

TOPOLOGICAL WATERSHED

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Chapter 1

Main Page

1.1 Licence

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Chapter 2

File Index

2.1 File List

Here is a list of all documented files with brief descriptions:

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Chapter 3

File Documentation

3.1 heightminima.c File Reference

h-minima operator

3.1.1 Detailed Description

h-minima operator

Usage: heightminima in.pgm connex h out.pgm

Description: The heightminima operator eliminates those regional minima which have a height less than the value **h**. The regional minima are defined with connexity **connex**.

Types supported: byte 2d, byte 3d

Category: connect

Author:

Michel Couprie

3.2 minima.c File Reference

regional minima

3.2.1 Detailed Description

regional minima

Usage: in.pgm *connex* out.pgm

Description: Selects the regional minima of a grayscale image with connectivity **connex**.

Types supported: byte 2d, int32_t 2d, byte 3d, int32_t 3d

Category: connect, topogray ,

Author:

Michel Couprie

3.3 pgm2raw.c File Reference

suppress the header from a pgm file

3.3.1 Detailed Description

suppress the header from a pgm file

Usage: pgm2raw in.pgm out.raw

Description: suppress the header from a pgm file

Types supported: byte 2d, byte 3d

Category: convert

Author:

Michel Couprie

3.4 raw2pgm.c File Reference

converts from raw format into pgm format

3.4.1 Detailed Description

converts from raw format into pgm format

Usage: in.raw rs cs ds headersize nbytespervox littleendian [xdim ydim zdim] out.pgm

Description: Converts from raw format into pgm format.

Parameters:

- **in.pgm** : source file in raw format
- **rs** (int32_t): row size (number of voxels in a row)
- **cs** (int32_t): column size (number of voxels in a column)
- **ds** (int32_t): number of planes
- **headersize** (int32_t): size of the header in bytes (information in the header will be ignored)
- **nbytespervox** (int32_t): number of bytes per voxel (1, 2 or 4)
- **littleendian** (int32_t) 1: littleendian, 0: bigendian. Usual choice is 0.
- **xdim** (float, optional) : gap (in the real world) between two adjacent voxels in a row.
- **ydim** (float, optional) : gap (in the real world) between two adjacent voxels in a column.
- **zdim** (float, optional) : gap (in the real world) between two adjacent planes.

Types supported: byte 3D, int16_t 3D, int32_t 3D

Warning:

Signed integers are not supported.

Category: convert

Author:

Michel Couprie

3.5 watershed.c File Reference

topological binary watershed

3.5.1 Detailed Description

topological binary watershed

Usage: watershed in.pgm mark.pgm connex [i] out.pgm

Description: Topological watershed as defined in [CB97,CNB05].

The parameter **connex** indicates the connectivity of the minima. Possible choices are 4, 8 in 2d and 6, 26 in 3d.

A marker image is supplied in **mark.pgm**, see [CNB05a] for the role of this marker..

The result is a binary image, which is the complementary of the set of regional minima of the grayscale topological watershed.

If the parameter **i** is given, then the dual operator is applied.

References:

[CB97] M. Couprie and G. Bertrand: "Topological Grayscale Watershed Transformation", SPIE Vision Geometry V Proceedings, 3168 (136–146), 1997.

[CNB05] M. Couprie and L. Najman and G. Bertrand: "Quasi-linear algorithms for the topological watershed", Journal of Mathematical Imaging and Vision, Vol. 22, No. 2-3, pp. 231-249, 2005.

[CNB05a] M. Couprie and L. Najman and G. Bertrand: "Algorithms for the topological watershed", Discrete geometry for computer imagery, Springer, Vol. 3429, pp. 172-182, 2005.

Types supported: byte 2d, byte 3d

Category: connect

Author:

Michel Couprie

3.6 wshedtopo.c File Reference

topological grayscale watershed

3.6.1 Detailed Description

topological grayscale watershed

Usage: wshedtopo in.pgm connex [i] out.pgm

Description: Topological grayscale watershed as defined in [CB97,CNB05].

The parameter **connex** indicates the connectivity of the minima. Possible choices are 4, 8 in 2d and 6, 26 in 3d.

If the parameter **i** is given, then the dual operator is applied.

References:

[CB97] M. Couprie and G. Bertrand: "Topological Grayscale Watershed Transformation", SPIE Vision Geometry V Proceedings, 3168 (136–146), 1997.

[CNB05] M. Couprie and L. Najman and G. Bertrand: "Quasi-linear algorithms for the topological watershed", Journal of Mathematical Imaging and Vision, Vol. 22, No. 2-3, pp. 231-249, 2005.

Types supported: byte 2d, byte 3d

Category: connect

Author:

Michel Couprie

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