DGtal: Digital Geometry Tools and Algorithms
http://liris.cnrs.fr/dgtal

The DGtal Team
DGCI demo session, April 2011
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

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