EuroGraphics 99 Tutorial
Multiresolution Modeling of Surfaces and Volume Data

A Keyword-indexed Bibliography

Paolo Cignoni

I.E.I. - Consiglio Nazionale delle Ricerche

via S. Maria 46, 56126 Pisa, ITALY

e-mail: cignoni@iei.pi.cnr.it

Leila De Floriani

DISI - Universitá di Genova

Via Dodecaneso, 35 - 16146 GENOVA (Italy)

e-mail: deflo@disi.unige.it

Enrico Puppo

I.M.A. - Consiglio Nazionale delle Ricerche

via De Marini 6, 16149 Genova, ITALY

e-mail: puppo@ima.ge.cnr.it

Roberto Scopigno

CNUCE - Consiglio Nazionale delle Ricerche

via S. Maria 36, 56126 Pisa, ITALY

e-mail: r.scopigno@cnuce.cnr.it

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This is a bibliography of some of the literature and Web resources on mesh simplification and LOD appeared before Summer 1999.

A list of keywords is given, and for each keyword relevant citations are listed, ordered alphabetically by author. Obviously, some papers may be referred to by more than one keyword. Keywords are cross-referenced through abbreviations in the list of references (see list of captions).

Main sources of this bibliography, as well as relevant URLs are listed.

This bibliography is certainly incomplete, and some papers could be incorrectly referenced or assigned to categories. Readers are welcome to browse through this list, and to look for errors. If you have additions and/or corrections please email us.

Keyword Index

Tutorials and Survey Papers:

- on simplification: [4, 17, 36, 63, 80, 99, 105, 112, 42]

- on multiresolution: [29, 62, 99, 100]

- on wavelets: [86, 119, 120]

Simplification techniques:

- for manifold surfaces: [3, 5, 11, 13, 19, 16, 20, 21, 35, 40, 44, 45, 49, 50, 46, 51, 52, 56, 58, 59, 64, 70, 65, 67, 69, 71, 72, 75, 78, 84, 87, 95, 101, 102, 104, 106, 108, 113, 109, 111, 114, 115, 121, 123, 124]

- for terrains and height fields: [2, 1, 4, 6, 7, 32, 39, 43, 80, 88, 103, 117]

- for parametric surfaces: [20, 73, 76, 75]

- for images: [7, 12, 61, 96, 116]

- for volume data: [14, 15, 57, 89, 48, 47, 131, 90, 102, 118, 122]

LOD models:

- layered:

  - for manifold surfaces: [8, 21, 41, 110, 125, 126]
  - for terrains and height fields: [23, 38]
  - for volume data: [14, 47, 54, 128]

- uniform refinement:

  - for manifold surfaces: [11, 13, 34, 67, 74, 82, 83, 106, 95]
  - for terrains and height fields: [9, 24, 107, 124]
  - for images: [116]
  - for volume data: [15, 93, 127, 128, 48, 94]

- selective refinement:

  - for manifold surfaces: [16, 25, 28, 53, 65, 66, 79, 95, 130, 129, 132]
  - for terrains and height fields: [10, 18, 22, 30, 26, 33, 68, 77, 37, 81, 85, 97, 98]
  - for parametric surfaces: [77, 27]
  - for images: [61, 65]
  - for volume data: [31, 60]

Methods using wavelets:

- for manifold surfaces: [11, 34, 46, 79, 83, 120, 55]

- for images: [61, 119]

- for volume data: [54, 91, 92, 93, 127]

Source material

We list sources appeared at least three times in the following references.

Journals:

- *ACM Transactions on Graphics*

- *Computer Graphics Forum*

- *Computers and Graphics*

- *IEEE Computer Graphics and Applications*

- *IEEE Transactions on Visualization and Computer Graphics*

- *The Visual Computer*

- *SPIE*

Conference Proceedings:

- *ACM SIGGRAPH*

- *IEEE Visualization*

- *ACM/IEEE Symp. on Volume Visualization*

- *Eurographics*

Web resources

- Multiresolution modeling (Michael Garland, CMU - CS)
  http://www.cs.cmu.edu/afs/∼garland/www/multires/index.html

- UNC Simplification Group (Univ. of Nort Carolina)
  http://www.cs.unc.edu:80/ luebke/simplify/index.html

- Visual Computing Group (CNR - IEI and CNUCE)
  http://vcg.iei.pi.cnr.it

- Geometric modeling group (Univ. Genova - DISI)
  http://www.disi.unige.it/research/Geometric_modeling/

- Unstructured decimation of tessellated domains (Iowa State - ICEMT)
  http://www.icemt.iastate.edu/Projects/xmate/html/xmate.html

- LevelOfDetail for behaviours (UC Berkeley - CS)
  http://http.cs.berkeley.edu/∼schenney/behaviours/summary.html

- The Caltech Multi-Res Modeling Group (Caltech - CS)
  http://www.multires.caltech.edu/

- Surface approximation and multiresolution modeling (Joseph S.B. Mitchell, SUNY-SB - CS)
  http://ams.sunysb.edu/∼jsbm/surfapprox.html

- LOD overview (Mike Krus, CNRS - LIMSI)
  http://www.multimania.com/mkrus/CG/LODS/

- Short simplification overview (by M. Krus, et al.)
  http://www.acm.org/crossroads/xrds3-4/levdet.html

- Hugues Hoppe (Microsoft research - CG group)
  http://research.microsoft.com/∼hoppe/

- Jonathan Cohen (Univ. North Carolina - CS)
  http://www.cs.unc.edu/∼cohenj/

Commercial Packages

- IBM 3D Interaction Accelerator, by IBM
  http://www.research.ibm.com/3dix

- Polygon reduction editors, by SGI
  http://cosmo.sgi.com/worlds/developer/DataSheet/
  http://cosmo.sgi.com/worlds/support/CosmoWorlds_UG
  http://www.sgi.com/Technology/OpenGL/optimizer/presentation.html

- IMEdit/IMCompress 2.0 Surface simplifier, by Innovmetric,
  http://www.innovmetric.com./

- Geomagic Decimator Surface simplifier, by Geomagic,
  http://www.geomagic.com/products/decimator.html

- Rational Reducer Surface simplifier, by System in Motion
  http://www.sim.no/polyred.html

- Decimate, by Cyberware,
  http://www.cyberware.com/products/Decimate.html

- Multiresolution Geometry SDK, by Sven Technologies,
  http://www.sven-tech.com/products/mrg/

Keyword abbreviations

A: application

- **c:** to CAD
- **g:** to geographical information systems
- **i:** to image processing
- **r:** to virtual reality
- **v:** to volume visualization

D: type of data

- **i:** images
- **m:** manifold surfaces
- **p:** parametric surfaces
- **t:** terrains and height fields
- **v:** volume data

M: LOD (multiresolution) model

- **l:** layered
- **u:** supporting uniform refinement
- **v:** supporting selective (variable) refinement

S: simplification technique

T: tutorial or survey

W: technique based on wavelets

Example: **[M:u;D:i,t;W]** denotes a paper containing a multiresolution model supporting uniform refinement, based on wavelets, for images and terrain data.

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