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*Markus Gross, Swiss Federal Institute of Technology (ETH), Zürich, Switzerland*

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Eurographics Association

IEEE Visualization and Graphics Technical Committee
Preface

The IEEE/EG International Symposium on Volume and Point-Based Graphics represents the joint 7th and 5th symposia of the Volume Graphics (VG08) and Point-Based Graphics (PBG08) series respectively. This joint event is held on August 10-11 in Los Angeles and is co-located with ACM SIGGRAPH annual conference.

The conference aims to bring together researchers from both the academic and industry sectors who are working, or wish to work, on volume and point-based graphics.

Volume graphics deals with the analysis, synthesis and presentation of volumetric phenomena, both static and time-varying. Specifically, it includes topics related to the acquisition, reconstruction and transformation of volume data as well as feature analysis, information extraction and rendering. Additional topics of interest include representation of solid and soft objects, interiors as well as surfaces, and synthesis of graphical images in a true 3D manner. The symposium will continue to explore the potential of volume-based techniques beyond the scope of volume visualization as it is currently practiced.

As witnessed over the last few years, the availability and complexity of sampled 3D objects has continuously increased, and the widespread use of point-based geometric models has penetrated the entire computer graphics and visualization community. Thus demanding powerful tools and algorithms for modeling, simulation, rendering, and other computer graphics and geometry processing applications.

This volume contains the proceedings of the joint IEEE/EG International Symposium on Volume and Point-Based Graphics. The calls for papers and the submission and review processes where handled separately for these two areas.

Following the call for papers on Volume Graphics, we received 29 paper submissions covering all major areas of the field. We thank all the authors for their creative contributions! For each paper at least 4 reviews were returned. We would like to express our thanks to the 46 members of the international program committee and the 10 additional experts for their promptness, dedication and insightful reviews. Based on these reviews 10 papers were accepted unconditionally and 7 conditionally. Finally 16 papers on Volume Graphics were selected for the conference and included in these proceedings.

Responding to our call for papers on Point-Based Graphics, we received 8 submissions from around the world. Each paper was reviewed by four members of the international program committee, and based on their recommendations the papers chairs made the final selection of 4 high-quality papers included in these proceedings. We thank our 34 program committee members and the external reviewers for their high-quality and timely reviews. Their work helps to ensure the caliber of the proceedings and the success of the conference. We also thank the authors of all submitted papers, including those whose papers we unfortunately were not able to publish this year. PBG08 would not be possible without your creative contribution and participation!

The keynote speaker is Markus Gross, ETH, Zürich. We highly appreciate his acceptance of our invitation and look forward to his inspiring presentation.

We gratefully acknowledge our sponsors the IEEE Visualization and Graphics Technical Committee (VGTC) and the European Association for Computer Graphics (Eurographics), as well as the ACM SIGGRAPH conference organization for their support of this symposium.
We would like to especially thank Stefanie Behnke and Meghan Haley from Eurographics and VGTC for their great and extremely timely support with the submission and review system as well as the proceedings preparation.

Furthermore we would like to thank Eva Skärblom from Linköping University for dedicated organizational support.

Due to the rapid research developments and penetration of sample based volume and surface data in all fields of computer graphics and scientific visualization, the Volume Graphics and Point-Based Graphics Symposia have eventually turned not only into a joint event but also into a truly joint proceedings publication.

We wish all the participants an inspiring and enjoyable conference!

**VG08 Chairs**
Hans-Christian Hege, David Laidlaw, Valerio Pascucci, and Anders Ynnerman

**PBG08 Chairs**
Mario Botsch, Renato Pajarola, Oliver Staadt, and Matthias Zwicker

August 2008
Volume Graphics

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Keynote

Keynote: 10 Years of Point Based Graphics - Achievements and Challenges

Markus Gross
Swiss Federal Institute of Technology (ETH), Zürich, Switzerland

Abstract
For a long time point samples had been a stepchild of graphics research. It is only over the past decade that points have established as useful and versatile primitives for rendering, modeling and animation. A variety of efficient methods evidence the advantages of point sampled representations over traditional graphics primitives when it comes to 3D photo processing, direct manipulation and restructuring of data, or similar operations. Research on point based graphics has created a subfield of its own and it has migrated into all major graphics conferences.

In this talk I will review the most significant technical achievements of point based graphics. I will take a trip down the graphics pipeline and present a selection of the most popular algorithms for the representation, modeling, processing, rendering, display, and animation of point sampled models. The presentation will conclude with an in-depth discussion of the challenges that lie ahead of us and with a view on how research on points and volume elements is naturally evolving into "Sampled Based Graphics".

Short Biography
Dr. Gross is a professor of computer science and founding director of the Computer Graphics Laboratory of the Swiss Federal Institute of Technology (ETH) in Zürich since 1994. He is one of the leading researchers in point-based graphics, and he has pioneered and developed the field for more than 10 years. He has published more than 200 scientific papers on computer graphics and scientific visualization and he holds various patents on core graphics and visualization technologies. Dr. Gross serves as a member of international program committees of many graphics conferences and on the editorial board of various scientific journals. He was a papers co-chair of the IEEE Visualization ’99, the Eurographics 2000, and the IEEE Visualization 2002 conferences and he was chair of the papers committee of ACM SIGGRAPH 2005. Dr. Gross is a senior member of IEEE, a member of ACM and ACM Siggraph, and a fellow of the Eurographics Association. He serves in board positions of a number of international research institutes, societies and governmental organizations. He co-founded Cyfex AG, Novodex AG, LiberoVision AG, and Dybuster AG. Dr. Gross received a Master of Science in electrical and computer engineering and a PhD in computer graphics and image analysis in 1989, both from the University of Saarbrücken, Germany.