder” : you should find

- A folder named “images” for recorded images with subfolders for objects-

- A folder named “descriptors” for Fourier1, Fourier2 or Zernike moments, with subfolders.

SVM learning

Click on “SVM learning” and select the folder “Fourier1”

When the learning process is completed, a file named “svm.model” is saved in the Fourier1 folder.

Real time decision

Now click on “Decision Fourier1”. Select the “SVM.model” file saved before.

Observe the output of the classification process.

It is also possible to compute the other descriptors without recording new images. Click on “Zernike BMP” and just click on Select in the “Select Folder” Dialog Box.

Repeat the SVM learning step for the Zernike moments.

The real time decision with Zernike moment is obtained clicking “Decision Zernike”

Gesture learning and recognition are still under development. Just record several gestures (at least 5 records for each, and 3 classes of gestures), and activate the recognition (gesture recognition). The record of a gesture starts when you move in front of the webcam and stop after a around 2s (fixed in this version). Don't mix gestures and objects in the same work folder, it won't work...

This program is not free software, it is just a demo software of real time pattern recognition useful for research purpose only. You are not allowed to redistribute it and/or modify it.

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The original methods are described in

- **"Generalized Fourier Descriptors with Applications to Objects Recognition in SVM Context"**, Fethi SMACH, Cédric LEMAITRE, Jean Paul GAUTHIER, Johel MITERAN, Mohamed ATRI, Journal of Mathematical Imaging and Vision (JMIV), Springer, 2007
- **FPGA-based accelerator for Fourier Descriptors computing for color object recognition using SVM**, Fethi SMACH, Johel MITERAN, Mohamed ATRI, Julien DUBOIS, Mohamed ABID, Jean Paul GAUTHIER, Journal of Real-Time Image Processing (JRTIP), Springer, 2007

And <http://www.csie.ntu.edu.tw/~cjlin/libsvm/> for the SVM library, from Chih-Chung Chang and Chih-Jen Lin.

About LibSVM :

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