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PROCEEDINGS

Visualization and Data Analysis 2017

Editors: Thomas Wischgoll, Wright State Univ. (United States),

Song Zhang, Mississippi State Univ. (United States)

David Kao, NASA Ames Research Center (United States)

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Visualization and Data Analysis 2017

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Introduction

This year marks the twenty-fourth anniversary of the Visualization and Data Analysis (VDA) Conference. VDA covers all R&D and application aspects of data visualization and visual analytics. For this year's program 15 submissions were accepted papers. This high-quality selection is possible due to the excellent reviews from the international program committee members.

This year is the second time that authors had the option to submit their work as journal submissions. Based on the journal review process, five papers were selected to appear in the Journal of Imaging Science and Technology.

The conference program for this year includes a keynote address by Dr. Gunther Weber from the Lawrence Berkeley National Laboratory. Dr. Weber's keynote covers several important topics related to visualization. Specifically, it will focus on topological visualization methods for extreme scale data sets to meet the need of data sets increasing in size due to that more and more data is collected nowadays.

Lastly, we thank Kitware and IS&T for sponsoring the conference. We also thank the authors, program committee members, and external reviewers for their hard work that makes the conference such a success.

— Thomas Wischgoll, David Kao, and Song Zhang

VDA 2017 thanks Conference Sponsor



Visualization and Data Analysis 2017

Monday January 30, 2017

El 2017 Wednesday Plenary and Symposium Awards

Session Chairs: Joyce E. Farrell, Stanford University, and Nitiin Sampat, Rochester Institute of Technology (United States)

2:00 – 3:00 PM

Grand Peninsula Ballroom D

Designing VR video camera systems, Brian Cabral, Facebook, Inc. (United States)

Brian Cabral is Director of Engineering at Facebook, leading the Surround 360 VR camera team, specializing in computational photography, computer vision, and computer graphics. He has published a number of papers in the area of computer graphics and imaging including the pioneering line Integral Convolution algorithm. Cabral discusses developing Facebook Surround 360, an open, high-quality 3D-360 video capture system. VR video capture systems are composed of multiple optical and digital components - all of which must operate as if they are one seamless optical system. The design of VR video cameras, optical choices, SNR, etc., require a new set of technologies and engineering approaches, with tight coupling to the computational system components.

3:00 – 3:30 PM Coffee Break

KEYNOTE: Topological Data Analysis

Session Chair: Thomas Wischgoll, Wright State University (United States)

3:30 – 4:30 PM

Cypress B

Topological analysis at the extreme scale: Finding features in large data sets, Gunther Weber^{1,2}; ¹Lawrence Berkeley National Laboratory and ²University of California, Davis (United States) [VDA-383]

Gunther Weber is a Staff Scientists in LBNL's Computational Research Division and an Adjunct Associate Professor of Computer Science at UC Davis. His research interests include computer graphics, scientific visualization, topological data analysis methods, parallelization of visualization algorithms, hierarchical data representation methods, and bioinformatics. Prior to joining LBNL, Weber worked as a Project Scientist at the Institute for Data Analysis and Visualization (IDAV) at UC Davis focusing on visualization of three-dimensional gene expression data (with researchers of LBNL's Genomics and Life Sciences divisions), topological exploration of scalar data, and visualization of brain imaging data and experimental earthquake data. Weber earned his PhD in computer science, from the University of Kaiserslautern, Germany (2003).

Visualization and Data Analysis 2017 Interactive Papers Oral Previews

Session Chair: Thomas Wischgoll, Wright State University (United States)

4:30 – 4:50 PM

Cypress B

In this session interactive poster authors will each provide a brief oral preview of their poster presentation, which will be presented fully in the Visualization and Data Analysis 2017 portion of the Symposium Interactive Papers Session at 5:30 pm on Wednesday.

4:30

An interactive tool for Analyzing the Correlation, Uncertainty, and Clustering (ACUC) over ensembles in climate dataset, Najmeh Abedzadeh, Mississippi State University (United States) [VDA-384]

5

4:36

Analysis enhanced particle-based flow visualization, Lieyu Shi, Lei Zhang, Wei Cao, and Guoning Chen, University of Houston (United States) [VDA-385]

12

4:42

Constellations of movement: An interactive application to visualise research in motor imagery decoding, Jennifer Rogers¹, Matthieu Poyade¹, and Frank Pollick²; ¹Glasgow School of Art and ²University of Glasgow (United Kingdom) [VDA-450]

PANEL: Application Papers: What are they and how should they be evaluated?

Panel Moderator: Gunther Weber, Berkeley Lab (United States)

4:50 – 5:30 PM

Cypress B

This panel will start a discussion in the community about what goals an application paper ought to have, what its main contributions to the state of art of visualization should be, and how it ought to be evaluated by reviewers. How do we as a community generate clear evaluation criteria for this type of paper?

5:30 – 7:00 PM Symposium Interactive Papers (Poster) Session, Grand Peninsula Ballroom E

Thursday February 2, 2017

Information Visualization

Session Chair: Song Zhang, Mississippi State University (United States)

8:50 – 10:10 AM

Cypress B

8:50

Declarative guide creation, Joseph Cottam and Andrew Lumsdaine, Indiana University (United States) [VDA-386]

22

9:10 34
Visual-interactive semi-supervised labeling of human motion capture data, Jürgen Bernard¹, Eduard Dobermann¹, Anna Vögele², Björn Krüger³, Jörn Kohlhammer^{1,4}, and Dieter Fellner^{1,4}; ¹Technische Universität Darmstadt (Germany), ²University of Bonn (Germany), ³Gokhale Method Institute (United States), and ⁴Fraunhofer Institute for Computer Graphics Research IGD (Germany) [VDA-387]

9:30 46
Visual-interactive creation and validation of text clustering workflows to explore document collections, Tobias Ruppert¹, Michael Staab², Andreas Bannach¹, Hendrik Lücke-Tieke¹, Jürgen Bernard², Arjan Kuijper^{1,2}, and Jörn Kohlhammer^{1,2}; ¹Fraunhofer Institute for Computer Graphics Research IGD and ²Technische Universität Darmstadt (Germany) [VDA-388]

9:50 58
AssisTag: Seamless integration of content-based and keyword-based image exploration for category search (JIST-first), Kazuyo Mizuno, Daisuke Sakamoto, and Takeo Igarashi, The University of Tokyo (Japan) [VDA-389]

10:10 – 10:50 AM Coffee Break

Virtual Reality

Session Chair: Song Zhang, Mississippi State University (United States)

10:50 – 11:30 AM

Cypress B

10:50 70
Megacity: A collaborative virtual reality environment for emergency response, training, and decision making, Sharad Sharma¹, Phillip Devreaux¹, David Scribner², Jock Grynovicki², and Peter Grazaitis²; ¹Bowie State University and ²Army Research Laboratory (United States) [VDA-390]

11:10 78
Display systems for visualization and simulation in virtual environments, Thomas Wischgoll, Wright State University (United States) [VDA-391]

Scientific Visualization

Session Chair: David Kao, NASA Ames Research Center (United States)

11:30 AM – 12:10 PM

Cypress B

11:30 89
Ray traced volume clipping using multi-hit BVH Traversal, Stefan Zellmann¹, Mauritius Hoevens², and Ulrich Lang¹; ¹University of Cologne and ²University Hospital of Cologne (Germany) [VDA-392]

11:50 99
Effectiveness of feature-driven storytelling in 3D time-varying data visualization (JIST-first), Li Yu, Lane Harrison, and Aidong Lu, University of North Carolina at Charlotte (United States) [VDA-393]

12:10 – 2:00 PM Lunch Break

Graphs and Hierarchies

Session Chair: Thomas Wischgoll, Wright State University (United States)

2:00 – 2:40 PM

Cypress B

2:00 110
A visual evaluation study of graph sampling methods, Fangyan Zhang¹, Song Zhang¹, Pak Chung Wong², Hugh Medal¹, Linkan Bian¹, J. Edward Swan II¹, and T.J. Jankun-Kelly¹; ¹Mississippi State University and ²Pacific Northwest National Laboratory (United States) [VDA-394]

2:20 118
Inferring partial orders of nodes for hierarchical network layout (JIST-first), Hsiang-Yun Wu¹, Shigeo Takahashi², Hiroko Miyamura³, Satoshi Ohzahata⁴, and Akihiro Nakao⁵; ¹Keio University, ²University of Aizu, ³Japan Atomic Energy Agency, ⁴The University of Electro-Communications, and ⁵The University of Tokyo (Japan) [VDA-395]

Flow Visualization

Session Chair: David Kao, NASA Ames Research Center (United States)

2:40 – 3:20 PM

Cypress B

2:40 131
Closest point sparse octree for surface flow visualization, Mark Kim and Charles Hansen, University of Utah (United States) [VDA-396]

3:00 140
Accelerating advection via approximate block exterior flow maps, Ryan Bleile¹, Linda Sugiyama², Christoph Garth³, and Hank Childs¹; ¹University of Oregon (United States), ²Massachusetts Institute of Technology (United States), and ³University of Kaiserslautern (Germany) [VDA-397]

3:00 – 5:00 PM Meet the Future: A Showcase of Student and Young Professionals Research, Grand Peninsula Ballroom E

3:20 – 4:00 PM Coffee Break