Eurographics Symposium on Rendering 2016

Experimental Ideas & Implementations

Dublin, Ireland
22-24 June 2016

Organized by

EUROGRAPHICS
THE EUROPEAN ASSOCIATION
FOR COMPUTER GRAPHICS

Trinity College
The University of Dublin

Program Co-Chairs
Elmar Eisemann (TU Delft)
Eugene Fiume (University of Toronto)

Conference Chair
Michael Manzke (Trinity College Dublin)

Proceedings Production Editor
Dieter Fellner (TU Darmstadt & Fraunhofer IGD, Germany)

Sponsored by EUROGRAPHICS Association

DOI: 10.2312/sre.20162015

Published by the Eurographics Association
–Postfach 2926, 38629 Goslar, Germany–
in cooperation with
Institute of Computer Graphics & Knowledge Visualization at Graz University of Technology
and
Fraunhofer IGD (Fraunhofer Institute for Computer Graphics Research), Darmstadt

ISBN 978-3-03868-019-2
ISSN 1727-3463

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

Table of Contents

Table of Contents

A Word from the Papers Chairs

Welcome to the 2016 Proceedings of the Eurographics Symposium on Rendering! This marks the 27th annual instance of the conference that focuses on all aspects of rendering. This year, the conference is being hosted at the beautiful Trinity College Dublin, Ireland on 22-24 June 2016, and is co-located with the conference on High Performance Graphics, as well as the workshop on Material Appearance Modeling. This is an exciting opportunity for researchers of various communities to meet over five inspiring days of Computer Graphics.

EGSR 2016 has again offered two submission tracks. The traditional "CGF track", with papers that are reviewed for publication in Computer Graphics Forum, is accompanied by an "Experimental Ideas and Implementation" (EI&I) track. The latter was introduced last year and targets submissions with fresh ideas, algorithmic details, or best-practice solutions that might still require further validation, but that would be inspiring for the community.

We initially received a substantial 64 abstract submissions (11 in the EI&I track and 53 in the CGF track). Unfortunately, some submissions were withdrawn, and ultimately 42 full papers were submitted to the CGF track, and 7 to the EI&I track. Still, with about 50 submissions, EGSR 2016 showed a considerable increase over 2013 and 2014, but did not keep pace with the tremendous showing last year.

EGSR 2016 will have 29 talks comprising 13 full papers accepted in the CGF track, 13 EI&I papers, and an additional three CGF invitations, while three CGF submissions were referred to the journal with major revisions; our packed program shows that EGSR remains the key venue for discussing and presenting top computer graphics research in rendering. During the Town Hall meeting, we will have the opportunity to discuss as a community how to maintain this strength and ensure a successful future for EGSR.

Additionally, our program this year will feature two fantastic invited speakers: Prof. Markus Gross, ETH Zurich and Disney Research, will give a keynote address to start the conference, and Prof. Steve Marschner, Cornell University, will speak on the next day. We thank them very much for accepting our invitations and being part of this event.

As in every year, some incremental changes were introduced. First, we kept the review consideration of a CGF submission blind to its possible redirection to the EI&I track. In this way, we wanted to avoid reviewers being given an "easy way out" of taking tough decisions. Consequently, only after a paper was rejected from the CGF track were the reviewers informed if the authors had also agreed to allow the paper to be considered for the EI&I track. Six papers were redirected from the CGF track to the EI&I. Another change was the reduction of the number of reviews per paper to three in accordance with the new CGF standards. The workload on the IPC members was reduced, with the goal of high quality review and discussion phases.

Ultimately, the success of this year's conference as well as future events lies in the hands of our research community and we, as paper chairs, cannot sufficiently express our gratitude for the work of the IPC members who invested a tremendous amount of effort to ensure a high quality review process. We thank the authors for their hard work on the submitted papers invested with the goal of moving our field forward. We also would like to underline the enormous help of Stefanie Behnke of TU Graz in her various roles in maintaining the submission and review system, producing the proceedings, and jumping in at various occasions to help us out; it was all highly appreciated and we cannot thank her enough. Additionally, we would like to thank Min Chen, Editor in Chief of CGF, for helping us cover all aspects of the journal publication process and for giving support for inviting the additional CGF papers to the conference. This conference would certainly not have happened were it not for the fantastic work by Michael Manzke, who had the role of local organizer and has had to deal with a huge amount of preparation for three events. Thank you, Michael!

Last but not least, we would also like to express our gratitude to the steering committee of the Eurographics Working Group on Rendering. We were pleased to be invited as Papers Co-Chairs for this year's conference. We were honored to be a part of this event and happy that we could contribute to the community. We look forward to helping the future chairs with their mission on maintaining EGSR the top venue in rendering.

We hope that you will enjoy EGSR 2016 as much as we enjoyed planning it.

Elmar Eisemann, Delft University of Technology, The Netherlands
Eugene Fiume, University of Toronto, Canada

Sponsors

International Programme Committee

Laurent Belcour (Université de Montréal)
Jiri Bittner (Czech Technical University in Prague)
Mike Doggett (Lund University)
Martin Eisemann (TH Köln)
Abhijeet Ghosh (Imperial College London)
Diego Gutierrez (Universidad de Zaragoza)
Ralf Habel (Walt Disney Animation Studios)
Johannes Hanika (Weta Digital)
Jon Hasselgren (Intel)
Vlastimil Havran (Czech Technical University in Prague)
Nicolas Holzschuch (INRIA)
Wenzel Jakob (EPFL)
Adrian Jarabo (Universidad de Zaragoza)
Wojciech Jarosz (Dartmouth)
Henrik Wann Jensen (Luxion, UC San Diego)
Anton Kaplanyan (NVIDIA)
Jaroslav Krivanek (Charles University Prague)
Jason Lawrence (Google, Arqball, University of Virginia)
Christian Lessig (TU Berlin)
Marcus Magnor (TU Braunschweig)
Karol Myszkowski (Max-Planck-Institut für Informatik)
Victor Ostromoukhov (Université de Lyon 1)
Fabio Pellacini (Sapienza University of Rome)
Erik Reinhard (Technicolor Research and Innovation)
Tobias Ritschel (University College London)
Pete Shirley (NVIDIA Research, University of Utah)
Peter-Pike Sloan (Activision, University of Utah)
Cyril Soler (INRIA)
Daniel Sýkora (Czech Technical University in Prague)
Chris Wyman (NVIDIA Research)
Sung-Eui Yoon (Korea Advanced Institute of Sci. and Tech.)
Kun Zhou (Zhejiang University)
Matthias Zwicker (University of Bern)

Author Index

Invited Talk

Steve Marschner
Cornell University

Keynote

The Technology to Create the Magic

Markus Gross

Abstract

Disney Research was launched in 2008 as a network of research laboratories that collaborate closely with academic institutions such as the Swiss Federal Institute of Technology in Zurich and Carnegie Mellon University. Its mission is to push the frontiers of technology in areas relevant to Disney's creative entertainment businesses. Disney Research develops innovations for Parks, Film, Animation, Television, Games, and Consumer Products. Research areas include video and animation technologies, postproduction and special effects, digital fabrication, robotics, and much more. This talk gives an overview of Disney Research spiced with some examples of our latest and greatest inventions. The focus is on the collaboration between ETH Zurich and the Walt Disney Company displaying the synergies arising from this program. This talk will highlight a company perspective as well as a view from the academic angle.

Short Biography

Markus Gross is a Professor of Computer Science at the Swiss Federal Institute of Technology Zürich (ETH), head of the Computer Graphics Laboratory, and the Director of Disney Research, Zürich. He joined the ETH Computer Science faculty in 1994. His research interests include physically based modeling, computer animation, immersive displays, and video technology. Before joining Disney, Gross was director of the Institute of Computational Sciences at ETH. He received a master of science in electrical and computer engineering and a PhD in computer graphics and image analysis, both from Saarland University in Germany in 1986 and 1989. Gross serves on the boards of numerous international research institutes, societies, and governmental organizations. He received the Technical Achievement Award from EUROGRAPHICS in 2010, the Swiss ICT Champions Award in 2011 and the IEEE Visualization Technical Achievement Award in 2015. He is a fellow of the ACM and of the EUROGRAPHICS Association and a member of the German Academy of Sciences Leopoldina as well as the Berlin-Brandenburg Academy of Sciences and Humanities. In 2013 he received a Technical Achievement Award from the Academy of Motion Picture Arts and Sciences, the Konrad Zuse Medal of GI and the Karl Heinz Beckurts price. He cofounded Cyfex AG, Novodex AG, LiberoVision AG, Dybuster AG and Gimalon AG.