

Implementation of SOBS algorithm as described in:

L. Maddalena, A. Petrosino, [A Self-Organizing Approach to Background Subtraction for Visual Surveillance Applications](#), **IEEE Transactions on Image Processing**, DOI: 10.1109/TIP.2008.924285, Vol. 17, no. 7, pagg. 1168-1177, July 2008

### Usage:

SOBS <SeqName> <#FirstFrame> <#LastFrame> [Parameters]

where

o <SeqName>: sequence name (complete path), not including frame numbers. Image sequences consist of binary PPM image frames with consecutive numbers, named in the following form

<SeqName>.<number>.ppm

The number of digits for <number> must be the same for all sequence frames (e.g. a sequence with 120 frames must be numbered from 1001 to 1120, and not from 1 to 120)

o <#FirstFrame>, <#LastFrame>: number of first and last sequence frame to be considered.

o [parameters]: optional, including:

-n #: (square root of) number of weight vectors for each pixel. Default 3

-K #: Number of initial frames for calibration. Default 200

-e1 #: Distance threshold  $e_1$  for calibration phase (eqn. (2)). Default 0.1

-e2 #: Distance threshold  $e_2$  for online phase (eqn. (2)). Default 0.03

-c1 #: Learning rate  $c_1$  for calibration phase (eqn. (4)). Default 1.0

-c2 #: Learning rate  $c_2$  for online phase (eqn. (4)). Default 0.05

-g #: Value for  $g$  in eqn. (5). Default 0.7

-b #: Value for  $b$  in eqn. (5). Default 1.0

-tS #: Value for  $t_S$  in eqn. (5). Default 0.1

-tH #: Value for  $t_H$  in eqn. (5). Default 10.0

-s: To apply shadow removal. Default: no shadow removal

-m: To save background model images. Default: do not save

-l: To save just last detection mask. Default: save all

<!--[if !supportEmptyParas]--> <!--[endif]-->

### Example of use:

```
SOBS c:/Sequences/WavingTrees/WavingTrees 1000 1247 -n 3 -e1 0.1 -e2 0.03 -K 200 -c1 1.0  
-c2 0.05 -l
```

where sequence *WavingTrees*, coming from sequences adopted in K. Toyama, J. Krumm, B. Brumitt, and B. Meyers, “Wallflower: principles and practice of background maintenance,” in *Proc. 7th IEEE Conf. Computer Vision*, 1999, vol. 1, pp. 255–261, has been saved in binary PPM image files named:

WavingTrees.1000.ppm, ..., WavingTrees.1247.ppm

and stored in directory `c:/Sequences/WavingTrees`.

Download the SOBS software [here](#) .