GCH 2021

Eurographics Workshop
on
Graphics and Cultural Heritage

4 – 6 November 2021
Bournemouth University, United Kingdom

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Sponsored by EUROGRAPHICS Association

DOI: 10.2312/gch.20212022

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Series Editors

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 978-3-03868-141-0
ISSN 2312-6124 (online)

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

Table of Contents

Table of Contents

Preface

Technology has the potential to provide new opportunities to explore and showcase cultural heritage (CH), while CH offers challenging applications for technology researchers and practitioners. This Eurographics Workshop on Graphics and Cultural Heritage – EG GCH 2021 – is the next event in a long and distinguished conference series which considers the intersection of these two fields. After the challenges of the COVID-19 pandemic and the disappointment of having to hold EG GCH 2020 solely online last year, we are delighted that the pandemic situation has improved sufficiently to enable EG GCH 2021 to be a hybrid event, with some participants face-to-face while others will be able to enjoy the event online.

The programme comprises 2 keynote papers:

- Holly Rushmeier, Yale University, US
- Niall Ó hOisín, Noho Ltd, Ireland,

12 high quality paper presentations, 7 short papers, a tutorial, a special session, panel and an exhibition. Within the constraints of a hybrid conference, we will ensure there is plenty of discussion. In particular, the panel session builds on the paper presentations to explore the topic of Digital Cultural Heritage post COVID-19.

We would like to thank the following for all their efforts to make this exciting event possible:

- All the authors for submitting the results of their latest endeavours
- The programme committee for all their work in reviewing the papers
- EU SCHEDAR project[†] for providing the Tutorial "Safeguarding the Cultural Heritage of Dance"
- Keynote speakers for their valuable contribution to the event
- Session chairs for their help in organising and steering the talks and discussions
- Panellists and exhibitors for adding extra value to the event
- Local organising team for their commitment and determination
- Bournemouth University admin teams for their support
- Karina and Stefanie for their guidance throughout the organisation process.

We hope you enjoy the EG GCH 2021 proceedings.

Vedad & Alan

[†] www.schedar.eu

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Author Index

Keynote

Tools for Making Sense of Cultural Heritage Data

Holly Rushmeier

Abstract

A challenge in cultural heritage documentation, analysis and communication is that relevant data is available in a wide variety of forms. Tools are needed to manage text, numerical output from instruments, images (both 2D and 3D), video and more. Further, a cultural heritage professional needs to observe all of this data to make informed decisions and communicate the basis for them. In this talk I will talk about tools for two scenarios – the data and analysis relevant to an individual object, and the data and analysis relevant to an entire site. I will provide examples of software we have developed and using the software to make sense of diverse data sets.

Biographical Sketch

Holly Rushmeier is the John C. Malone Professor of Computer Science at Yale University. Her research interests include shape and appearance capture, applications of perception in computer graphics, modeling material appearance and developing computational tools for cultural heritage.

Holly Rushmeier received the BS, MS and PhD degrees in Mechanical Engineering from Cornell University in 1977, 1986 and 1988 respectively. Between receiving the BS and returning to graduate school in 1983 she worked as an engineer at the Boeing Commercial Airplane Company and at Washington Natural Gas Company (now a part of Puget Sound Energy). In 1988 she joined the Mechanical Engineering faculty at Georgia Tech. While there she conducted sponsored research in the area of computer graphics image synthesis and taught classes heat transfer and numerical methods at both the undergraduate and graduate levels. At the end of 1991 Holly Rushmeier joined the computing and mathematics staff of the National Institute of Standards and Technology, focusing on scientific data visualization.

From 1996 to early 2004 Rushmeier was a research staff member at the IBM T.J. Watson Research Center. At IBM she worked on a variety of data visualization problems in applications ranging from engineering to finance. She also worked in the area of acquisition of data required for generating realistic computer graphics models, including a project to create a digital model of Michelangelo's Florence Pieta, and the development of a scanning system to capture shape and appearance data for presenting Egyptian cultural artifacts on the World Wide Web.

Rushmeier was Editor-in-Chief of ACM Transactions on Graphics from 1996-99 and co-EiC of Computer Graphics Forum (2010-2014). She has also served on the editorial boards of IEEE Transactions on Visualization and Computer Graphics, ACM Journal of Computing and Cultural Heritage and IEEE Computer Graphics and Applications. She currently serves the editorial boards of ACM Transactions on Applied Perception, ACM Transactions on Graphics, the Visual Computer and Computers and Graphics. In 1996 she served as the papers chair for the ACM SIGGRAPH conference, in 1998,2004 and 2005 as the papers co-chair for the IEEE Visualization conference and in 2000 as the papers co-chair for the Eurographics Rendering Workshop. She has also served in numerous program committees including multiple

years on the committees for SIGGRAPH, IEEE Visualization, Eurographics, Eurographics Rendering Workshop/Symposium, and Graphics Interface.

Rushmeier is a fellow of the ACM and of the Eurographics Association. She has lectured at many meetings and academic institutions, including invited keynote presentations at international meetings (Eurographics Rendering Workshop 94, 3DIM 01 , Eurographics Conference 2001 and 2012, Pacific Graphics 2010, SCCG 2013, CGI 2014, CAA 2015 and VISAPP 2017.) She has spoken at and/or organized many tutorials and panels at the SIGGRAPH and IEEE Visualization conferences. Rushmeier served as chair of the Computer Science Department, July 2011- July 2014.

Keynote

Stories from the Field

Niall Ó hOisín

Abstract

Digital experiences in the cultural heritage sector have enjoyed much success in the last decade and this talk will look at the different factors that make a successful digital experience. The talk will draw from our own experiences in this field and how we combine our creative and technical know-how to engage the audience.

As content developers and digital story-tellers we walk a tightrope between different factions within the cultural heritage landscape. We are required to balance engagement in a story with historical authenticity, or the scholarly publications with the short attention span of a 12 year old. We visualise historical stories and have to find a happy medium between conflicting theories of archaeologists and historians. All the while weighing the small budget against the wild expectations of the audience and the curator. We will look at Design, Visualisation, Storytelling and Technology and how we combine these elements to engage and educate the audience, whilst keeping the curators/experts happy.

Despite the great success in the last decade the sector has some problems that can be overcome. We will look at these issues and see how they have changed and how we have solved or contributed to these over the years. The pandemic has brought digital experiences to the fore in ways we couldn't have imagined before, and museums and cultural institutions have a chance to embrace the medium and embed it into their stories.

Biographical Sketch

Niall is founder and Managing Director of Noho. He is also Creative Director and is responsible for articulating the creative vision on all projects.

Following a degree in History and History of Art from UCD, Niall studied computer animation and graphics in Ballyfermot College. He began working in the Post Production industry in 1994 and has been creating high-end 3D animation, VFX and motion graphics for the past 20 years. He trained and worked in Screenscene for 8 years, and then at The Farm, Dublin before founding Noho in 2009.

Niall is a leader in the field of virtual heritage, combining his technical and creative background in broadcast graphics, commercials and animation with his interest in history and history of art. His expertise in animation and design and his experience in interactive and immersive technologies, enables him to create innovative solutions and interpretive experiences across diverse industry sectors: from heritage to corporate and broadcast.

Niall is a founding member of several EU-funded projects and networks, such as V-Must, CEMEC, Emotive, Cobbra, MEMEX, and Share3D. Through participation in these projects and networks he keeps abreast of innovations and new discoveries in digital and virtual heritage.