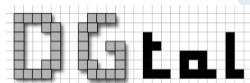


DGtal: Digital Geometry Tools and Algorithms

<http://liris.cnrs.fr/dgtal>

The DGtal Team

DGCI demo session, April 2011

The logo for DGtal, where the letters 'D', 'G', and 't' are rendered in a pixelated, grid-based font, while 'a' and 'l' are in a solid, bold sans-serif font.

UMR 5127

DGtal : why, who

Objectives

- to make easier discrete geometry for the neophyte (student, researcher from another field, ...)
- to test quickly new ideas, with objective comparison wrt existant works
- to make easier the implementation of demonstrators
- to help spread our research results to other domains
- to pursue a federative project

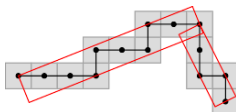
Who ? for now ...

- LIRIS (Lyon)
- Gipsa-lab (Grenoble)
- GREYC (Caen)
- LAMA (Chambéry)
- LORIA (Nancy)

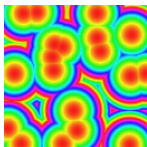
DGtal : what for ?

Main features

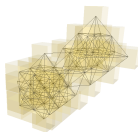
- to define digital objects in arbitrary dimension
- to propose algorithms for topological and geometric analysis
- to provide I/O mechanisms and visualization tools



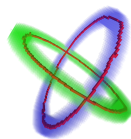
DSS



DT



Objects



Thinning

DGtal philosophy and structure

- Genericity and efficiency : C++ library, concepts
- LGPL or GPL with restrictions
- user friendly, not necessarily kernel-developer friendly

Kernel

Basic types, data structures

- digital space, point, sets, lin. algebra
- software infrastructure : trace, concept validation, ...

Images

- generic container
- several implementation : standard, other adapted to big images

Base modules

Topology module

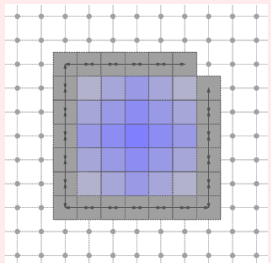
- digital topology : connectedness, border, simple points
- grid topology : cells, contours, surfaces, tracking

Geometry module

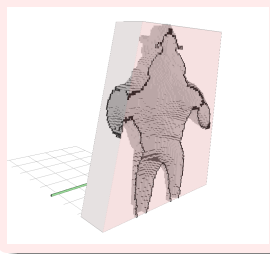
- primitives, DSS recognition
- contour analysis : decomposition, convexity
- volumetric analysis : distance transforms, medial axis

Other modules, or modules with external dependencies

2D vector export (SVG, ...)



3D visualization



Backends

- Kiteware's ITK
- VIGRA (soon)

Import/export

- images (ImageMagick)
- volumes (libvol)

Project modules

- noisy objects (GeoDIB)
- ...

DGtal Roadmap

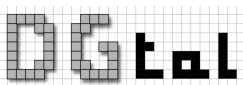
New in milestone 0.3 (now)

- Kernel update : integer genericity, concept checking, domain iterators
- 2D, nD-volumetric geometry : primitive decomposition, tangential cover, reverse distance transformation
- 3D visualization with QGLviewer : stream mechanism as in 2D
- grid or interpixel topology : cells, digital surfaces, surface tracking
- shape construction

Join DGtal

- new contributors are welcome (new bug-reporters, documentation readers are welcome too)
- collaborative forge, development infrastructure
- DGtal week this summer

DGtal Team



<http://liris.cnrs.fr/dgtal>



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