

## PREFACE

We are pleased to welcome you to the Short Papers Track of the international conference on computer graphics Eurographics 2003 in Granada.

Short Presentation sessions, which were first introduced in Eurographics'98, are now an established track in the Eurographics conference programme. Their aim is to provide a forum in which late-breaking results and work in progress can be presented.

This year, there were 67 submitted papers covering a large variety of topics in computer graphics. The papers were reviewed by at least two independent experts of the International Program Committee helped with external reviewers, and finally 43 papers were selected for publication and oral presentation. This volume is arranged according to the 10 sessions of oral presentations. They span a wide range of computer graphics research such as Rendering, Image-based rendering and Augmented reality, BRDF and textures, Deformations, Visibility, Meshes, Animation and Virtual Worlds

A CD-ROM that contains electronic versions of the papers as well as submitted animations accompanies the proceedings.

Authors will allow 10 minutes to present their papers plus 5 minutes for discussion and questions. We hope to have enriching debate.

We wish to congratulate the authors for their good papers. Special thanks are due to all the reviewers and the ICP members who had a short time to review many papers and did it excellently. Thanks also to the session chairs for their contribution to the success of the short presentations sessions. Finally, we would like to thank Stephanie Behnke for her invaluable support in managing the web site.

Hans Hagen, Miguel Chover and Dani Tost

## AUTHOR INDEX

Ahmed A.	157	Hadwiger M.	191	Ray N.	249
Araujo D.	121	Hagiwara I.	1	Rebocho R.	121
Atalay V.	21	Hasegawa S.	151	Rekimoto J.	129
Banerjee S.	113	Havran V.	257	Rhodes P.J.	83
Bergeron R.D.	83	Hilton A.	157	Romão T.	121
Berretty R.	219	Iguchi T.	205	Saakes D.P.	301
Bianconi F.	105	Inakage M.	151	Santos C.	121
Bourdin J.	145	Ju T.	61	Sanyal S.	113
Bornik A.	235	Kalra P.	113	Savchenko V.	1
Boyer V.	145	Karner K.	191	Scateni R.	69
Bruderlin B.	29	Klaus A.	191	Seidel H.	257
Câmara A.	121	Klimenko S.	7, 199, 279	Seipel S.	213
Cavin X.	249	Ko H.	309	Sen S. I.	21
Cech P.	235	Kodama T.	205	Senin M.	1
Cerezo E.	271	Kushal A.M.	113	Serón F.J.	271
Chanda G.	113	Laramee R.S.	83	Serpa J.	121
Choi K.	309	Leborán V.	89	Shrivastava K.	113
Chrysanthou Y.	185	Lévy B.	249	Sim T.	165
Conti P.	105	Liang R.	287	Sobczyk D.	145
Correia N.	121	Liu F.	287	Song Y.	301
Costa M.	121	Loviscach J.	265	Sørensen M.	37
Danado J.	121	Madsen C.B.	37	Sparr T.M.	83
Davis T.A.	97	Maillot J.	241	Sriram T.V.N.	113
Despina M.	185	Márquez A.	13	Szécsi L.	45
Dias E.	121	Meyer-Spradow J.	265	Szirmay-Kalos L.	45
Dmitriev K.	257	Mokhtarian F.	157	Tan C. L.	165
Domik G.	227	Morillo P.	179	Tobita H.	129, 137
Duarte P.	121	Murakami K.	173	Tohda A.	151
Enoki R.	293	Nikita K	1	Trabuco A.	121
Ernst F.	219	Nikitin I.	7, 199, 279	Tsuruno R.	173
Ertl T.	53	Nikitina L.	7, 199, 279	Ullmann T.	29
Ferko A.	235	Noborio H.	205, 293	Ulysse J.	249
Fernández M.	179	Nogami R.	293	Vergeest J.S.M.	301
Ficklin S.P.	97	Orduña J.M.	179	Vittrup M.	37
Frolov P.	199	Ortega L.	13	Weiskopf D.	53
Goetz F.	227	Palmeiro J.	121	Ye D.	287
Goldman R.	61	Pardo X.M.	89	Zach C.	77, 191
Grabner M.	77	Perko R.	235	Zhang Y.	165
Grima C.I:	13	Porcu M.B.	69		
Gupta M.	113	Preidel T.	29		

## **INTERNATIONAL SHORT PRESENTATION PROGRAMME COMITÉ**

### **Co-chairs:**

Miguel Chover

Hans Hagen

Dani Tost

### **Programme Committee:**

Marc Alexa  
Dolors Ayala  
Guido Brunnett

E. Galin  
Nadia Magnenat-Thalmann  
Domingo Martín

Ignacio Martín  
Joerg Meyer  
Mateu Sbert

### **Reviewers:**

Philippe Bekaert  
Miguel Gea  
J. Iehl  
Laszlo Neumann

Anna Puig  
Ricardo Quirós  
Lluis Solano  
László Szirmay-Kalos

Carlos Urefña  
Pere Pau Vázquez  
Marc Vigo

## TABLE OF CONTENTS

### **Visibility and Collision Detection**

<i>Particle-based Collision Detection</i>	1
Mikhail Senin, Kojekine Nikita, Vladimir Savchenko and Ichiro Hagiwara	
<i>Parallel Visibility Test and Occlusion Culling in Avango Virtual Environment Framework</i>	7
Stanislav Klimenko, Lalia Nikitina and Igor Nikitin	
<i>Motion planning and Visibility problems using the polar diagram</i>	13
C.I. Grima, A. Márquez and L. Ortega	
<i>Occlusion Culling for Image-Based Rendering with Warping</i>	21
Soner I. Sen and Volkan Atalay	

### **Rendering**

<i>Efficient Sampling of Textured Scenes in Vertex Tracing</i>	29
Thomas Ullmann, Thomas Preidel and Beat Bruderlin	
<i>Estimating Positions and Radiances of a Small Number of Light Sources for Real-Time Image-Based Lighting</i>	37
Claus B. Madsen, Mads K. D. Sørensen, and Michael Vittrup	
<i>Improved Indirect Photon Mapping with Weighted Importance Sampling</i>	45
László Szirmay-Kalos and László Szécsi	
<i>Shadow Mapping Based on Dual Depth Layers</i>	53
Daniel Weiskopf and Thomas Ertl	

### **Curves, Surfaces, Isosurfaces and Triangular Meshes**

<i>Morphing Rational B-spline Curves and Surfaces Using Mass Distributions</i>	61
Tao Ju and Ron Goldman	
<i>An Iterative Stripification Algorithm Based on Dual Graph Operations</i>	69
Massimiliano B. Porcu and Riccardo Scateni	

*Adaptive quantization with error bounds for compressed view-dependent multiresolution meshes* 77

Markus Grabner and Christopher Zach

*Uncertainty Visualization Methods in Isosurface Rendering* 83

Philip J. Rhodes, Robert S. Laramee, R. Daniel Bergeron, and Ted M. Sparr

*Implicit Surface Reconstruction and uniform Sampling by Striped Marching Triangles* 89

Víctor Leborán and Xose M. Pardo

## Image-based Rendering and Augmented Reality

*Interactive Dynamic Environments Using Image-Based Modeling and Rendering* 97

Timothy A. Davis and Stephen P. Ficklin

*An approach to construct augmented CAD models using acquired digital images* 105

Francesco Bianconi and Paolo Conti.

*Multilevel modelling and rendering of architectural scenes* 113

Akash M. Kushal, Gaurav Chanda, Kanishka Shrivastava, Mohit Gupta, Subhajit Sanyal, T.V.N. Sriram, Prem Kalra and Subhashis Banerjee

*Mobile Augmented Reality for Environmental Management(MARE)* 121

José Danado; Eduardo Dias; Teresa Romão; Nuno Correia; Adelaide Trabuco; Carlos Santos; David Araújo; Pedro Duarte; Rui Rebocho; José Palmeiro; João Serpa; Manuel Costa; António Câmara.

## Paint and Animation Techniques

*ActiveInk* 129

Hiroaki Tobita and Jun Rekimoto

*VelvetPath - Layout Design System with Sketch and Paint Manipulations* 137

Hiroaki Tobita.

*The Virtual Painting Paintbox* 145

D. Sobczyk, V. Boyer and J-J. Bourdin

*Animatope: A Manga-Styled Animation Expression Toolkit* 151

Asuka Tohda, Sho Hasegawa and Masa Inakage

## Animation, Avatars and Virtual Worlds

<i>Cyclification of Human Motion for Animation Synthesis</i> Amr Ahmed , Farzin Mokhtarian and Adrian Hilton	157
<i>Reconstruction of Animatable Personalized 3D Faces by Adaptation-based Modeling</i> Yu Zhang, Terence Sim and Chew Lim Tan	165
<i>Trans-Polygon Stroke Method for Frame Coherent Pastel Images</i> Kyoko Murakami and Reiji Tsuruno	173
<i>On the characterization of avatars in Distributed Virtual Worlds</i> Pedro Morillo, Marcos Fernández and Juan Manuel Orduña	179
<i>Automatic High Level Avatar Guidance Based On Affordance Of Movement</i> Despina Michael and Yiorgos Chrysanthou	185

## Virtual Reality

<i>Accurate Dense Stereo Reconstruction using Graphics Hardware</i> Christopher Zach, Andreas Klaus, Markus Hadwiger and Konrad Karner	191
<i>Crosstalk reduction in passive stereo-projection systems</i> Stanislav Klimenko, Pavel Frolov, Lialia Nikitina, Igor Nikitin	199
<i>A Precise Approach Calibrated by Experimental Data to Make an Artificial Impulse</i> Toshiko Iguchi, Tetsuya Kodama and Hiroshi Noborio	205

## Visualization, Images and Video Integration

<i>Information visualization using transparent shape impostors</i> Stefan Seipel	213
<i>High quality images from 2.5D video</i> Robert-Paul Berretty and Fabian Ernst	219
<i>A Framework for Video-based and Hardware-Accelerated Remote 3D-Visualization</i> Frank Goetz and Gitta Domik	227
<i>Beyond Image Quality Comparison</i> Alexander Bornik, Peter Cech, Andrej Ferko and Roland Perko	235

## **BRDFs, Materials and Textures**

<i>Continuous Local Parameterization of Polygons</i> Jerome Maillot	241
<i>Generation of Radiosity Texture Atlas for Realistic Real-Time Rendering</i> Nicolas Ray, Jean-Christophe Ulysse, Xavier Cavin and Bruno Lévy	249
<i>Goniometric Diagram Mapping for Hemisphere</i> Vlastimil Havran, Kirill Dmitriev and Hans-Peter Seidel.	257
<i>Evolutionary Design of BRDFs</i> Jennis Meyer-Spradow and Jörn Loviscach	265
<i>Inelastic Scattering and Participating Media. Application to the ocean</i> Eva Cerezo and Francisco J. Serón	271

## **Deformations**

<i>Real-Time Simulation of Flexible Materials in Avango Virtual Environment Framework</i> Stanislav Klimenko, Lilia Nikitina and Igor Nikitin	279
<i>Skeleton Sub-space Deformation with Displacement Map</i> Feng Liu, Ronghua Liang and Dahai Ye	287
<i>Precise Deformation of Rheology MSD Model Calibrated by Randomized Algorithm</i> Hiroshi Noborio, Ryo Nogami and Ryo Enoki	293
<i>Parameter-driven freeform deformations</i> Yu SONG, J.S.M. Vergeest and D.P. Saakes	301
<i>Extending the Immediate Buckling Model to Triangular Meshes for Simulating Complex Clothes</i> Kwang-Jin Choi and Hyeong-Seok Ko	309