Computer Graphics & Visual Computing (CGVC) 2015

Eurographics UK Chapter Proceedings

University College London, United Kingdom

16 – 17 September 2015

Programme Co-Chairs

Rita Borgo (Swansea University)
Cagatay Turkay (City University London)

Local Organisers

Tim Weyrich (UCL, co-chair)
Rebecca Martin (UCL)
Tom Haines (UCL)

Proceedings Production Editor

Dieter Fellner (TU Darmstadt & Fraunhofer IGD, Germany)

DOI: 10.2312/cgvc.20152019

delivered by EUROGRAPHICS DIGITAL LIBRARY www.eg.org diglib.eg.org

This work is subject to copyright.

All rights reserved, whether the whole or part of the material is concerned, specifically those of translation, reprinting, re-use of illustrations, broadcasting, reproduction by photocopying machines or similar means, and storage in data banks.

Copyright ©2015 by the Eurographics Association
Postfach 2926, 38629 Goslar, Germany

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 978-3-905674-94-1

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

Table of Contents

Table of Contents iii

Preface v

Sponsor vi

International Programme Committee vii

Author Index viii

Visualisation and Analytics

Multivariate Hybrid Visualisation of Ornithological Sensor Data 1
Richard C. Roberts, Robert S. Laramee, and Mark W. Jones

Explaining Neighborhood Preservation for Multidimensional Projections 7
Rafael Messias Martins, Rosane Minghim, and Alexandru C. Telea

Quasi-Hamming Distances: An Overarching Concept for Measuring Glyph Similarity 15
Philip A. Legg, Eamonn Maguire, Simon Walton, and Min Chen

Revealing Cultural Collections Over Time 19
Florian Kräutli and Stephen Boyd Davis

Recent Work on Cell Lineage Visualisation 23
A. J. Pretorius

Computer Graphics Applications: From 2D to Simulation

GKS-94 to SVG: Some Reflections on the Evolution of Standards for 2D Graphics 27
David A. Duce and F.R.A. Hopgood

Tiled Projection Onto Deforming Screens 35
Hyosun Kim, Christoph Schinko, Sven Havemann, Ivan Redi, Andrea Redi, and Dieter W. Fellner

Space Carving Voxel Models for Urban Aerial Laser Scan Data 43
Oliver Skidmore, Hamish Carr, and Debra Laefer

Visualising Real Time Large Scale Micro-Simulation of Transport Networks 47
Peter Heywood, Paul Richmond, and Steve Maddock

QCDVis: a tool for the visualization of Lattice Quantum Chromodynamics data 51
Dean P. Thomas, Rita Borgo, and Simon Hands

Table of Contents

Visualisation Techniques

Visibility-Weighted Saliency for Volume Visualization 55
Shengzhou Luo and John Dingliana

Fiber Surfaces: Generalizing Isosurfaces to Bivariate Data 63
Hamish Carr, Geng Zhao, Julien Tierny, Amit Chattopadhyay, and Aaron Knoll

Multi-Perspective Synopsis with Faceted Views of Varying Emphasis 65
Chris Rooney, Roger Beecham, Jason Dykes, Cagatay Turkay, Aidan Slingsby, Jo Wood, and William Wong

Natural Phenomena as Metaphors for Visualization of Trend Data in Interactive Software Maps 69
Hannes Würfel, Matthias Trapp, Daniel Limberger, and Jürgen Döllner

Interaction Techniques and Applications

Extending the Scaffold Hunter Visualization Toolkit with Interactive Heatmaps 77
Werner Sturm, Till Schäfer, Tobias Schreck, Andreas Holzinger, and Torsten Ullrich

Some Thoughts on Visual Analytics in Teaching 85
David A. Duce

Using Sketching to Control Heterogeneous Groups 87
Thomas Allen, Aleksandar Parvanov, Sam Knight, and Steve Maddock

User-defined Gestures for Augmented Reality with Smart Phones 93
Francesca Madeddu, Daniel Archambault, Rita Borgo, and Lewis Hancock

Preface

This conference proceedings contains the programme of the Computer Graphics and Visual Computing 2015, the 33nd Annual Conference organised by the UK Chapter of the Eurographics Association -EGUK. The conference takes place between 16-17 September 2015 at University College London, UK.

This year, the UK Chapter has maintained its focus towards being a forum for exchange between academic research groups and industry. In order to facilitate this dialogue, we placed considerable more emphasis on quality of extended abstracts as compared to previous editions of the conference. The current conference programme reflects this shift in our motivations and objectives.

This year has seen a considerable rise in submissions numbers, we received 35 submissions, and we accepted 8 full papers and 10 extended abstracts. A record number of international programme committee members participated in the review of each submission. Every submission was seen by at least 3 referees, enabling the conference chairs to easily assess the quality of the submissions. The exciting conference programme covers a wide range of topics in Graphics, Visualization and Visual Analytics. Special thanks go to our dedicated programme committee members who provided constant support and excellent reviews.

We thank all authors for submitting their work. We would also like to thank our Keynote Speaker Stuart Adcock, from ILM, for his participation. Special thanks go to the local organisers Professor Tim Weyrich, Ms Rebecca Martin and Dr. Tom Haines at University College London for their hard work in organizing and hosting the conference.

CGVC 2015 Conference Chairs
Rita Borgo and Cagatay Turkay

Sponsor

International Programme Committee

Daniel Archambault, Swansea University
Hamish Carr, University of Leeds
Min Chen, University of Oxford
Silvester Czanner, Manchester Metropolitan University
Kurt Debattista, University of Warwick
Neil Dodgson, University of Cambridge
David Duce, Oxford Brookes University
David Duke, University of Leeds
Jason Dykes, City University London
Rae Earnshaw, University of Bradford
Jean-Yves Guillemaut, University of Surrey
Nick Holliman, University of York
Toby Howard, University of Manchester
Ioannis Ivrissimtzis, Durham University
Mark Jones, Swansea University
Yukun Lai, Cardiff University
Bob Laramee, Swansea University
Stephen Laycock, University of East Anglia
Steve Maddock, University of Sheffield
Ralph Martin, Cardiff University
Niloy Mitra, University College London
Benjamin Mora, Swansea University
Alexander Pasko, Bournemouth University
Steve Pettifer, University of Manchester
Hannes Pretorius, University of Leeds
Paul Richmond, University of Sheffield
Jonathan Roberts, Bangor University
Gerald Schaefer, Loughborough University
Gary Tam, Swansea University
Wen Tang, Bournemouth University
Cagatay Turkay, City University London
Martin Turner, University of Manchester
Hassan Ugail, University of Bradford
Franck Vidal, Bangor University
Tao Wan, University of Bradford

Author Index

Allen, Thomas 87
Archambault, Daniel 93
Beecham, Roger 65
Borgo, Rita 51, 93
Boyd Davis, Stephen 19
Carr, Hamish 43, 63
Chattopadhyay, Amit 63
Chen, Min 15
Dingliana, John 55
Döllner, Jürgen 69
Duce, David A. 27, 85
Dykes, Jason 65
Fellner, Dieter W. 35
Hancock, Lewis 93
Hands, Simon 51
Havemann, Sven 35
Heywood, Peter 47
Holzinger, Andreas 77
Hopgood, F.R.A. 27
Jones, Mark W. 1
Kim, Hyosun 35
Knight, Sam 87
Knoll, Aaron 63
Kräutli, Florian 19
Laefer, Debra 43
Laramee, Robert S. 1
Legg, Philip A. 15
Limberger, Daniel 69
Luo, Shengzhou 55
Maddock, Steve 47, 87
Madeddu, Francesca 93
Maguire, Eamonn 15
Martins, Rafael Messias 7
Minghim, Rosane 7
Parvanov, Aleksandar 87
Pretorius, A. J. 23
Redi, Ivan 35
Redi, Andrea 35
Richmond, Paul 47
Roberts, Richard C. 1
Rooney, Chris 65
Schäfer, Till 77
Schinko, Christoph 35
Schreck, Tobias 77
Skidmore, Oliver 43
Slingsby, Aidan 65
Sturm, Werner 77
Telea, Alexandru C. 7
Thomas, Dean P. 51
Tierny, Julien 63
Trapp, Matthias 69
Turkay, Cagatay 65
Ullrich, Torsten 77
Walton, Simon 15
Wong, William 65
Wood, Jo 65
Würfel, Hannes 69
Zhao, Geng 63