High-Performance Graphics 2016

ACM SIGGRAPH / Eurographics Symposium Proceedings

Dublin, Ireland
June 20 – 22, 2016

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DOI: 10.2312/hpg.20162014

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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 978-3-03868-008-6
ISSN 2079-8679

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

Table of Contents

Table of Contents

Preface

We are very pleased to present the proceedings of High-Performance Graphics 2016. This is the eighth year of the conference, which has become the leading international conference on graphics hardware, systems, and algorithms. The conference brings together researchers, engineers, and architects to discuss the complex interactions of parallel hardware, novel programming models, efficient graphics algorithms, and innovative applications.

High-Performance Graphics (HPG) was founded in 2009 as the combination of two important and well-respected conferences in computer graphics: Graphics Hardware, an annual conference focusing on graphics hardware, architecture, and systems since 1986; and Interactive Ray Tracing, concentrating on interactive ray tracing and global illumination since 2006. HPG combines the best research from these two fields and covers a very broad range of exciting algorithms for interactive and high-performance graphics solutions.

This year's proceedings continue to reflect this tradition of synthesis, with about half of the accepted papers being related to ray tracing. In total, 32 papers were submitted to HPG 2016, of which 17 were accepted, resulting in an acceptance rate of about 53%. We want to express our deepest gratitude to all the 107 reviewers, 34 IPC members, and all the submitters for your hard work in making a successful proceeding.

Ulf Assarsson and Warren Hunt
Papers chairs

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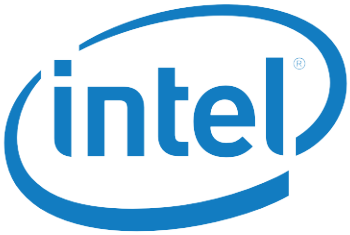
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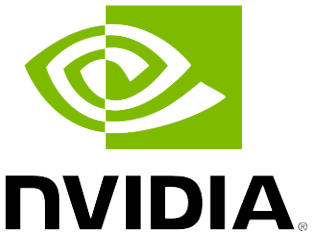
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Author Index

Keynote

Bryan Catanzaro

Abstract
During the past few years, Deep Learning has made significant progress towards solving many difficult Artificial Intelligence tasks. Although the techniques behind deep learning have been studied for decades, they rely on large datasets and large computational resources, and so have only recently become practically applicable. Training deep neural networks is very computationally intensive: training one model takes tens of exaflops of work. The more models we train, the more hypotheses we can evaluate about how to solve our problems, and the more research progress we can make. Accordingly, we care a great deal about reducing training time - so High Performance Computing is central to our work. Once we have a good model, we deploy it to users, which is also a computationally intensive problem. Therefore, throughput oriented processors and associated programming models are central to the current and future success of deep learning. In this talk, I will discuss the use of GPUs for training and deploying deep learning models. I'll talk about the directions I think deep learning is leading GPU hardware and programming models.

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.