

Sixth Eurographics Italian Chapter Conference

**Salerno, Italy
July 2nd – 4th, 2008**

Programme Committee

Vittorio Scarano (Università di Salerno)
Rosario De Chiara (Università di Salerno)
Ugo Erra (Università della Basilicata)

Local Committee

Vittorio Scarano (Università di Salerno)
Ugo Erra (Università della Basilicata)
Rosario De Chiara (Università di Salerno)
Gennaro Cordasco (Università di Salerno)
Riccardo Prinzi (Università di Salerno)

Proceedings Production Editor

Dieter Fellner (TU Darmstadt & Fraunhofer IGD, Germany)

This work is subject to copyright.

All rights reserved, whether the whole or part of the material is concerned, specifically those of translation, reprinting, re-use of illustrations, broadcasting, reproduction by photocopying machines or similar means, and storage in data banks.

Copyright ©2008 by the Eurographics Association
–PO Box 16, CH-1288 Aire-la-Ville, Switzerland–

Published by the Eurographics Association
–PO Box 16, CH-1288 Aire-la-Ville, Switzerland–
in cooperation with
Institute of Computer Graphics & Knowledge Visualization at Graz University of Technology
and
University of Braunschweig - Institute of Scientific Computing

Printed in Germany

Cover design by Stefanie Behnke

ISBN 978-3-905673-68-5

The electronic version of the proceedings is available from the Eurographics Digital Library at
<http://diglib.eg.org>

Cover Image Credits

Matteo Dellepiane, Marco Callieri, Emanuela Paribeni, Elena Sorge, Nino Sulfaro, Veronica Marianelli, and Roberto Scopigno: “Multiple Uses of 3D Scanning for the Valorization of an Artistic Site: the Case of Luni”, pp. 7 – 13

Table of Contents

Table of Contents	iii
Preface	v
Sponsors	vi
Scientific Committee	vii
Author Index	viii

Cultural Heritage and Medical Applications

The Archeomatica Project: Towards a New Application of the Computer Graphics in Archaeology ... <i>Emanuele Sangregorio, Filippo Stanco, and Davide Tanasi</i>	1
Multiple Uses of 3D Scanning for the Valorization of an Artistic Site: the Case of Luni <i>Matteo Dellepiane, Marco Callieri, Emanuela Paribeni, Elena Sorge, Nino Sulfaro, Veronica Marianelli, and Roberto Scopigno</i>	7
Medical Image Segmentation using Level Sets <i>Gaetano Impoco</i>	15
Towards Advanced Volumetric Display of the Human Musculoskeletal System <i>Marco Agus, Andrea Giachetti, Enrico Gobbetti, José Antonio Iglesias Guitián, and Fabio Marton</i>	21

Virtual Reality and Graphical User Interface

Environment based on Augmented Reality and Interactive Simulation for Product Design Review <i>Monica Bordegoni, Francesco Ferrise, Marco Ambrogio, Giandomenico Caruso, Fabio Bruno, and Francesco Caruso</i>	27
A Virtual-Reality-based Evaluation Environment for Wheelchair-mounted Manipulators <i>Agostino De Santis, Giuseppe Di Gironimo, Adelaide Marzano, Bruno Siciliano, and Andrea Tarallo</i>	35
Low Cost Finger Tracking on Flat Surfaces <i>Giovanni Maria Farinella and Eugenio Rustico</i>	43
Eulerview with Projections: Non Hierarchical Visualisation <i>Rosario De Chiara and Andrew Fish</i>	49

Image Capture and Geometric Algorithms

Practical and Robust MLS-based Integration of Scanned Data <i>Valentino Fiorin, Paolo Cignoni, and Roberto Scopigno</i>	57
--	----

Table of Contents

Combining Segmentations for Understanding and Annotating 3D Objects	65
<i>Nicolò Carissimi, Laura Papaleo, and Leila De Floriani</i>	
Topological Operations on Triangle Meshes Using the OpenMesh Library	73
<i>Fabio Guggeri, Stefano Marras, Claudio Mura, and Riccardo Scateni</i>	
Rendering	
Fractal Compression Approach for Efficient Interactive Terrain Rendering on the GPU	81
<i>Ugo Erra, Vittorio Scarano, and Davide Guida</i>	
A Survey on Exploiting Grids for Ray Tracing	89
<i>Biagio Cosenza</i>	
On Estimating the Effectiveness of Temporal and Spatial Coherence in Parallel Ray Tracing	97
<i>Biagio Cosenza, Gennaro Cordasco, Rosario De Chiara, Ugo Erra, and Vittorio Scarano</i>	
CG Applications	
MightyMind3D. A 3D Mindmapping Software Using Glove Interaction	105
<i>Fabio Turchet</i>	
3-SHIRT: Three-Dimensional Shape Indexing and Retrieval Techniques	113
<i>Umberto Castellani, Guido Maria Cortelazzo, M. Cristani, Elisabetta Delponte, Andrea Fusiello, Andrea Giachetti, Stefano Mizzaro, Francesca Odone, Enrico Puppo, Riccardo Scateni, and Pietro Zanuttigh</i>	
IMPROVE: the experience from a FP6 EU project	121
<i>Martin Witzel, Giuseppe Conti, and Raffaele De Amicis</i>	
MeshLab: an Open-Source Mesh Processing Tool	129
<i>Paolo Cignoni, Marco Callieri, Massimiliano Corsini, Matteo Dellepiane, Fabio Ganovelli, and Guido Ranzuglia</i>	
Indirect Illuminance Computation on GPU for Lighting CAD using CIE Basic Method	137
<i>S. Mazzocchi, Fulvio Musante, M. Rossi, and D. Selmo</i>	

Preface

“Si tibi deficient medici,
medici tibi fiant haec tria:
mens laeta, requies, moderata diaeta.”

“If doctors fail you,
let these three be doctors for you:
A joyful mind, rest, and a moderate diet.”

(Scuola Medica Salernitana, Regimen sanitatis Salernitanum)

Benvenuti a Salerno, the place where the Schola Medica Salernitana, the first medieval medical school, was founded providing the most important native source of medical knowledge in Europe at the time.

Salerno is also the venue of the Sixth EUROGRAPHICS Italian Chapter Conference. The purpose of this conference is to provide a chance for fostering and stimulating fruitful collaborations and exchange of knowledge and ideas within the Italian Computer Graphics Community. This year conference follows in footsteps of previous edition of EGITA 2002 and 2003 in Milan, 2005 in Pisa, 2006 in Catania and 2007 in Trento.

Obviously, this conference is the outcome of the work of plenty of skillful researchers and professionals that we would like to thank for an undoubtedly successful conference. First of all, the program committee members that were able to ensure deep and, at the same, timely reviews for the papers submitted. Given the tight schedule we had it was not an easy task to accomplish and the quality of the papers presented was greatly dependent on the comments and suggestions they provided to the authors. Thanks!

We would also like to express our gratitude to the contributions of our invited speakers who have set a high scientific level for the conference with their internationally scientific experience. Therefore, we would like to thank Dr. Roberto Scopigno from Visual Computer Lab of Italian National Research Council, Italy. Prof. Carsten Dachsbacher from Visualization Research Center (VISUS) of the University of Stuttgart, Germany and Giovanni Caturano from SpinVector, Italy.

Then, the great help and support by Eurographics, very well impersonated by the tireless and competent presence of Stefanie Behnke that constantly supported the chairs and the authors in their objective to produce the best quality proceedings that could be obtained. Thanks also to the Visual Computing Laboratory for cover images.

Locally, we enjoyed the support of the ISISLab and the many students, PhD students and post-docs that made every little problem instantly disappear with a solution promptly at hand. Among them, we would like to thank particularly Gennaro Cordasco and Riccardo Prinzi for their precious support.

Last, but not least, we would also like to thank our sponsors Università degli Studi di Salerno, Dipartimento di Informatica ed Applicazione “R.M.Capocelli”, SpinVector, and Dot Mind In Motion for supporting the organization of the conference.

Vittorio Scarano, Rosario De Chiara and Ugo Erra

Sponsors



UNIVERSITÀ DEGLI
STUDI DI SALERNO



ISISLab

SpinVector



DOT MIND IN MOTION
www.dotmindinmotion.com



EVENTS PROMOTION
CGKEVENT.COM

Scientific Committee

Sebastiano Battiato (Università di Catania)
Francesco Beltrame (Università di Genova)
Eleonora Bilotta (Università della Calabria)
Monica Bordegoni (Politecnico di Milano)
Giulio Casciola (Università di Bologna)
Giuseppe Conti (GraphiTech, Trento)
Guido Maria Cortellazzo (Università di Padova)
Raffaele De Amicis (GraphiTech, Trento)
Rosario De Chiara (Università di Salerno)
Leila De Floriani (Università di Genova)
Giuseppe Di Gironimo (Università di Napoli Federico II)
Ugo Erra (Università della Basilicata)
Bianca Falcidieno (IMATICNR)
Andrea Fusiello (Università di Verona)
Giovanni Gallo (Università di Catania)
Silvia Biasotti (IMATICNR)
Enrico Gobbetti (CRS4)
Antonella Guidazzoli (Cineca)
Paola Magillo (Università di Genova)
Daniele Marini (Università di Milano)
Laura Moltedo (IACCNR)
Maurizio Muzzupappa (Università della Calabria)
Pietro Pantano (Università della Calabria)
Alberto Paoluzzi (Università di Roma)
Piero Pili (CRS4)
Domenico Prattichizzo (Università di Siena)
Maurizio Rossi (Politecnico di Milano)
Vittorio Scarano (Università di Salerno)
Riccardo Scateni (Università di Cagliari)
Roberto Scopigno (ISTICNR)
Giuliana Ucelli (GraphiTech, Trento)
Antonello Uva (Politecnico di Bari)

Author Index

Agus, Marco	21	Guida, Davide	81
Ambrogio, Marco	27	Guitián, José Antonio Iglesias	21
Bordegoni, Monica	27	Impoco, Gaetano	15
Bruno, Fabio	27	Marianelli, Veronica	7
Callieri, Marco	7, 129	Marras, Stefano	73
Carissimi, Nicolò	65	Marton, Fabio	21
Caruso, Francesco	27	Marzano, Adelaide	35
Caruso, Giandomenico	27	Mazzocchi, S.	137
Castellani, Umberto	113	Mizzaro, Stefano	113
Cignoni, Paolo	57, 129	Mura, Claudio	73
Conti, Giuseppe	121	Musante, Fulvio	137
Cordasco, Gennaro	97	Odone, Francesca	113
Corsini, Massimiliano	129	Papaleo, Laura	65
Cortelazzo, Guido Maria	113	Paribeni, Emanuela	7
Cosenza, Biagio	89, 97	Puppo, Enrico	113
Cristani, M.	113	Ranzuglia, Guido	129
De Amicis, Raffaele	121	Rossi, M.	137
De Chiara, Rosario	49, 97	Rustico, Eugenio	43
De Floriani, Leila	65	Sangregorio, Emanuele	1
De Santis, Agostino	35	Scarano, Vittorio	81, 97
Dellepiane, Matteo	7, 129	Scateni, Riccardo	73, 113
Delponte, Elisabetta	113	Scopigno, Roberto	7, 57
Di Gironimo, Giuseppe	35	Selmo, D.	137
Erra, Ugo	81, 97	Siciliano, Bruno	35
Farinella, Giovanni Maria	43	Sorge, Elena	7
Ferrise, Francesco	27	Stanco, Filippo	1
Fiorin, Valentino	57	Sulfaro, Nino	7
Fish, Andrew	49	Tanasi, Davide	1
Fusiello, Andrea	113	Tarallo, Andrea	35
Ganovelli, Fabio	129	Turchet, Fabio	105
Giachetti, Andrea	21, 113	Witzel, Martin	121
Gobbetti, Enrico	21	Zanutigh, Pietro	113
Guggeri, Fabio	73		