

IS&T International Symposium on  
**Electronic  
Imaging**  
SCIENCE AND TECHNOLOGY

PROCEEDINGS

26 January 2020 — 30 January 2020 • Burlingame, CA, USA

## Visualization and Data Analysis 2020

Editors: **Thomas Wischgoll**, Wright State University (United States),  
**David Kao**, NASA Ames Research Center (United States),  
**Yi-Jen Chiang**, New York University (United States)

These papers represent the program of Electronic Imaging 2020,  
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## Visualization and Data Analysis 2020

### Conference overview

The Conference on Visualization and Data Analysis (VDA) 2020 covers all research and development and application aspects of data visualization and visual analytics, including the use of virtual and augmented reality technology. Since the first VDA conference was held in 1994, the annual event has served as a major venue for visualization researchers and practitioners from around the world to present their work and share their experiences.

### Award

Kostas Pantazos Memorial Award for Outstanding Paper

**Conference Chairs:** Thomas Wischgoll, Wright State University (United States); David Kao, NASA Ames Research Center (United States); and Yi-Jen Chiang, New York University (United States)

**Program Committee:** Madjid Allili, Bishop's University (Canada); Wes Bethel, Lawrence Berkeley National Laboratory (United States); Aashish Chaudhary, Kitware, Inc. (United States); Guoning Chen, University of Houston (United States); Joseph Cottam, Pacific Northwest National Laboratory (United States); Sussan Einakian, California Polytechnic State University (United States); Ulrich Engelke, CSIRO (Australia); Christina Gillman, University of Leipzig (Germany); Matti Gröhn, Finnish Institute of Occupational Health (Finland); Hanqi Guo, Argonne National Laboratory (United States); Ming Hao, conData (United States); Christopher G. Healey, North Carolina State University (United States); Halldór Janetzko, University of Konstanz (Germany); Ming Jiang, Lawrence Livermore National Laboratory (United States); Andreas Kerren, Linnaeus University (Sweden); Robert Lewis, Washington State University (United States); Peter Lindstrom, Lawrence Livermore National Laboratory (United States); Zhanping Liu, Kentucky State University (United States); Aidong Lu, The University of North Carolina at Charlotte (United States); G. Elisabeta Marai, University of Illinois at Chicago (United States); Alex Pang, University of California, Santa Cruz (United States); Kristi Potter, National Renewable Energy Laboratory (United States); Theresa-Marie Rhyne, Computer Graphics and E-Learning (United States); René Rosenbaum, meeCoda (Germany); Jibonananda Sanyal, Oak Ridge National Laboratory (United States); Pinaki Sarder, University of Buffalo (United States); Graig Sauer, Towson University (United States); Jürgen Schulze, University of California, San Diego (United States); Kalpathi Subramanian, The University of North Carolina at Charlotte (United States); Chaoli Wang, University of Notre Dame (United States); Jie Yan, Bowie State University (United States); Leishi Zhang, Middlesex University London (United Kingdom); Song Zhang, Mississippi State University (United States); and Wenjin Zhou, Oakland University (United States)

Paper authors listed as of 1 January 2020; refer to manuscript for final authors. Titles that are not listed with the proceedings files were presentation-only.

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# VISUALIZATION AND DATA ANALYSIS 2020

## Wednesday, January 29, 2020

10:00 am – 3:30 pm Industry Exhibition - Wednesday

10:10 – 11:00 am Coffee Break

12:30 – 2:00 pm Lunch

### PLENARY: VR/AR Future Technology

Session Chairs: Radka Tezaur, Intel Corporation (United States), and Jonathan Phillips, Google Inc. (United States)

**2:00 – 3:10 pm**

Grand Peninsula Ballroom D

**Quality Screen Time: Leveraging Computational Displays for Spatial Computing**, Douglas Lanman, director, Display Systems Research, Facebook Reality Labs (United States)

For abstract and speaker biography, see page 7

3:10 – 3:30 pm Coffee Break

### Visualization and Data Analysis 2020 Interactive Papers Session

**5:30 – 7:00 pm**

Sequoia

The Visualization and Data Analysis 2020 Conference work to be presented at the EI 2020 Symposium Interactive Posters Session is listed in the Visualization and Data Analysis 2020 "Information Visualization" session on Thursday afternoon.

5:30 – 7:00 pm EI 2020 Symposium Interactive Posters Session

5:30 – 7:00 pm Meet the Future: A Showcase of Student and Young Professionals Research

## Thursday, January 30, 2020

10:10 – 11:00 am Coffee Break

### Scientific Visualization

Session Chair: Yi-jen Chiang, New York University (United States)

**11:05 am – 12:10 pm**

Regency C

11:05

Conference Welcome

11:10

VDA-374

**A gaze-contingent system for foveated multiresolution visualization of vector and volumetric data**, Thanawut Ananpiriyakul<sup>1</sup>, Josh Anghe<sup>2</sup>, Kristi Potter<sup>3</sup>, and Alark Joshi<sup>1</sup>; <sup>1</sup>University of San Francisco, <sup>2</sup>Boise State University, and <sup>3</sup>National Renewable Energy Laboratory (United States)

11:30

VDA-375

**A visualization system for performance analysis of image classification models**, Chanhee Park<sup>1</sup>, Hyojin Kim<sup>2</sup>, and Kyungwon Lee<sup>1</sup>; <sup>1</sup>Ajou University (Republic of Korea) and <sup>2</sup>Lawrence Livermore National Laboratory (United States)

11:50

VDA-376

**HashFight: A platform-portable hash table for multi-core and many-core architectures**, Brenton Lessley<sup>1</sup>, Shaomeng Li<sup>2</sup>, and Hank Childs<sup>1</sup>; <sup>1</sup>University of Oregon and <sup>2</sup>National Center for Atmospheric Research (United States)

12:30 – 2:00 pm Lunch

### KEYNOTE: Visualization and Cognition

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

**2:00 – 3:00 pm**

Regency C

VDA-386

**Augmenting cognition through data visualization**, Alark Joshi, data visualization researcher and associate professor, University of San Francisco (United States)

Biographies and/or abstracts for all keynotes are found on pages 9–14

3:00 – 3:30 pm Coffee Break

### Information Visualization

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

**3:30 – 4:20 pm**

Regency C

3:30

VDA-387

**A visualization tool for analyzing the suitability of software libraries via their code repositories**, Casey Haber<sup>1</sup> and Robert Gove<sup>2</sup>; <sup>1</sup>Chartio and <sup>2</sup>Two Six Labs (United States)

3:50

VDA-388

**Visualization of search results of large document sets**, James Anderson and Thomas Wischgoll, Wright State University (United States)

The title below is presented as an overview of the interactive presentation at the EI 2020 Interactive Poster session on Wednesday evening.

4:10

VDA-389

**Human-computer interface based on tongue and lips movements and its application for speech therapy system**, Barbara Zitova, Zuzana Bilkova, Adam Novozamsky, and Michal Bartos, Institute of Information Theory and Automation, Czech Academy of Sciences (Czechia)

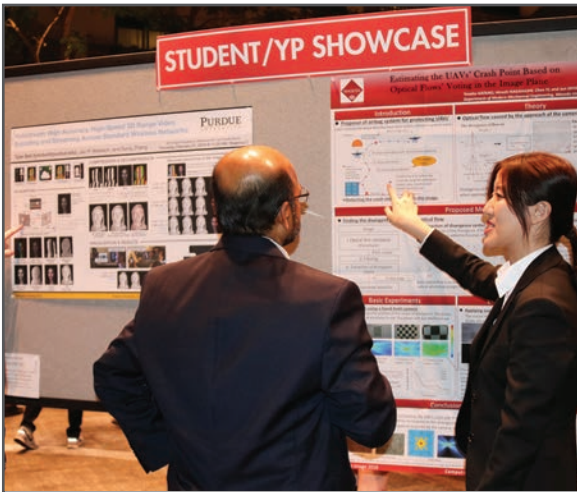
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