Eurographics Symposium on Rendering 2024

– Symposium Track –

Imperial College London, South Kensington, London, UK

3 – 5 July 2024

Organized by

EUROGRAPHICS
THE EUROPEAN ASSOCIATION
FOR COMPUTER GRAPHICS

IMPERIAL

IMPERIAL COLLEGE LONDON

Program Co-Chairs

Elena Garces, Universidad Rey Juan Carlos, Spain / Adobe, France
Eric Haines, NVIDIA, US

Conference Chairs

Abhijeet Ghosh, Imperial College London, UK
Tobias Ritschel, University College London, UK

Proceedings Production Editor

Dieter Fellner (TU Darmstadt & Fraunhofer IGD, Germany)

Sponsored by EUROGRAPHICS Association

DOI: 10.2312/sr.20242017

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

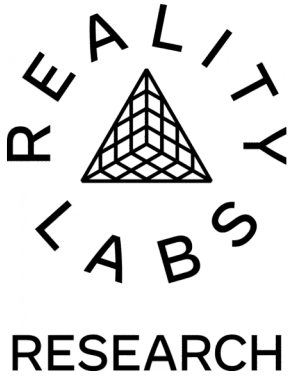
ISBN 978-3-03868-262-2
ISSN 1727-3463

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

Table of Contents

Table of Contents

Gold Sponsors



Silver Sponsors

Best Paper Award Sponsor

International Programme Committee

Laurent Belcour, Intel
Pierre Bénard, Bordeaux University, Inria Bordeaux-Sud-Ouest
Jiří Bittner, Czech Technical University in Prague
Tamy Boubekeur, Adobe Research
Per Christensen, Pixar
Petrik Clarberg, NVIDIA
Eugene d'Eon, NVIDIA
Daljit Singh Dhillon, Clemson University
George Drettakis, INRIA
Marc Droske, Wētā FX
Jonathan Dupuy, Intel
Farshad Einabadi, University of Surrey
Alban Fichet, Intel
Iliyan Georgiev, Adobe Research
Yotam Gingold, George Mason University
Pascal Grittman, Saarland University
Thorsten Grosch, TU Clausthal
Adrien Gruson, École de Technologie Supérieure
Tobias Günther, FAU Erlangen-Nuremberg
Milos Hasan, Adobe Research
Julian Iseringhausen, Google Research
Adrián Jarabo, Meta
Markus Kettunen, NVIDIA
Georgios Kopanas, Inria & Université Côte d'Azur
Rafael Kuffner dos Anjos, University of Leeds
Manuel Lagunas, Amazon
Thomas Leimkühler, MPI Informatik
Hendrik Lensch, University of Tübingen
Gabor Liktor, Intel
Jorge Lopez-Moreno, Universidad Rey Juan Carlos
Daniel Meister, Advanced Micro Devices, Inc.
Xiaoxu Meng, Tencent
Quirin Meyer, Coburg University
Zahra Montazeri, University of Manchester
Bochang Moon, Gwangju Institute of Science and Technology
Krishna Mullia, Adobe Research
Jacob Munkberg, NVIDIA
Thu Nguyen-Phuoc, Meta
Merlin Nimier-David, NVIDIA
Christoph Peters, Intel
Matt Pharr, NVIDIA
Julien Philip, Adobe Research

International Programme Committee

Alexander Reshetov, NVIDIA
Tobias Rittig, Additive Appearance, Charles University
Fabrice Rousselle, NVIDIA
Marco Salvi, NVIDIA
Nicolas Savva, Autodesk, Inc.
Johannes Schudeiske (Hanika), KIT
Kai Selgrad, OTH Regensburg
Ari Silvennoinen, Activision
Gurprit Singh, MPI Informatik
Erik Sintorn, Chalmers University of Technology
Peter-Pike Sloan, Activision
Cara Tursun, Rijksuniversiteit Groningen
Karthik Vaidyanathan, NVIDIA
Konstantinos Vardis, Huawei Technologies
Delio Vicini, Google
Jiří Vorba, Weta Digital
Bruce Walter, Cornell University
Li-Yi Wei, Adobe Research
Hongzhi Wu, Zhejiang University
Zexiang Xu, Adobe Research
Kai Yan, University of California Irvine
Tizian Zeltner, NVIDIA
Shuang Zhao, University of California, Irvine

Reviewers

Artur Grigorev, ETH Zurich

Author Index

Keynote

Demystifying Peripheral Vision

Ruth Rosenholtz

Abstract

Recent advances in human vision research have pointed toward a theory that unifies many aspects of vision. What one can perceive at a glance, i.e. in a single fixation, is of critical importance to the performance of many visual tasks. Perception at a glance, in turn, hinges on the strengths and limitations of peripheral vision. In this talk I will discuss several pervasive myths about peripheral vision, as well as what is actually true: Peripheral vision is dominated not by loss of acuity, but rather by its vulnerability to clutter, known as visual crowding. Nonetheless, despite significant loss of information, humans rely on peripheral vision for a broad range of visual tasks. People may not always point their eyes at objects of interest, because that may not always be optimal for real-world tasks. Rather, we move our eyes as part of a complex tradeoff between the information available in the fovea vs. periphery, and the costs of shifting one's gaze.

Short Biography

Ruth Rosenholtz is a Principal Research Scientist at NVIDIA, having recently joined after 20 years in MIT's Department of Brain & Cognitive Sciences and CSAIL. She joined MIT after 7 years at the Palo Alto Research Center (formerly Xerox PARC). She has a B.S. in Engineering from Swarthmore College, and a Ph.D. from UC Berkeley in EECS. She brings her background in electrical engineering, specifically computer vision, to the study of human vision, including visual search, perceptual organization, visual clutter, and peripheral vision. Her work focuses on developing predictive computational models of visual processing.

Keynote

What are Good Representations for Controllable Generative Models

Niloy Mitra

Abstract

Foundational models have rapidly emerged as powerful generative models. In the context of content creation workflows, such image generators are currently controlled by domain-specific conditioning signals (e.g., prompts, depth, joint locations). This, however, makes iterative content creation difficult as 'identity' of object(s) can change in unpredictable ways as the user refines the creation. In this talk, I will discuss how classical representations can be meaningfully used to control pretrained generative models to generate and subsequently edit visual content using easy-to-author high-level guidance. I will report on our recent attempts to mix differential geometry and neural networks to build universal algorithms that do not require huge amounts of 3D training data and discuss open challenges ahead. I will discuss applications in image creation, feature extraction, and image editing.

Short Biography

Niloy J. Mitra leads the Smart Geometry Processing group in the Department of Computer Science at University College London and the Adobe Research London Lab. He received his Ph.D. from Stanford University under the guidance of Leonidas Guibas. His research focuses on developing machine learning frameworks for generative models for high-quality geometric and appearance content for CG applications. He was awarded the Eurographics Outstanding Technical Contributions Award in 2019, the British Computer Society Roger Needham Award in 2015, and the ACM SIGGRAPH Significant New Researcher Award in 2013. He was elected as a fellow of Eurographics in 2021 and served as the Technical Papers Chair for SIGGRAPH in 2022. His work has also earned him a place in the SIGGRAPH Academy in 2023. Besides research, Niloy is an active DIYer and loves reading, cricket, and cooking.