

Curriculum Vitae et Studiorum

Paolo Cignoni

I.S.T.I. - C.N.R.
Via Moruzzi, 1
56124 PISA
ITALY

Email: p.cignoni@isti.cnr.it
Web: <http://vcg.isti.cnr.it/~cignoni>
Phone: +39 050 3152 926

Synthetic Education and Experience

- 04/1992 graduated cum laude, obtaining a *Laurea* (Ms equiv.) at the Computer Science Department of the Pisa University;
- 05/1998 received a PhD from the Computer Science Department of the Pisa University with the thesis "Scientific Visualization based on Simplicial Complexes";
- 01/1996 Researcher at the ISTI: Institute of Information Science and Technologies of the National Research Council in Pisa, Italy.

Professional Activities

Reviewer for: "IEEE Transaction on Visualization and Computer Graphics", "ACM Transaction on Graphics", "Computer Graphics Forum", "Computer & Graphics", "IEEE Visualization Conference", "ACM Siggraph", "Eurographics Conference" and many others.

Program Committee Member of: ACM Web3D 2003, IEEE Symposium on Parallel and Large Data Visualization and Graphics 2003, Eurographics Symposium on Parallel Graphics and Visualization 2004, SIBGRAPI/SIAGC 2004, ACM Symposium on Solid and Physical Modeling 2005, Eurographics 2005, Symposium on Volume Graphics 2005

Teaching

At Computer Science Department of the Pisa University:

- 1997-1998, 1998-1999, 1999-2000, 2000-2001 and 2001-2002 Teaching Assistant of "*Interazione Uomo Macchina - Fondamenti di Computer Graphics*" hold by prof. G. Attardi;
- 2002-2003, 2003-2004, and 2004-2005.: I hold the main Computer Graphics course at the Computer Science Department named "*Costruzione di Interfacce*".

I also supervised many students in their tesi di laurea (Master Thesis) at the Computer Science Department of the Pisa University and two PhD students.

Awards

- **Eurographics Young Researcher Award 2004**, The Eurographics Awards Programme yearly recognizes individuals who have significantly advanced the field of computer graphics
- **Second Best Paper Award Eurographics 2003**, for the paper: P. Cignoni, F. Ganovelli, E. Gobbetti, F. Marton, F. Ponchio, R. Scopigno, "*BDAM - Batched Dynamic Adaptive Meshes for High Performance Terrain Visualization*"
- **Best Paper Award 2000, Journal Computer & Graphics** (Pergamon Press - Elsevier), Dec. 2001, Vol. 25(6), pp. III-V, for the paper: P. Cignoni, C. Montani, F. Ganovelli, R. Scopigno, "*Reconstruction of Topologically Correct and Adaptive Trilinear Isosurfaces*", Computers & Graphics, Pergamon Press, Vol.24, no. 3, May 2000, pp.399-418.
- **Second Best Paper Award (and Best Student Paper), Eurographics 2000**, for the paper: M. Tarini, P. Cignoni, C. Rocchini, R. Scopigno, "*Real Time, Accurate, Multi-Featured Rendering of Bump Mapped Surfaces*", Computer Graphics Forum, vol. 19(3), 2000, pp. 119-130.

- **Second Best Paper Award 1998, Journal Computer & Graphics** (Pergamon Press - Elsevier), Dec. 1999, Vol. 24(1), pp.3-4, for the paper: P. Cignoni, C. Montani, R. Scopigno, "A Comparison of Mesh Simplification Algorithm", Computers & Graphics, Pergamon Press, Vol. 22(1), 1998, pp. 37-54.

Publications

Siggraph Papers

1. P. Cignoni, F. Ganovelli, E. Gobbetti, F. Marton, F. Ponchio, R. Scopigno
Adaptive TetraPuzzles: Efficient Out-of-Core Construction and Visualization of Gigantic Multiresolution Polygonal Models
ACM Trans. on Graphics, vol. 23(3), 2004, pp. .?? (Siggraph '04, in press)
2. D. Koller, M. Turitzin, M. Levoy, M. Tarini, G. Croccia, P. Cignoni, R. Scopigno
Protected Interactive 3D Graphics Via Remote Rendering
ACM Trans. on Graphics, vol. 23(3), 2004, pp..?? (Siggraph '04, in press)
3. M. Tarini, K. Hormann, P. Cignoni, C. Montani
PolyCube-Maps
ACM Trans. on Graphics, vol. 23(3), 2004, pp..?? (Siggraph '04, in press)

Chapter in Books

1. P. Cignoni, R. Scopigno
Making Profitable Use of the Digital 3D Model in the David's Restoration
Chapter in book in "Exploring David - Diagnostic Tests and State of Conservation", S. Bracci, F. Falletti, M. Matteini, R. Scopigno eds., Giunti Editore S.p.A., Florence, 2004.
2. P. Cignoni, C. Montani, E. Puppo, and R. Scopigno
Optimal Isosurface Extraction
Chapter in book "Visualization HandBook", Academic Press, 2003
3. R. Borgo, P. Cignoni, and R. Scopigno
Simplicial-based techniques for multi-resolution volume visualization: an overview
Chapter in book "Geometric Modeling for Scientific Visualization", Brunnett G., Hamann B., Müller H., Linsen L. (Eds.), Springer Verlag, 2003

International Journals

1. M. Callieri, P. Cignoni, F. Ganovelli, G. Impoco, C. Montani, P. Pingi, F. Ponchio, R. Scopigno
Visualization and 3D data processing in David's restoration,
IEEE Computer Graphics & Applications, 24(2), Mar/Apr 2004, pp. 16-21.
2. C. Rocchini, P. Cignoni, F. Ganovelli, C. Montani, P. Pingi, and R. Scopigno
The Marching Intersections Algorithm for Merging Range Images,
The Visual Computer, 20 (2-3), May 2004, 149 – 164.
3. P. Cignoni, Paola Magillo, Leila De Floriani, Enrico Puppo, R. Scopigno
Memory-Efficient Selective Refinement on Unstructured Tetrahedral Meshes for Volume Visualization
IEEE Trans. on Visualization and Computer Graphics, Volume 10 (1), 29-45, Jan.-Feb. 2004.
4. P. Cignoni, C. Rocchini, C. Montani, R. Scopigno
External Memory Management and Simplification of Huge Meshes
IEEE Trans. on Visualization and Comp. Graph., vol. 9(4), Oct-Dic 2003, pp.525-537
5. P. Cignoni, F. Ganovelli, E. Gobbetti, F. Marton, F. Ponchio, R. Scopigno
BDAM: Batched Dynamic Adaptive Meshes for High Performance Terrain Visualization
Computer Graphics Forum, vol. 22(3), Sept. 2003, pp.505-514

6. P. Cignoni, R. Scopigno, M. Tarini
A simple Normal Enhancement technique for interactive Non-Photorealistic Renderings
Computer & Graphics, Vol 27, 2003, p. ??
7. C. Rocchini, P. Cignoni, C. Montani, R. Scopigno
Acquiring, Stitching and Blending Appearance Attributes on 3D Models
The Visual Computer, Springer International, Vol 18 (3), 2002, pp. 186-204
8. F. Ganovelli, P. Cignoni, C. Montani, R. Scopigno
Enabling Cuts on Multiresolution Representation
The Visual Computer, Springer International, Vol 17, 2001, pp. 278-286
9. C. Rocchini, P. Cignoni, C. Montani, P. Pingi, R. Scopigno
A low cost optical 3D scanner
Computer Graphics Forum, vol. 20, 2001, pp. 299-308
10. P. Cignoni, F. Ganovelli, C. Montani, R. Scopigno
Reconstruction of Topologically Correct and Adaptive Trilinear Isosurfaces
Computers & Graphics, Elsevier Science, Vol. 24(3): 399-418, June 2000
11. M. Tarini, P. Cignoni, C. Rocchini, R. Scopigno
Real Time, Accurate, Multi-Featured Rendering of Bump Mapped Surfaces
Computer Graphics Forum, vol. 19 (3), 2000, pp. 119-130
12. F. Ganovelli, P. Cignoni, C. Montani, R. Scopigno
A Multiresolution Model for Soft Objects supporting interactive cuts and lacerations
Computer Graphics Forum, vol. 19 (3), 2000, pp. 271-281
13. C. Rocchini, P. Cignoni
Generating Random Points in a Tetrahedron
Journal of Graphics Tools, vol 5 (4), 2000, pp. 9-12
14. P. Cignoni, C. Montani, C. Rocchini, R. Scopigno, M. Tarini
Preserving attribute values on simplified meshes by re-sampling detail textures
The Visual Computer, Springer International, Vol. 15 (10): 519-539, 1999.
15. P. Cignoni, C. Montani, and R. Scopigno.
DeWall: a fast divide & conquer Delaunay triangulation algorithm in Ed.
Computer Aided Design, 30(5):333-341, Elsevier, 1998.
16. P. Cignoni, C. Montani, and R. Scopigno.
A comparison of mesh simplification algorithms.
Computers & Graphics, 22(1): 37-54, 1998.
17. P. Cignoni, C. Montani, C. Rocchini and R. Scopigno.
Metro: measuring error on simplified surfaces.
Computer Graphics Forum, 17(2): 167-174, 1998.
18. P. Cignoni, C. Montani, C. Rocchini, R. Scopigno
Zeta : a resolution modeling system
GMIP: Graphical Models and Image Processing, vol.60(5): 305-329, September 1998
19. A. Ciampalini, P. Cignoni, C. Montani, and R. Scopigno.
Multiresolution decimation based on global error.
The Visual Computer, 13(5):228-246, June 1997.
20. P. Cignoni, E. Puppo, and R. Scopigno.
Representation and visualization of terrain surfaces at variable resolution.
The Visual Computer, 13(5):199-217, 1997.
21. P. Cignoni, P. Marino, C. Montani, E. Puppo, and R. Scopigno.
Speeding up isosurface extraction using interval trees.
IEEE Trans. on Visualization and Comp. Graph., 3(2):158-170, 1997.
22. P. Cignoni, C. Montani, E. Puppo, and R. Scopigno.
Multiresolution representation and visualization of volume data.
IEEE Trans. on Visualization and Comp. Graph., 3(4):352-369, 1997.

23. P. Cignoni, C. Montani, and R. Scopigno.
Computer-assisted generation of bas- and high-reliefs.
Journal of Graphics Tools, 2(3):15-28, 1997.
24. P. Cignoni, C. Montani, and R. Scopigno.
Triangulating convex polygons having T-vertices.
Journal of Graphics Tools, 1(2):1-4, 1996.
25. P. Cignoni, D. Laforenza, C. Montani, R. Perego, and R. Scopigno.
Evaluation of parallelization strategies for an incremental Delaunay triangulator in E3.
Concurrency: Practice and Experience, 7(1):61-80, 1995.
26. P. Cignoni, C. Montani, and R. Scopigno.
MagicSphere: an insight tool for 3D data visualization.
Computer Graphics Forum, 13 (3):317-328, 1994
27. P. Cignoni, C. Montani, R. Perego, and R. Scopigno.
Parallel 3D Delaunay triangulation.
Computer Graphics Forum, 12 (3):129-142, 1993.

Tutorials at International Conferences

1. L. De Floriani, E. Puppo, P. Cignoni, R. Scopigno
Level-of-Detail in Surface and Volume Modeling
Eurographics 1999, Milano, Italy
2. P. Cignoni, L. De Floriani, V. Pascucci, J. Rossignac, C. Silva
Multi-Resolution Modeling, Visualization and Compression of Volumetric Data
IEEE Visualization '03, October 19-24 2003, Seattle, Washington
3. P. Cignoni, L. De Floriani, P. Lindstrom, V. Pascucci, J. Rossignac, C. Silva
Multi-resolution Modeling, Visualization and Streaming of Volume Meshes
Eurographics 2004, Grenoble, France

International Refereed Conferences

1. R. Borgo, R. Scopigno, P. Cignoni, V. Pascucci
PSP: A Progressive Subdivision Paradigm
VDA '04, IS&T/SPIE's International Symposium on Electronic Imaging Conf. Proc., San Jose (CA), Jan. 18-22, 2004
2. P. Cignoni, G. Impoco, R. Scopigno
Closing Gaps by Clustering Unseen Directions
In Proceedings of SMI '04 International Conference, Genova, Italy, 7-9 June 2004 (in press).
3. M. Callieri, A. Fasano, G. Impoco, P. Cignoni, R. Scopigno, G. Parrini, and G. Biagini
RoboScan: An automatic system for accurate and unattended 3D scanning
Int. Symp. on 3D Data Processing, Visualization, and Transmission 3DPVT'04, Thessaloniki, Greece, Sept. 6-9, 2004 (in press)
4. A. Fasano, M. Callieri, Paolo Cignoni, Roberto Scopigno,
Exploiting Mirrors for Laser Stripe 3D Scanning
3DIM 2003 Conference, Banff, Canada.
5. R. Scopigno, P. Cignoni, M. Callieri, F. Ganovelli, G. Impoco, P. Pingi, F. Ponchio
Using optically scanned 3D data in the restoration of Michelangelo's David,
SPIE Int. Symposium on Optical Metrology, Munich, Germany, 23-26 June 2003, pp.??-??.
6. P. Cignoni, F. Ganovelli, E. Gobbetti, F. Marton, F. Ponchio, R. Scopigno,
Planet-Sized Batched Dynamic Adaptive Meshes (P-BDAM)
IEEE Visualization 2003, Seattle, 2003, pp. 147-155
7. M. Tarini, P. Cignoni, R. Scopigno,
Visibility based methods and assessment for detail-recovery
IEEE Visualization 2003, Seattle, 2003, pp. ???

8. M. Callieri, P. Cignoni, F. Ganovelli, C. Montani, P. Pingi, R. Scopigno
VCLab's Tools for 3D range data processing
4th International Symposium on Virtual Reality, Archaeology and Intelligent Cultural Heritage (VAST2003) and First EUROGRAPHICS Workshop on Graphics and Cultural Heritage, Brighton (UK), 5-7 November 2003
9. M. Callieri, P. Cignoni, M. Coluccia, G. Gaggio, P. Pingi, M. Romanelli, R. Scopigno
Derma: monitoring the evolution of skin lesions with a 3D system
8th International Fall Workshop on VISION, MODELING, AND VISUALIZATION 2003, November 19 - 21, 2003, Munich, Germany
10. M. C. Gambino, R. Fontana, M. Greco, E. Pampaloni, L. Pezzati, P. Pingi, P. Cignoni, R. Scopigno
Supporting the restoration of the Minerva of Arezzo
Lacona V – 5th International Conference on Lasers in the Conservation of Artworks, Osnabrueck (Germany), September 15-18, 2003.
11. Marco Callieri, Paolo Cignoni, Claudio Rocchini, Roberto Scopigno,
Weaver, an automatic texture builder
3D Data Processing, Visualization and Transmission, Int. Conf., Padova, June 19-21, 2002,
12. P. Cignoni, R. Scopigno, M. Tarini
Normal Enhancement for Interactive NPR,
Eurographics 2002 Short papers, 2002, pp.95-103.
13. Marco Callieri, Paolo Cignoni, Roberto Scopigno,
Reconstructing textured meshes from multiple range+rgb maps,
Vision, Modeling and Visualization 2002, Int. Conf., Erlangen, Germany, Nov. 20-22, 2002, (in press)
14. C. Rocchini, P. Cignoni, F. Ganovelli, C. Montani, P. Pingi and R. Scopigno
Marching Intersections: an Efficient Resampling Algorithm for Surface Management
International Conference On Shape Modeling And Applications (SMI 2001)
Genova, Italy, 7-11 May 2001, (in press)
15. C. Rocchini, P. Cignoni, C. Montani, P. Pingi, R. Scopigno,
A suite of tools for the management of 3D scanned data,
Italy-Canada Workshop on 3D Digital Imaging and Modeling, Padova, 2001 (in press).
16. C. Rocchini, P. Cignoni, C. Montani, P. Pingi, R. Scopigno, et. al.
3D Scanning the Minerva of Arezzo,
ICHIM 01, Milano, Sept 3-7 2001, pp. 265-271.
17. R. Borgo, P. Cignoni, R. Scopigno,
An Easy-to-use Visualization System for Huge Cultural Heritage Meshes,
VAST 01, Glyfada Athens, Nov 28-20 2001,
18. P. Cignoni, C. Montani, C. Rocchini, R. Scopigno
Acquisition and management of digital 3D models of statues
3rd Int. Congress on "Science and Technology for the Safeguard of Cultural Heritage in the Mediterranean Basin", Alcalá de Henares (Spain), July. 9-14, 2001, vol.2, pp.1159-1164.
19. F. Ganovelli, P. Cignoni, C. Montani, R. Scopigno
Enabling Cuts on Multiresolution Representations
Computer Graphics International CGI2000 Conference Proc., Geneva (SW), June 20-23, 2000, pp. (in press)
20. P. Cignoni, C. Costanza, C. Montani, C. Rocchini, R. Scopigno,
Simplification of tetrahedral meshes with accurate error evaluation
IEEE Visualization 2000, Oct. 9 - 13, 2000, pp. 85-92.
21. P. Cignoni, L. De Floriani, P. Magillo, E. Puppo, R. Scopigno
Volume Visualization of Large Tetrahedral Meshes on Low Cost Platforms
NSF DoE Hierarchical Approximation and Geom. Methods for Scientific Visualization, Tahoe City, California October 15-17, 2000

22. M. Tarini, P. Cignoni, C. Rocchini, R. Scopigno,
Computer Assisted Reconstruction of Buildings from Photographic Data
5th International Fall Workshop on VISION, MODELING, AND VISUALIZATION Saarbrücken,
Germany, Nov. 22 - 24, 2000 (in press)
23. P. Cignoni, C. Montani, C. Rocchini, R. Scopigno, and P. Pinci.
3d scanning and rendering cultural heritage artifacts on a low budget.
In High Performance Graphics Systems and Applications European Workshop, pages 11-14,
Palazzo Marescotti, Bologna, Italy, October 16-17 2000. CINECA.
24. F. Ganovelli, P. Cignoni, R. Scopigno
Introducing Multiresolution Representation in Deformable Object Modeling
SCCG '99 Conference Proceedings, April 28th-May 1st, Budmerice (Slovakia), 1999, pp.149-158
25. C. Rocchini, P. Cignoni, C. Montani, R. Scopigno
Multiple Textures Stitching and Blending on 3D Objects
10th Eurographics Workshop On Rendering, G. Ward and D. Lischinsky ed.,
Granada (E), June 21-23, 1999, pp.127-138
26. F. Allamandri, P. Cignoni, C. Montani, and R. Scopigno.
Adaptively adjust marching cubes output to fit a trilinear reconstruction filter.
EG Ws. on Scientific Visualization '98, Springer Computer Science, Wien, 1998.
27. P. Cignoni, L. De Floriani.
Power Diagram Depth Sorting.
Proceedings of CCCG '98, pages 19--26., August 11-14, 1998.
28. P. Cignoni, C. Montani, C. Rocchini and R. Scopigno.
A general method for preserving attribute values on simplified meshes.
Proceedings of Visualization '98, pages 59-66, ACM Press, 1998.
29. E. Ciabatti, P. Cignoni, C. Montani, R. Scopigno
Towards a distributed 3d virtual museum
Working Conf. on Advanced Visual Interfaces, AVI98 Proceedings, L'Aquila, Italy, 1998, pp. 264-
266
30. P. Cignoni, C. Montani, and R. Scopigno.
Tetrahedra based volume visualization.
In LNCS (Proc. VisMath '97, Berlin), Springer Verlag, 1997.
31. P. Cignoni, C. Montani, E. Puppo, and R. Scopigno.
Optimal isosurface extraction from irregular volume data.
Proceedings of IEEE/ACM 1996 Symposium on Volume Visualization, pages 31--38. ACM Press,
October 28-29 1996.
32. P. Cignoni, C. Montani, D. Sarti, and R. Scopigno.
On the optimization of projective volume rendering.
In P. Zanarini R. Scateni, J.J. van Wijk, editor, Visualization in Scientific Computing 1995, pages
58--71. Springer KG, Wien, 1995.
33. P. Cignoni, E. Puppo, and R. Scopigno.
Representation and visualization of terrain surfaces at variable resolution.
In R. Scateni, editor, Scientific Visualization '95 (Proc. Inter. Symposium on), pages 50-68. World
Scientific, 1995.
34. P. Cignoni, L. De Floriani, C. Montani, E. Puppo, and R. Scopigno.
Multiresolution modeling and rendering of volume data based on simplicial complexes.
Proceedings of IEEE/ACM 1994 Symposium on Volume Visualization, pages 19--26. ACM Press,
October 17-18 1994.
35. P. Cignoni, C. Montani, and R. Scopigno.
Volume rendering and Delaunay triangulations.
Proceedings of the GraphiCon '92 Conference, Moskow, September 1992.