1 Overview

The code implements Shashua and Ullman's saliency map according to: *Alter, T.D., Basri, R*. – "Extracting Salient Curves from Images: An Analysis of the Saliency Network" IJCV(27), No. 1, March 1998, pp. 51-69.

2 Technical notes

Unpack the gzipped file "susal.tgz" by writing at the command prompt:

> ➢ tar –xzf usual.tgz

The archive contains the following files:

File-Name	Description
rand.c, sumap_read_wh.c , susal.c utilities.c, sumap_read.c ,sumap_to_curves.c , susal-utilities.c	Source files
libvis.a	Thomas Bruel's computer vision library. (Binary compiled under Linux)
Makefile	Compiling directive file
Circ_Spec.pgm	Sample input in PGM format
circ-noise-1	Sample input in saliency map format

The code has been compiled and tested under the Linux operating system. To compile the project type "make" at the command prompt. The resulting executable is saved under the name "susal".

3 Usage

> ➢ Susal [Input-file] [Outputfile] [Parameter file]

3.1 Input-File

The input file can be in the following format:
1. An 8 bit raw PGM image.
2. Saliency map in the following format:

    A. Header : `points: P; dim: 4; curves: 0;`
       Where P is the number of points in the map.
    B. Body : Each point has 4 values:

X	X coordinate
Y	Y coordinate

Gradient orientation	**Orientation Number according to the following key:**
	
	16 orientations:
	<pre>Y|X= -2 -1 0 1 2
	-|----------------------
	2| 6 5 4 3 2
	 |
	1| 7 . . . 1
	 |
	0| 8 . X . 0
	 |
	-1| 9 . . . 15
	 |
	-2| 10 11 12 13 14</pre>
	24 orientations:
	<pre>Y|X= -3 -2 -1 0 1 2 3
	-|----------------------------
	3| 9 8 7 6 5 4 3
	 |
	2| 10 2
	 |
	1| 11 1
	 |
	0| 12 . . X . . 0
	 |
	-1| 13 23
	 |
	-2| 14 22
	 |
	-3| 15 16 17 18 19 20 21</pre>

Gradient Magnitude	Usually equal to 1

A complete map file looks something like:

```
points: 10; dim: 4; curves: 0;
10 10 0 1.;
12 10 0 1.;
14 10 0 1.;
16 10 0 1.;
```

```
18 10 1 1.;
20 11 1 1.;
22 12 1 1.;
24 13 1 1.;
26 14 1 1.;
28 15 1 1.;
```

3.2 Output-File

The program output consists of the following:

1. Outputfile.pgm – A gray level saliency map.
2. Outputfile_cur.pgm – A binary image showing the most salient curve.
3. Outputfile.map – The complete saliency map in text format, note that this output is optional and can be controlled via the parameters file.

3.3 Parameter-File

The parameter file should hold one parameter for each line according to the following table:

Line no.	Field description	Possible values
1	Input type file format	0/1: 0 - Saliency map 1 - 8 bit raw PGM image
2	Sigma for Gaussian smoothing	Active only when the input is an image. Sigma=1,2.5
3	Number of iterations	10-10000
4	Number of discrete orientations	16/17/24/25: if odd (17/25) then reset gap penalty, rho, to 0.
5	Length to trace	typically = the number of iterations
6	Prints iteration number after every printmod iterations	Printmod=1-50
7	Print max saliency every printmod iterations	0- Don't print 1- Print
8	when done print to stdout the elements on the most salient curve	0- Don't print 1- Print
9	Leave the bug from Shashua & Ullman's paper scale (multiplies element length)	0- no 1- Yes

10	Scale (multiplies element length)	1
11	Print the saliency map to <outfile>.map	0- no 1- Yes