

# 2015 Electronic Imaging

SCIENCE AND TECHNOLOGY

TECHNICAL PROGRAM

[www.electronicimaging.org](http://www.electronicimaging.org)

**Conferences and Courses**

8–12 February 2015

**Location**

Hilton San Francisco, Union Square  
San Francisco, California, USA



**SPIE.**



*2015 Symposium Chair*  
**Sheila S. Hemami**  
Northeastern Univ.  
(USA)



*2015 Symposium  
Co-Chair*  
**Choon-Woo Kim**  
Inha Univ.  
(Republic of Korea)



*2015 Short Course Chair*  
**Majid Rabbani**  
Eastman Kodak Co.  
(USA)

# Welcome

On behalf of IS&T—The Society for Imaging Science and Technology and SPIE, the international society for optics and photonics, we would like to welcome you to the 27th annual Symposium on Electronic Imaging. Imaging is pervasive in the human experience, be it photographs that we take in our everyday lives or those that are used in space exploration, medical imaging, entertainment, science, or national security.

This week at Electronic Imaging 2015, you will hear the latest research from the world's leading experts in imaging, image processing, sensors, applications, and imaging science and technology.

You will also have many opportunities to develop both your career and business by networking with leading researchers and entrepreneurs in the field.

Electronic Imaging 2015 is the premier international imaging symposium where you are on the forefront of research and innovation, and we look forward to seeing you this week.

*2015 Symposium Steering Committee:*

- Sheila S. Hemami**, Symposium Chair, Northeastern Univ. (USA)
- Choon-Woo Kim**, Symposium Co-Chair, Inha Univ. (Korea, Republic of)
- Majid Rabbani**, Eastman Kodak Co. (USA)
- Andrew J. Woods**, Curtin Univ. (Australia)
- Sergio R. Goma**, Qualcomm Inc. (USA)
- Kevin J. Matherson**, Microsoft Corp. (USA)
- Joyce E. Farrell**, Stanford Univ. (USA)
- Suzanne E. Grinnan**, IS&T Executive Director (USA)
- Rob Whitner**, SPIE Event Manager (USA)

IS&T/SPIE  
**Electronic  
Imaging**  
SCIENCE AND TECHNOLOGY

**8–12 February 2015**

Hilton San Francisco, Union Square  
San Francisco, California, USA

Join us in celebrating



**INTERNATIONAL  
YEAR OF LIGHT  
2015**

[www.spie.org/IYL](http://www.spie.org/IYL)



## Contents

Special Events .....	4
Organizing Committees .....	2
Meeting Room Locations .....	3
Plenary Presentations .....	5
Exhibition .....	6
Conference Daily Schedule .....	7
Short Course Daily Schedule .....	8-11
Index of Authors, Chairs and Committee Members ..	62-70
General Information .....	72-74
Proceedings .....	75
Publication Order Form .....	76

## CONFERENCES

### 3D Imaging, Interaction, and Metrology

9391 <b>Stereoscopic Displays and Applications XXVI</b> (Holliman, Woods, Favalora, Kawai) .....	12
9392 <b>The Engineering Reality of Virtual Reality 2015</b> (Dolinsky, McDowall) .....	15
9393 <b>Three-Dimensional Image Processing, Measurement (3DIPM), and Applications 2015</b> (Sitnik, Puech) ....	17

### Visualization, Perception, and Color

9394 <b>Human Vision and Electronic Imaging XX</b> (Rogowitz, Pappas, de Ridder) .....	19
9395 <b>Color Imaging XX: Displaying, Processing, Hardcopy, and Applications</b> (Eschbach, Marcu, Rizzi) 23	
9396 <b>Image Quality and System Performance XII</b> (Larabi, Triantaphillidou) .....	26
9397 <b>Visualization and Data Analysis 2015</b> (Kao, Hao, Livingston, Wischgoll) .....	29
9398 <b>Measuring, Modeling, and Reproducing Material Appearance 2015</b> (Ortiz Segovia, Urban, Imai) .....	32

## Image Processing

9399 <b>Image Processing: Algorithms and Systems XIII</b> (Egiazarian, Agaian, Gotchev) .....	35
9400 <b>Real-Time Image and Video Processing 2015</b> (Kehtarnavaz, Carlsohn) .....	37
9401 <b>Computational Imaging XIII</b> (Bouman, Sauer) .....	39
9402 <b>Document Recognition and Retrieval XXII</b> (Ringger, Lamiroy) .....	41

## Image Capture

9403 <b>Image Sensors and Imaging Systems 2015</b> (Widenhorn, Dupret) .....	43
9404 <b>Digital Photography and Mobile Imaging XI</b> (Sampat, Tezaur, Wüller) .....	45

## Computer Vision

9405 <b>Image Processing: Machine Vision Applications VIII</b> (Lam, Niel) .....	47
9406 <b>Intelligent Robots and Computer Vision XXXII: Algorithms and Techniques</b> (Röning, Casasent) ....	49
9407 <b>Video Surveillance and Transportation Imaging Applications 2015</b> (Loce, Saber) .....	51

## Media Processing and Communication

9408 <b>Imaging and Multimedia Analytics in a Web and Mobile World 2015</b> (Lin, Allebach, Fan) .....	53
9409 <b>Media Watermarking, Security, and Forensics 2015</b> (Alattar, Memon, Heitzenrater) .....	55
9410 <b>Visual Information Processing and Communication VI</b> (Said, Guleryuz, Stevenson) .....	58

## Mobile Imaging

9411 <b>Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications 2015</b> (Creutzburg, Akopian) .....	60
--	----

---

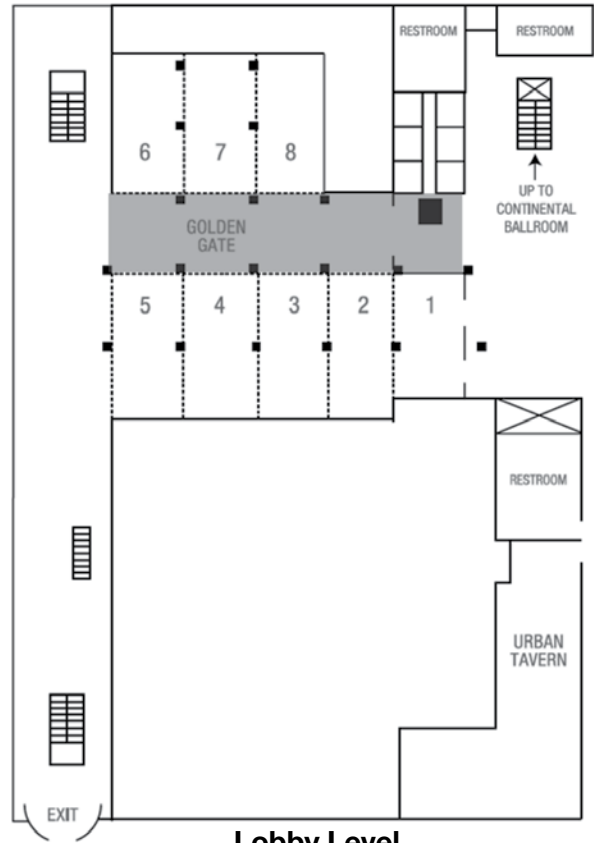
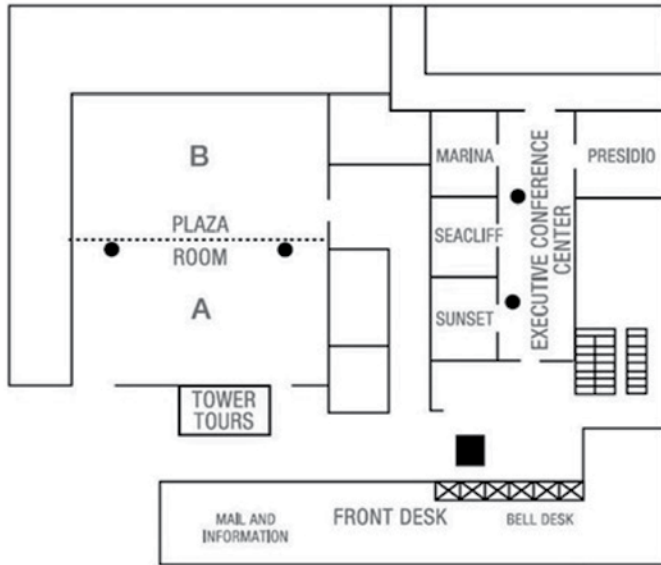
**IS&T/SPIE**  
**Electronic**  
**Imaging**  
**SCIENCE AND TECHNOLOGY**

*2015 Technical Committee:*

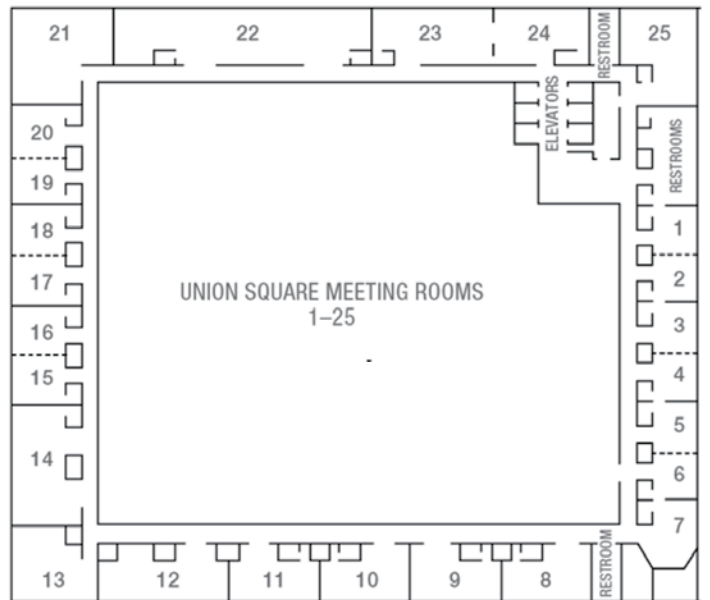
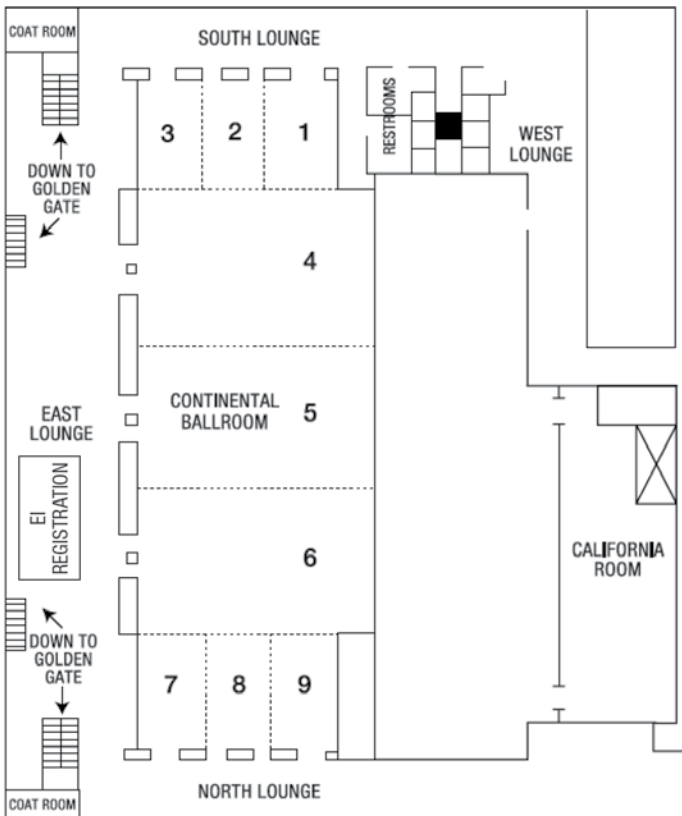
- Sos S. Agaian**, The Univ. of Texas at San Antonio (USA)  
**David Akopian**, The Univ. of Texas at San Antonio (USA)  
**Adnan M. Alattar**, Digimarc Corp. (USA)  
**Jan P. Allebach**, Purdue Univ. (USA)  
**Sebastiano Battiato**, Univ. degli Studi di Catania (Italy)  
**E. Wes Bethel**, Lawrence Berkeley National Lab. (USA)  
**Charles A. Bouman**, Purdue Univ. (USA)  
**Matthias F. Carlsohn**, Computer Vision and Image Communication at Bremen (Germany)  
**David Casasent**, Carnegie Mellon Univ. (USA)  
**Reiner Creutzburg**, Fachhochschule Brandenburg (Germany)  
**Huib de Ridder**, Technische Univ. Delft (Netherlands)  
**Margaret Dolinsky**, Indiana Univ. (USA)  
**Antoine Dupret**, Commissariat à l'Énergie Atomique (France)  
**Karen O. Egjazarian**, Tampere Univ. of Technology (Finland)  
**Reiner Eschbach**, Xerox Corp. (USA)  
**Zhigang Fan**, SKR Labs (USA)  
**Joyce E. Farrell**, Stanford Univ. (USA)  
**Gregg E. Favalora**, VisionScope Technologies LLC (USA)  
**Boyd A. Fowler**, Google (USA)  
**Atanas P. Gotchev**, Tampere Univ. of Technology (Finland)  
**Onur G. Guleryuz**, LG Electronics MobileComm U.S.A., Inc. (USA)  
**Ming C. Hao**, Hewlett-Packard Labs. (USA)  
**Chad D. Heitzenrater**, Air Force Research Lab. (USA)  
**Nicolas S. Holliman**, The Univ. of York (United Kingdom)  
**Francisco H. Imai**, Canon U.S.A., Inc. (USA)  
**Alark Joshi**, Univ. of San Francisco (USA)  
**David L. Kao**, NASA Ames Research Ctr. (USA)  
**Takashi Kawai**, Waseda Univ. (Japan)  
**Nasser Kehtarnavaz**, The Univ. of Texas at Dallas (USA)  
**Edmund Y. Lam**, The Univ. of Hong Kong (Hong Kong, China)  
**Bart Lamiroy**, Univ. de Lorraine (France)  
**Mohamed-Chaker Larabi**, Univ. de Poitiers (France)  
**Qian Lin**, Hewlett-Packard Co. (USA)  
**Mark A. Livingston**, U.S. Naval Research Lab. (USA)  
**Robert P. Loce**, Xerox Corp. (USA)  
**Andrew Lumsdaine**, Indiana Univ. (USA)  
**Gabriel G. Marcu**, Apple Inc. (USA)  
**Kevin J. Matherson**, Microsoft Corp. (USA)  
**Ian E. McDowall**, Fakespace Labs, Inc. (USA)  
**Nasir D. Memon**, Polytechnic Institute of New York Univ. (USA)  
**Kurt S. Niel**, Upper Austria Univ. of Applied Sciences (Austria)  
**Maria V. Ortiz Segovia**, Océ Print Logic Technologies (France)  
**Thrasylvoulos N. Pappas**, Northwestern Univ. (USA)  
**William Puech**, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France)  
**Eric K. Ringger**, Brigham Young Univ. (USA)  
**Alessandro Rizzi**, Univ. degli Studi di Milano (Italy)  
**Ian Roberts**, Pacific Northwest National Lab. (USA)  
**Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA)  
**Juha Röning**, Univ. of Oulu (Finland)  
**Eli Saber**, Rochester Institute of Technology (USA)  
**Amir Said**, LG Electronics MobileComm U.S.A., Inc. (USA)  
**Nitin Sampat**, Rochester Institute of Technology (USA)  
**Ken D. Sauer**, Univ. of Notre Dame (USA)  
**Christopher D. Shaw**, Simon Fraser Univ. (Canada)  
**Robert Sitnik**, Warsaw Univ. of Technology (Poland)  
**Robert L. Stevenson**, Univ. of Notre Dame (USA)  
**Radka Tezaur**, Nikon Research Corp. of America (USA)  
**Sophie Triantaphillidou**, Univ. of Westminster (United Kingdom)  
**Philipp Urban**, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany)  
**Ralf Widenhorn**, Portland State Univ. (USA)  
**Thomas Wischgoll**, Wright State Univ. (USA)  
**Andrew J. Woods**, Curtin Univ. (Australia)  
**Dietmar Wüller**, Image Engineering GmbH & Co. KG (Germany)

# Meeting Room Locations

## Hilton San Francisco, Union Square



**Lobby Level**



**Union Square Fourth Floor**

# Special Events

## Women in Electronic Imaging Lunch

Monday, 9 February

Join female colleagues and senior women scientists to share stories and make connections at the inaugural Women in Electronic Imaging Lunch. The complimentary lunch is open to EI full registrants. Space is limited to 40 people. Visit the registration desk for more information about this special event.

## 3D Theatre

Continental Ballroom 5

Monday, 9 February, 5:30 pm to 7:30 pm

Hosted by **Andrew J. Woods**, Curtin Univ. (Australia)

The 3D Theatre Session at each year's Stereoscopic Displays and Applications conference showcases the wide variety of 3D content that is being produced and exhibited around the world. All 3D footage screened at the 3D Theatre Session is shown in high-quality, polarized 3D on a large screen. The final program will be announced at the conference, and 3D glasses will be provided.

## Industry Exhibition and Employment Marketplace

Continental Ballroom Foyer

Tuesday, 10 February, 9:50 am to 7:30 pm

Wednesday, 11 February, 9:50 am to 4:00 pm

The Electronic Imaging Symposium will host an annual industry exhibit including mobile imaging and its applications. This event provides a unique opportunity to meet company representatives working in this and related electronic imaging areas from highlighting products and services to meeting prospective employers.

## Interactive Paper Set-Up, Viewing, and Presentations

Continental Ballroom 4 and Golden Gate Foyer

**Author Set-Up:**

Tuesday, 10 February, 8:00 am to 10:00 am

**General Viewing:**

Tuesday, 10 February, 10:00 am to 7:00 pm

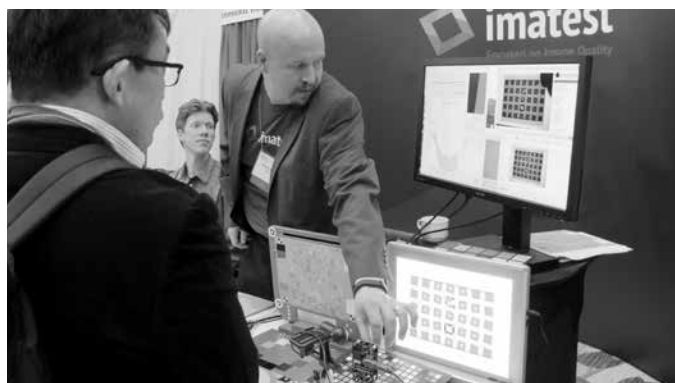
**Interactive Paper Session:**

Tuesday, 10 February, 5:30 pm to 7:00 pm

Conference attendees are encouraged to attend the Interactive Paper Session where Interactive Paper authors display their posters and are available to answer questions and engage in in-depth discussions about their papers. Light refreshments are provided. Please note that conference registration badges are required for entrance and that posters may be previewed by all attendees beginning Tuesday at 10:00 am.

Authors are asked to set up their poster papers starting at 8:00 am on Tuesday. Pushpins are provided; other supplies can be obtained at the Registration Desk.

Authors must remove poster papers at the conclusion of the Interactive Session. Posters not removed are considered unwanted and will be removed by staff and discarded. Neither sponsoring Society assumes responsibility for posters left up before or after the Interactive Paper Session.



## Symposium Demonstration Session

Continental Ballroom Foyer

Tuesday, 10 February, 5:30 pm to 7:30 pm

**Demonstration Set-Up:**

Tuesday, 10 February, 4:30 pm

The highly-successful, interactive, hands-on demonstration of hardware, software, display, and research products are related to all the topics covered by the Electronic Imaging Symposium.

This annual demonstration, which traditionally has showcased the largest and most diverse collection of stereoscopic research and products in one location, represents a unique networking opportunity, a time when attendees can see the latest research in action, compare commercial products, ask questions of technically knowledgeable demonstrators, and even make purchasing decisions about a range of electronic imaging products.

## All-Conference Dessert Reception

Continental Ballroom Foyer

Wednesday, 11 February, 8:00 pm to 9:30 pm

The All-Conference Reception provides a wonderful opportunity to get to know your Electronic Imaging colleagues. Plan to join us for this relaxing and enjoyable event. Coffee, dessert, and beverages will be provided. Conference registration badges are required for entrance.

# Plenary Presentations

## Plenary Session and Society Award Presentations

Continental Ballroom 5

Tuesday, 10 February, 8:30 to 9:50 am

### Analyzing Social Interactions through Behavioral Imaging



**James M. Rehg**, Georgia Institute of Technology (USA)

*Abstract:* Beginning in infancy, individuals acquire the social and communication skills that are vital for a healthy and productive life. Children with developmental delays face great challenges in acquiring these skills, resulting in substantial lifetime risks. Children with an Autism

Spectrum Disorder (ASD) represent a particularly significant risk category, due both to the increasing rate of diagnosis of ASD and its consequences. Since the genetic basis for ASD is unclear, the diagnosis, treatment, and study of the disorder depends fundamentally on the observation of behavior. In this talk, I will describe our research agenda in Behavioral Imaging, which targets the capture, modeling, and analysis of social and communicative behaviors between children and their caregivers and peers. We are developing computational methods and statistical models for the analysis of vision, audio, and wearable sensor data. Our goal is to develop a new set of capabilities for the large-scale collection and interpretation of behavioral data. I will describe several research challenges in multi-modal sensor fusion and statistical modeling which arise in this area, and present illustrative results from the analysis of social interactions with children and adults.

*Biography:* **James M. Rehg** is a Professor in the School of Interactive Computing at the Georgia Institute of Technology, where he is co-Director of the Computational Perception Lab and is the Associate Director for Research in the Center for Robotics and Intelligent Machines. He received his Ph.D. from CMU in 1995 and worked at the Cambridge Research Lab of DEC (and then Compaq) from 1995-2001, where he managed the computer vision research group. He received an NSF CAREER award in 2001 and a Raytheon Faculty Fellowship from Georgia Tech in 2005. He and his students have received a number of best paper awards, including best student paper awards at ICML 2005 and BMVC 2010. Dr. Rehg serves on the Editorial Board of the *International Journal of Computer Vision*, and he served as the General co-Chair for CVPR 2009. He has authored more than 100 peer-reviewed scientific papers and holds 23 issued US patents. His research interests include computer vision, medical imaging, robot perception, machine learning, and pattern recognition. Dr. Rehg is currently leading a multi-institution effort to develop the science and technology of Behavior Imaging—the capture and analysis of social and communicative behavior using multi-modal sensing—to support the study and treatment of developmental disorders such as autism.

## Plenary Session and Conference Award Presentations

Continental Ballroom 5

Wednesday, 11 February, 8:30 to 9:50 am

### What Makes Big Visual Data Hard?



**Alexei (Alyosha) Efros**, University of California, Berkeley (USA)

*Abstract:* There are an estimated 3.5 trillion photographs in the world, of which 10% have been taken in the past 12 months. Facebook alone reports 6 billion photo uploads per month. Every minute, 72 hours of video are uploaded to YouTube. Cisco estimates that in the next few

years, visual data (photos and video) will account for over 85% of total internet traffic. Yet, we currently lack effective computational methods for making sense of all this mass of visual data. Unlike easily indexed content, such as text, visual content is not routinely searched or mined; it's not even hyperlinked. Visual data is Internet's "digital dark matter" [Perona,2010]—it's just sitting there! In this talk, I will first discuss some of the unique challenges that make Big Visual Data difficult compared to other types of content. In particular, I will argue that the central problem is the lack of good measure of similarity for visual data. I will then present some of our recent work that aims to address this challenge in the context of visual matching, image retrieval, visual data mining, and interactive visual data exploration.

*Biography:* **Alexei (Alyosha) Efros** joined UC Berkeley in 2013 as associate professor of Electrical Engineering and Computer Science. Prior to that, he was nine years on the faculty of Carnegie Mellon University, and has also been affiliated with École Normale Supérieure/INRIA and University of Oxford. His research is in the area of computer vision and computer graphics, especially at the intersection of the two. He is particularly interested in using data-driven techniques to tackle problems which are very hard to model parametrically but where large quantities of data are readily available. Alyosha received his PhD in 2003 from UC Berkeley. He is a recipient of CVPR Best Paper Award (2006), NSF CAREER award (2006), Sloan Fellowship (2008), Guggenheim Fellowship (2008), Okawa Grant (2008), Finmeccanica Career Development Chair (2010), SIGGRAPH Significant New Researcher Award (2010), ECCV Best Paper Honorable Mention (2010), and the Helmholtz Test-of-Time Prize (2013).

# Visit the 2015 Electronic Imaging Symposium Industry Exhibition and Employment Marketplace.

See products, applications, related research, and job opportunities

---

Tuesday 10 February, 9:50 am to 7:30 pm  
Wednesday 11 February, 9:50 am to 4:00 pm  
Location: Continental Ballroom Foyer

---



---

*Electronic Imaging exhibitors include:*



Image Engineering



Image Science  
Associates





# Conference Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>3D Imaging, Interaction, and Metrology</b>				
	9391 <b>Stereoscopic Displays and Applications XXVI</b> ( <i>Holliman, Woods, Favalora, Kawai</i> ) p. 12			
	9392 <b>The Engineering Reality of Virtual Reality 2015</b> ( <i>Dolinsky, McDowall</i> ) p. 15	9393 <b>Three-Dimensional Image Processing, Measurement (3DIPM), and Applications 2015</b> ( <i>Sitnik, Puech</i> ) p. 17		
<b>Visualization, Perception, and Color</b>				
	9394 <b>Human Vision and Electronic Imaging XX</b> ( <i>Rogowitz, Pappas, de Ridder</i> ) p. 19			
	9395 <b>Color Imaging XX: Displaying, Processing, Hardcopy, and Applications</b> ( <i>Eschbach, Marcu, Rizzi</i> ) p. 23	9396 <b>Image Quality and System Performance XII</b> ( <i>Larabi, Triantaphillidou</i> ) p. 26		
	9397 <b>Visualization and Data Analysis 2015</b> ( <i>Kao, Hao, Livingston, Wischgoll</i> ) p. 29			
	9398 <b>Measuring, Modeling, and Reproducing Material Appearance 2015</b> ( <i>Ortiz Segovia, Urban, Imai</i> ) p. 32			
<b>Image Processing</b>				
	9399 <b>Image Processing: Algorithms and Systems XIII</b> ( <i>Egjazarian, Agaian, Gotchev</i> ) p. 35			
	9400 <b>Real-Time Image and Video Processing 2015</b> ( <i>Kehtarnavaz, Carlsohn</i> ) p. 37			
	9401 <b>Computational Imaging XIII</b> ( <i>Bouman, Sauer</i> ) p. 39			
			9402 <b>Document Recognition and Retrieval XXII</b> ( <i>Ringger, Lamiroy</i> ) p. 41	
<b>Image Capture</b>				
	9403 <b>Image Sensors and Imaging Systems 2015</b> ( <i>Widenhorn, Dupret</i> ) p. 43			
	9404 <b>Digital Photography and Mobile Imaging XI</b> ( <i>Sampat, Tezaur, Wüller</i> ) p. 45			
<b>Computer Vision</b>				
	9405 <b>Image Processing: Machine Vision Applications VIII</b> ( <i>Lam, Niel</i> ) p. 47			
	9406 <b>Intelligent Robots and Computer Vision XXXII: Algorithms and Techniques</b> ( <i>Röning, Casasent</i> ) p. 49			
				9407 <b>Video Surveillance and Transportation Imaging Applications 2015</b> ( <i>Loce, Saber</i> ) p. 51
<b>Media Processing and Communication</b>				
				9408 <b>Imaging and Multimedia Analytics in a Web and Mobile World 2015</b> ( <i>Lin, Allebach, Fan</i> ) p. 53
	9409 <b>Media Watermarking, Security, and Forensics 2015</b> ( <i>Alattar, Memon, Heitzenrater</i> ) p. 55			
				9410 <b>Visual Information Processing and Communication VI</b> ( <i>Said, Guleryuz, Stevenson</i> ) p. 58
<b>Mobile Imaging</b>				
		9411 <b>Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications 2015</b> ( <i>Creutzburg, Akopian</i> ) p. 60		



# Short Courses

## Short Courses at Electronic Imaging

Relevant training | Proven instructors | Education you need to stay competitive in today's job market

- 16 Short Courses in fundamental and current topics in electronic imaging including color imaging, camera and digital image capture & evaluation, stereoscopic displays, mobile imaging, and more.
- Short Course attendees receive CEUs to fulfill continuing education requirements
- Full-time students receive 50% off courses
- All-new and featured courses for 2015 include
  - Introduction to Color Imaging
  - Camera Characterization and Camera Models
  - Recent Trends in Imaging Devices

[www.spie.org/education](http://www.spie.org/education)

### Money-back Guarantee

We are confident that once you experience an IS&T/SPIE course for yourself you will look to us for your future education needs. However, if for any reason you are dissatisfied, we will gladly refund your money. We just ask that you tell us what you did not like; suggestions for improvement are always welcome.



### Continuing Education Units

IS&T/SPIE has been approved as an authorized provider of CEUs by IACET, The International Association for Continuing Education and Training (Provider #1002091). In obtaining this approval, IS&T/SPIE has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice.

**IS&T/SPIE reserves the right to cancel a course due to insufficient advance registration.**

# Short Course Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>3D Imaging, Interaction, and Metrology</b>				
SC468 <b>Image Enhancement, Deblurring and Super-Resolution</b> (Rabbani) 8:30 am to 5:30 pm, \$600 / \$710		SC927 <b>3D Imaging</b> (Agam) 8:30 am to 12:30 pm, \$370 / \$430		
SC1154 <b>Introduction to Digital Color Imaging</b> (Sharma) 8:30 am to 12:30 pm, \$370 / \$430		SC1015 <b>Understanding and Interpreting Images</b> (Rabbani) 1:30 pm to 5:30 pm, \$370 / \$430		
SC969 <b>Perception, Cognition, and Next Generation Imaging</b> (Rogowitz) 8:30 am to 12:30 pm, \$370 / \$430				
SC060 <b>Stereoscopic Display Application Issues</b> (Merritt, Woods) 8:30 am to 5:30 pm, \$600 / \$710				
<b>Computer Vision</b>				
SC468 <b>Image Enhancement, Deblurring and Super-Resolution</b> (Rabbani) 8:30 am to 5:30 pm, \$600 / \$710	SC1049 <b>Benchmarking Image Quality of Still and Video Imaging Systems</b> (Phillips, Hornung, Denman) 8:30 am to 5:30 pm, \$600 / \$710	SC807 <b>Digital Camera and Scanner Performance Evaluation: Standards and Measurement</b> , (Burns, Williams), 8:30 am to 12:30 pm, \$370 / \$430	SC812 <b>Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence</b> (Pappas, Hemami) 1:30 pm to 5:30 pm, \$370 / \$430	
SC969 <b>Perception, Cognition, and Next Generation Imaging</b> (Rogowitz) 8:30 am to 12:30 pm, \$370 / \$430	SC965 <b>Joint Design of Optics and Image Processing for Imaging Systems</b> , (Stork) 1:30 pm to 5:30 pm, \$370 / \$430	SC1015 <b>Understanding and Interpreting Images</b> (Rabbani) 1:30 pm to 5:30 pm, \$370 / \$430		
SC1157 <b>Camera Characterization and Camera Models</b> (Phillips, Hornung, Denman) 8:30 am to 5:30 pm, \$600 / \$710				
<b>Image Capture</b>				
SC967 <b>High Dynamic Range Imaging: Sensors and Architectures</b> (Darmont) 8:30 am to 5:30 pm, \$645 / \$755	SC1097 <b>HDR Imaging in Cameras, Displays and Human Vision</b> (Rizzi, McCann) 8:30 am to 12:30 pm, \$370 / \$430	SC807 <b>Digital Camera and Scanner Performance Evaluation: Standards and Measurement</b> , (Burns, Williams), 8:30 am to 12:30 pm, \$370 / \$430	SC812 <b>Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence</b> (Pappas, Hemami) 1:30 pm to 5:30 pm, \$370 / \$430	
SC468 <b>Image Enhancement, Deblurring and Super-Resolution</b> (Rabbani) 8:30 am to 5:30 pm, \$600 / \$710	SC1049 <b>Benchmarking Image Quality of Still and Video Imaging Systems</b> (Phillips, Hornung, Denman) 8:30 am to 5:30 pm, \$600 / \$710	SC1015 <b>Understanding and Interpreting Images</b> (Rabbani) 1:30 pm to 5:30 pm, \$370 / \$430		
SC1058 <b>Image Quality and Evaluation of Cameras In Mobile Devices</b> (Matherson, Artmann) 8:30 am to 5:30 pm, \$600 / \$710	SC965 <b>Joint Design of Optics and Image Processing for Imaging Systems</b> , (Stork) 1:30 pm to 5:30 pm, \$370 / \$430			
SC1154 <b>Introduction to Digital Color Imaging</b> (Sharma) 8:30 am to 12:30 pm, \$370 / \$430				
SC969 <b>Perception, Cognition, and Next Generation Imaging</b> (Rogowitz) 8:30 am to 12:30 pm, \$370 / \$430				
SC980 <b>Theory and Methods of Lightfield Photography</b> (Georgiev, Lumsdaine) 8:30 am to 5:30 pm, \$600 / \$710				
SC1048 <b>Recent Trends in Imaging Devices</b> (Battiato, Farinella) 1:30 pm to 5:30 pm, \$370 / \$430				
SC1157 <b>Camera Characterization and Camera Models</b> (Phillips, Hornung, Denman) 8:30 am to 5:30 pm, \$600 / \$710				
			<b>See Course descriptions and register for Courses onsite.</b>	

# Short Course Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>Image Processing</b>				
SC967 <b>High Dynamic Range Imaging: Sensors and Architectures</b> ( <i>Darmont</i> ) 8:30 am to 5:30 pm, \$645 / \$755	SC1097 <b>HDR Imaging in Cameras, Displays and Human Vision</b> ( <i>Rizzi, McCann</i> ) 8:30 am to 12:30 pm, \$370 / \$430	SC927 <b>3D Imaging</b> ( <i>Agam</i> ) 8:30 am to 12:30 pm, \$370 / \$430	SC812 <b>Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence</b> ( <i>Pappas, Hemami</i> ) 1:30 pm to 5:30 pm, \$370 / \$430	
SC468 <b>Image Enhancement, Deblurring and Super-Resolution</b> ( <i>Rabbani</i> ) 8:30 am to 5:30 pm, \$600 / \$710	SC965 <b>Joint Design of Optics and Image Processing for Imaging Systems</b> , ( <i>Stork</i> ) 1:30 pm to 5:30 pm, \$370 / \$430	SC1015 <b>Understanding and Interpreting Images</b> ( <i>Rabbani</i> ) 1:30 pm to 5:30 pm, \$370 / \$430		
SC1058 <b>Image Quality and Evaluation of Cameras In Mobile Devices</b> ( <i>Matherson, Artmann</i> ) 8:30 am to 5:30 pm, \$600 / \$710		SC807 <b>Digital Camera and Scanner Performance Evaluation: Standards and Measurement</b> , ( <i>Burns, Williams</i> ), 8:30 am to 12:30 pm, \$370 / \$430		
SC1154 <b>Introduction to Digital Color Imaging</b> ( <i>Sharma</i> ) 8:30 am to 12:30 pm, \$370 / \$430				
SC969 <b>Perception, Cognition, and Next Generation Imaging</b> ( <i>Rogowitz</i> ) 8:30 am to 12:30 pm, \$370 / \$430				
SC060 <b>Stereoscopic Display Application Issues</b> ( <i>Merritt, Woods</i> ) 8:30 am to 5:30 pm, \$600 / \$710				
SC980 <b>Theory and Methods of Lightfield Photography</b> ( <i>Georgiev, Lumsdaine</i> ) 8:30 am to 5:30 pm, \$600 / \$710				
SC1048 <b>Recent Trends in Imaging Devices</b> ( <i>Battiato, Farinella</i> ) 1:30 pm to 5:30 pm, \$370 / \$430				
<b>Media Processing and Communication</b>				
SC967 <b>High Dynamic Range Imaging: Sensors and Architectures</b> ( <i>Darmont</i> ) 8:30 am to 5:30 pm, \$645 / \$755	SC1097 <b>HDR Imaging in Cameras, Displays and Human Vision</b> ( <i>Rizzi, McCann</i> ) 8:30 am to 12:30 pm, \$370 / \$430	SC927 <b>3D Imaging</b> ( <i>Agam</i> ) 8:30 am to 12:30 pm, \$370 / \$430	SC812 <b>Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence</b> ( <i>Pappas, Hemami</i> ) 1:30 pm to 5:30 pm, \$370 / \$430	
SC468 <b>Image Enhancement, Deblurring and Super-Resolution</b> ( <i>Rabbani</i> ) 8:30 am to 5:30 pm, \$600 / \$710	SC1049 <b>Benchmarking Image Quality of Still and Video Imaging Systems</b> ( <i>Phillips, Hornung, Denman</i> ) 8:30 am to 5:30 pm, \$600 / \$710	SC1015 <b>Understanding and Interpreting Images</b> ( <i>Rabbani</i> ) 1:30 pm to 5:30 pm, \$370 / \$430		
SC1058 <b>Image Quality and Evaluation of Cameras In Mobile Devices</b> ( <i>Matherson, Artmann</i> ) 8:30 am to 5:30 pm, \$600 / \$710				
SC969 <b>Perception, Cognition, and Next Generation Imaging</b> ( <i>Rogowitz</i> ) 8:30 am to 12:30 pm, \$370 / \$430				
SC060 <b>Stereoscopic Display Application Issues</b> ( <i>Merritt, Woods</i> ) 8:30 am to 5:30 pm, \$600 / \$710				
SC1048 <b>Recent Trends in Imaging Devices</b> ( <i>Battiato, Farinella</i> ) 1:30 pm to 5:30 pm, \$370 / \$430				
SC1157 <b>Camera Characterization and Camera Models</b> ( <i>Phillips, Hornung, Denman</i> ) 8:30 am to 5:30 pm, \$600 / \$710				

# Short Course Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>Mobile Imaging</b>				
SC967 <b>High Dynamic Range Imaging: Sensors and Architectures</b> ( <i>Darmont</i> ) 8:30 am to 5:30 pm, \$645 / \$755	SC1097 <b>HDR Imaging in Cameras, Displays and Human Vision</b> ( <i>Rizzi, McCann</i> ) 8:30 am to 12:30 pm, \$370 / \$430	SC1015 <b>Understanding and Interpreting Images</b> ( <i>Rabban</i> ) 1:30 pm to 5:30 pm, \$370 / \$430	SC812 <b>Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence</b> ( <i>Pappas, Hemami</i> ) 1:30 pm to 5:30 pm, \$370 / \$430	
SC468 <b>Image Enhancement, Deblurring and Super-Resolution</b> ( <i>Rabban</i> ) 8:30 am to 5:30 pm, \$600 / \$710	SC1049 <b>Benchmarking Image Quality of Still and Video Imaging Systems</b> ( <i>Phillips, Hornung, Denman</i> ) 8:30 am to 5:30 pm, \$600 / \$710			
SC1058 <b>Image Quality and Evaluation of Cameras In Mobile Devices</b> ( <i>Matherson, Artmann</i> ) 8:30 am to 5:30 pm, \$600 / \$710				
SC1154 <b>Introduction to Digital Color Imaging</b> ( <i>Sharma</i> ) 8:30 am to 12:30 pm, \$370 / \$430				
SC969 <b>Perception, Cognition, and Next Generation Imaging</b> ( <i>Rogowitz</i> ) 8:30 am to 12:30 pm, \$370 / \$430				
SC1157 <b>Camera Characterization and Camera Models</b> ( <i>Phillips, Hornung, Denman</i> ) 8:30 am to 5:30 pm, \$600 / \$710				
<b>Visualization, Perception, and Color</b>				
SC967 <b>High Dynamic Range Imaging: Sensors and Architectures</b> ( <i>Darmont</i> ) 8:30 am to 5:30 pm, \$645 / \$755	SC1097 <b>HDR Imaging in Cameras, Displays and Human Vision</b> ( <i>Rizzi, McCann</i> ) 8:30 am to 12:30 pm, \$370 / \$430	SC927 <b>3D Imaging</b> ( <i>Agam</i> ) 8:30 am to 12:30 pm, \$370 / \$430	SC812 <b>Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence</b> ( <i>Pappas, Hemami</i> ) 1:30 pm to 5:30 pm, \$370 / \$430	
SC468 <b>Image Enhancement, Deblurring and Super-Resolution</b> ( <i>Rabban</i> ) 8:30 am to 5:30 pm, \$600 / \$710	SC1049 <b>Benchmarking Image Quality of Still and Video Imaging Systems</b> ( <i>Phillips, Hornung, Denman</i> ) 8:30 am to 5:30 pm, \$600 / \$710	SC1015 <b>Understanding and Interpreting Images</b> ( <i>Rabban</i> ) 1:30 pm to 5:30 pm, \$370 / \$430		
SC1058 <b>Image Quality and Evaluation of Cameras In Mobile Devices</b> ( <i>Matherson, Artmann</i> ) 8:30 am to 5:30 pm, \$600 / \$710		SC807 <b>Digital Camera and Scanner Performance Evaluation: Standards and Measurement</b> , ( <i>Burns, Williams</i> ), 8:30 am to 12:30 pm, \$370 / \$430		
SC1154 <b>Introduction to Digital Color Imaging</b> ( <i>Sharma</i> ) 8:30 am to 12:30 pm, \$370 / \$430				
SC969 <b>Perception, Cognition, and Next Generation Imaging</b> ( <i>Rogowitz</i> ) 8:30 am to 12:30 pm, \$370 / \$430				
SC060 <b>Stereoscopic Display Application Issues</b> ( <i>Merritt, Woods</i> ) 8:30 am to 5:30 pm, \$600 / \$710				
SC1048 <b>Recent Trends in Imaging Devices</b> ( <i>Battiato, Farinella</i> ) 1:30 pm to 5:30 pm, \$370 / \$430				
SC1157 <b>Camera Characterization and Camera Models</b> ( <i>Phillips, Hornung, Denman</i> ) 8:30 am to 5:30 pm, \$600 / \$710				
<hr/> <p><b>See Course descriptions and register for Courses onsite.</b></p>				

# Conference 9391 • Continental Ballroom 5

Monday–Wednesday 9–11 February 2015 • Proceedings of IS&T/SPIE Vol. 9391

## Stereoscopic Displays and Applications XXVI

*Conference Chairs:* **Nicolas S. Holliman**, The Univ. of York (United Kingdom); **Andrew J. Woods**, Curtin Univ. (Australia); **Gregg E. Favalora**, VisionScope Technologies LLC (USA); **Takashi Kawai**, Waseda Univ. (Japan)

*Program Committee:* **Neil A. Dodgson**, Univ. of Cambridge (United Kingdom); **Davide Gadia**, Univ. degli Studi di Milano (Italy); **Hideki Kakeya**, Univ. of Tsukuba (Japan); **John D. Stern**, Intuitive Surgical, Inc. (Retired) (USA); **Vivian K. Walworth**, StereoJet, Inc. (USA); **Chris Ward**, Lightspeed Design, Inc. (USA); **Michael A. Weissman**, Perspective Systems (USA); **Samuel Zhou**, IMAX Corp. (Canada)

*Founding Chair:* **John O. Merritt**, The Merritt Group (USA)

### Monday 9 February

#### Session 1

**Location: Continental Ballroom 5 . . . . Mon 8:30 am to 9:10 am**

#### High Parallax Displays

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

8:30 am: **Enhancement of the effective viewing window for holographic display with amplitude-only SLM**, Geeyoung Sung, Jungkwon An, Hong-Seok Lee, Sun Il Kim, Song Hoon, Juwon Seo, Hojung Kim, Wontaek Seo, Chil-Sung Choi, U-in Chung, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [9391-1]

8:50 am: **A full parallax 3D display with restricted viewing zone tracking viewer's eye**, Naoto Beppu, Tomohiro Yendo, Nagaoka Univ. of Technology (Japan) . . . . . [9391-2]

**Location: Continental Ballroom 5 . . . . .9:10 am to 9:20 am**

#### Opening Remarks

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

**Location: Continental Ballroom 5 . . . Mon 9:20 am to 10:20 am**

#### Keynote Session I

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

9:20 am: **A stereoscope for the PlayStation generation (Keynote Presentation)**, Ian H. Bickerstaff, Sony Computer Entertainment Europe Ltd. (United Kingdom) . . . . . [9391-50]

#### Session 2

**Location: Continental Ballroom 5 . . Mon 10:50 am to 12:30 pm**

#### Camera Designs

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

10:50 am: **3D UHD TV contents production with 2/3 inch sensor cameras**, Alaric C. Hamacher, Sunil P. Pardeshi, Kwangwoon Univ. (Korea, Republic of); Taeg Keun Whangboo, Gachon Univ. (Korea, Republic of); SeungHyun Lee, Kwangwoon Univ. (Korea, Republic of) . . . . . [9391-3]

11:10 am: **Integral three-dimensional capture system with enhanced viewing angle by using camera array**, Masato Miura, Naoto Okaichi, Jun Arai, Tomoyuki Mishina, NHK Japan Broadcasting Corp. (Japan) . [9391-4]

11:30 am: **A stereoscopic lens for digital cinema cameras**, Lenny Lipton, Leonardo IP (USA); John A. Rupkalvis, StereoScope International (USA) . . . . . [9391-5]

11:50 am: **A novel optical design for light field acquisition using camera array**, Mei Zhang, Geng Zheng, Zhaoxing Zhang, Institute of Automation (China) . . . . . [9391-6]

12:10 pm: **Real-time viewpoint image synthesis using strips of multi camera images**, Munekazu Date, Hideaki Takada, Akira Kojima, Nippon Telegraph and Telephone Corp. (Japan) . . . . . [9391-7]

Lunch Break . . . . . Mon 12:30 pm to 2:00 pm

#### Session 3

**Location: Continental Ballroom 5 . . . . Mon 2:00 pm to 3:20 pm**

#### Applications

Session Chair: **Gregg E. Favalora**, VisionScope Technologies LLC (USA)

2:00 pm: **Interactive stereo games to improve vision in children with amblyopia using dichoptic stimulation**, Jonathan H. Purdy, Univ. of Bradford (United Kingdom); Alexander Foss, Nottingham Univ. Hospitals NHS Trust (United Kingdom); Richard M. Eastgate, The Univ. of Nottingham (United Kingdom); Daisy MacKeith, Nottingham Univ. Hospitals NHS Trust (United Kingdom); Nicola Herbison, The Univ. of Nottingham (United Kingdom); Anthony Vivian, Nottingham Univ. Hospitals NHS Trust (United Kingdom) . . . . . [9391-8]

2:20 pm: **Stereoscopic visualization of 3D volumetric data for patient-individual skull base prosthesis prior to manufacturing**, Justus F. Ilgner M.D., Martin Westhofen M.D., Univ. Hospital Aachen (Germany) . [9391-9]

2:40 pm: **Visual perception and stereoscopic imaging: an artist's perspective**, Steve Mason, Yavapai College (USA) . . . . . [9391-10]

3:00 pm: **Assessing the benefits of stereoscopic displays to visual search: methodology and initial findings**, Hayward J. Godwin, Univ. of Southampton (United Kingdom); Nicolas S. Holliman, The Univ. of York (United Kingdom); Tamaryn Menneer, Simon P. Liversedge, Univ. of Southampton (United Kingdom); Kyle R. Cave, Univ. of Massachusetts Amherst (USA); Nicholas Donnelly, Univ. of Southampton (United Kingdom) . . . . . [9391-11]

Coffee Break . . . . . Mon 3:20 pm to 4:00 pm

#### Session 4

**Location: Continental Ballroom 5 . . . . Mon 4:00 pm to 5:20 pm**

#### Light Field Displays

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

4:00 pm: **Small form factor full parallax tiled light field display**, Zahir Y. Alpaslan, Hussein S. El-Ghoroury, Ostendo Technologies, Inc. (USA) . . . . . [9391-12]

4:20 pm: **Load-balancing multi-LCD light field display**, Xuan Cao, Zheng Geng, Mei Zhang, Xiao Zhang, Institute of Automation (China) . . [9391-13]

4:40 pm: **Light field display simulation for light field quality assessment**, Rie Matsubara, Zahir Y. Alpaslan, Hussein S. El-Ghoroury, Ostendo Technologies, Inc. (USA) . . . . . [9391-14]

5:00 pm: **Integration of real-time 3D capture, reconstruction, and light-field display**, Zhaoxing Zhang, Zheng Geng, Tuotuo Li, Institute of Automation (China); Yongchun Liu, Nanjing Univ. of Aeronautics and Astronautics (China); Xiao Zhang, Jiangsu Univ. (China) . . . . . [9391-15]

# Conference 9391 · Location: Continental Ballroom 5

Location: Continental Ballroom 5 . . . . Mon 5:30 pm to 7:30 pm

## SD&A 3D Theatre

*This ever-popular session allows attendees to see large-screen examples of 3D content from around the world. Program announced at the conference. 3D glasses provided.*

## Tuesday 10 February

Location: Continental Ballroom 5 . . . . Tue 8:30 am to 9:50 am

### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

### Session 5

Location: Continental Ballroom 5 . . . Tue 10:10 am to 11:30 am

### Autostereoscopic Displays

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

10:10 am: **A large 1D retroreflective autostereoscopic display**, Quinn Y. Smithwick, Disney Research, Los Angeles (USA); Nicola Ranieri, ETH Zürich (Switzerland) . . . . . [9391-16]

10:30 am: **Time-sequential lenticular display with layered LCD panels**, Hironobu Gotoda, National Institute of Informatics (Japan) . . . . . [9391-17]

10:50 am: **Dual side transparent OLED 3D display using Gabor super-lens**, Sergey Chestak, Dae-Sik Kim, Sung-Woo Cho, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . [9391-18]

11:10 am: **360-degree three-dimensional flat panel display using holographic optical elements**, Hirofumi Yabu, Osaka City Univ. (Japan); Kayo Yoshimoto, Osaka Univ. (Japan); Hideya Takahashi, Osaka City Univ. (Japan); Kenji Yamada, Osaka Univ. (Japan) . . . . . [9391-19]

Location: Continental Ballroom 5 . . . Tue 11:30 am to 12:30 pm

### Keynote Session II

Session Chair: **Gregg E. Favalora**, VisionScope Technologies LLC (USA)

11:30 am: **What is stereoscopic vision good for? (Keynote Presentation)**, Jenny C. A. Read, Newcastle Univ. (United Kingdom) . . . . . [9391-49]

### Session 6

Location: Continental Ballroom 5 . . . . Tue 2:00 pm to 3:20 pm

### Human Factors and Performance

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

2:00 pm: **Subjective contrast sensitivity function assessment in stereoscopic viewing of Gabor patches**, Johanna Rousson, Jérémy Haar, Barco N.V. (Belgium); Ljiljana Platiša, Univ. Gent (Belgium); Bastian Piepers, Tom R. Kimpe, Barco N.V. (Belgium); Wilfried Philips, Univ. Gent (Belgium) . . . . . [9391-20]

2:20 pm: **An objective method for 3D quality prediction using perceptual thresholds and acceptability**, Darya Khaustova, Orange SA (France); Olivier Le Meur, Univ. de Rennes 1 (France); Jerome Fournier, Emmanuel Wyckens, Orange SA (France) . . . . . [9391-21]

2:40 pm: **Disparity modification in stereoscopic images for emotional enhancement**, Takashi Kawai, Daiki Atsuta, Sanghyun Kim, Waseda Univ. (Japan); Jukka P. Häkkinen, Univ. of Helsinki (Finland) . . . . . [9391-22]

3:00 pm: **Preference for motion and depth in 3D film**, Brittney A. Hartle, York Univ. (Canada); Arthur Lugtigheid, Univ. of Southampton (United Kingdom); Ali Kazimi, Robert S. Allison, Laurie M. Wilcox, York Univ. (Canada) . . . . . [9391-23]

Coffee Break . . . . . Tue 3:20 pm to 4:00 pm

### Session 7

Location: Continental Ballroom 5 . . . . Tue 4:00 pm to 5:20 pm

### Visual Comfort Studies

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

4:00 pm: **Microstereopsis is good, but orthostereopsis is better: precision alignment task performance and viewer discomfort with a stereoscopic 3D display**, John P. McIntire, Paul R. Havig II, Air Force Research Lab. (USA); Lawrence K. Harrington, Ball Aerospace & Technologies Corp. (USA); Steve T. Wright, U.S. Air Force (USA); Scott N. J. Watamaniuk, Wright State Univ. (USA); Eric L. Heft, Air Force Research Lab. (USA) . . . . . [9391-24]

4:20 pm: **Effects of blurring and vertical misalignment on visual fatigue of stereoscopic displays**, Sangwook Baek, Chulhee Lee, Yonsei Univ. (Korea, Republic of) . . . . . [9391-25]

4:40 pm: **Subjective and objective evaluation of visual fatigue on viewing 3D display continuously**, Danli Wang, Yaohua Xie, Yang Lu, Institute of Software (China) . . . . . [9391-26]

5:00 pm: **Study of objective parameters of 3D visual fatigue based on RDS related tasks**, Yi Huang, Yue Liu, Bochao Zou, Yongtian Wang, Dewen Cheng, Beijing Institute of Technology (China) . . . . . [9391-27]

Location: Continental Ballroom 4 and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm

### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Enhancement of viewing angle with homogenized brightness for autostereoscopic display with lens-based directional backlight**, Takuya Mukai, Hideki Kakeya, Univ. of Tsukuba (Japan) . . . . . [9391-40]

**Effect of Petzval curvature on integral imaging display**, Ganbat Baasantseren, National Univ. of Mongolia (Mongolia); Densmaa Batbayr, Ulaanbaatar State Univ. (Mongolia); Lodoiravsal Choimaa, National Univ. of Mongolia (Mongolia) . . . . . [9391-41]

**Data conversion from multi-view cameras to layered light field display for aliasing-free 3D visualization**, Toyohiro Saito, Keita Takahashi, Mehrdad P. Tehrani, Toshiaki Fujii, Nagoya Univ. (Japan) . . . . . [9391-42]

**Free-viewpoint video synthesis from mixed resolution multi-view images and low resolution depth maps**, Takaaki Emori, Nagoya Univ. Graduate School of Engineering (Japan); Mehrdad Panahpour Tehrani, Keita Takahashi, Nagoya Univ. (Japan); Toshiaki Fujii, Nagoya Univ. Graduate School of Engineering (Japan) . . . . . [9391-43]

**Formalizing the potential of stereoscopic 3D user experience in interactive entertainment**, Jonas Schild, Consultant (Germany) [9391-44]

**Development of binocular eye tracker system via virtual data**, Frank Hofmeyer, Sara Kepplinger, Technische Univ. Ilmenau (Germany); Manuel Leonhardt, Nikolaus Hottong, Hochschule Furtwangen Univ. (Germany) . . . . . [9391-45]

**Two CCD cameras stereoscopic position measurement for multi fiber positioners on ground-based telescope**, Zengxiang Zhou, Hongzhan Hu, Jianping Wang, Jiuru Chu, Zhigang Liu, Univ. of Science and Technology of China (China) . . . . . [9391-46]

# Conference 9391 • Location: Continental Ballroom 5

**Usability of stereoscopic view in teleoperation**, Wutthigrai Boonsuk, Eastern Illinois Univ. (USA) ..... [9391-47]

**Using binocular and monocular properties for the construction of a quality assessment metric for stereoscopic images**, Mohamed-Chaker Larabi, Univ. of Poitiers (France); Iana Iatsun M.D., XLIM-SIC (France) ..... [9391-48]

**Location: Continental Ballroom Foyer • Tue 5:30 pm to 7:30 pm**  
**Symposium Demonstration Session**  
A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

**Location: Continental Ballroom 5 • • • • Wed 8:30 am to 9:50 am**  
**Plenary Session and Conference Award Presentations**  
8:30 am: **What Makes Big Visual Data Hard?** (Plenary), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) ..... [9391-501]

Coffee Break ..... Wed 9:50 am to 10:10 am

### Session 8

**Location: Continental Ballroom 5 • • Wed 10:10 am to 11:30 am**

#### Image Processing

Session Chair: **Gregg E. Favalora**, VisionScope Technologies LLC (USA)

10:10 am: **Multi-view stereo image synthesis using binocular symmetry based global optimization**, Hak Gu Kim, Yong Ju Jung, Soosung Yoon, Yong Man Ro, KAIST (Korea, Republic of) ..... [9391-28]

10:30 am: **Depth assisted compression of full parallax light fields**, Danilo Graziosi, Zahir Y. Alpaslan, Hussein S. El-Ghoroury, Ostendo Technologies, Inc. (USA) ..... [9391-29]

10:50 am: **A 3D mosaic algorithm using disparity map**, Bo Yu, Hideki Kakeya, Univ. of Tsukuba (Japan) ..... [9391-30]

11:10 am: **Post inserted object calibration for stereo video rectification**, Weiming Li, Samsung Advanced Institute of Technology (China) ..... [9391-31]

#### PANEL DISCUSSION

**Location: Continental Ballroom 5 • • Wed 11:30 am to 12:30 pm**

#### Discussion Forum: The Future For Home 3D Entertainment

Panel Moderator: **Lenny Lipton**, Leonardo IP (USA)

*The SD&A Discussion Forum is a great opportunity to hear a panel of stereoscopic luminaries discuss a topic of high stereoscopic relevance. Speakers to be announced closer to the event. Please visit the conference website or join the SD&A LinkedIn group for updates.*

Lunch Break ..... Wed 12:30 pm to 2:00 pm

### Session 9

**Location: Continental Ballroom 5 • • • • Wed 2:00 pm to 3:20 pm**

#### Multi-View and Integral Imaging Displays

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

2:00 pm: **A new type of multiview display**, René de la Barré, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); Silvio Jurk, Technical Univ. Berlin (Germany); Mathias Kuhlmeier, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) [9391-32]

2:20 pm: **Compact multi-projection 3D display using a wedge prism**, ByoungHo Lee, Soon-gi Park, Chang-Kun Lee, Seoul National Univ. (Korea, Republic of) ..... [9391-33]

2:40 pm: **Integral 3D display using multiple LCDs**, Naoto Okaichi, Masato Miura, Jun Arai, Tomoyuki Mishina, NHK Japan Broadcasting Corp. (Japan) ..... [9391-34]

3:00 pm: **A super multi-view display with small viewing zone tracking using directional backlight**, Jin Miyazaki, Tomohiro Yendo, Nagaoka Univ. of Technology (Japan) ..... [9391-35]

Coffee Break ..... Wed 3:20 pm to 3:50 pm

### Session 10

**Location: Continental Ballroom 5 • • • • Wed 3:50 pm to 5:10 pm**

#### Image Production and Perception

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

3:50 pm: **Real object-based 360 degree integral-floating display using multi depth camera**, Munkh-Uchral Erdenebat, Erkhembaatar Dashdavaa, Ki-Chul Kwon, Kwan-Hee Yoo, Nam Kim, Chungbuk National Univ. (Korea, Republic of) ..... [9391-36]

4:10 pm: **Multi-layer 3D imaging using multiple viewpoint images and depth map**, Hidetsugu Suginozaki, Hirotaka Sakamoto, Satoshi Yamanaka, Mitsubishi Electric Corp. (Japan); Shiro Suyama, Univ. of Tokushima (Japan); Hirotosugu Yamamoto, Utsunomiya Univ. (Japan) and The Univ. of Tokushima (Japan) ..... [9391-37]

4:30 pm: **Evaluation of vision training using 3D play game**, Jungho Kim, Soon Chul Kwon, Kwang-Chul Son, SeungHyun Lee, Kwangwoon Univ. (Korea, Republic of) ..... [9391-38]

4:50 pm: **Partially converted stereoscopic images and the effects on visual attention and memory**, Sanghyun Kim, Waseda Univ. (Japan); Hiroyuki Morikawa, Aoyama Gakuin Univ. (Japan); Reiko Mitsuya, Takashi Kawai, Waseda Univ. (Japan); Katsumi Watanabe, The Univ. of Tokyo (Japan) ..... [9391-39]

**Location: Continental Ballroom 5 • • • • Wed 5:10 pm to 5:30 pm**

#### SD&A Closing Remarks and Prizes

Session Chair: **Nicolas S. Holliman**, The Univ. of York (United Kingdom)

Further information about the SD&A conference is available at the conference website [www.stereoscopic.org](http://www.stereoscopic.org) .



# Conference 9392 • Location: Golden Gate 6

Monday–Tuesday 9–10 February 2015 • Proceedings of IS&T/SPIE Vol. 9392

## The Engineering Reality of Virtual Reality 2015

Conference Chairs: **Margaret Dolinsky**, Indiana Univ. (USA); **Ian E. McDowall**, Fakespace Labs, Inc. (USA)

### Monday 9 February

#### Session 1

Location: Golden Gate 6 . . . . . Mon 8:30 am to 10:10 am

#### Work Harder and Play Harder in AR/VR

Session Chair: **Ian E. McDowall**, Fakespace Labs, Inc. (USA)

8:30 am: **Game-day football visualization experience on dissimilar virtual reality platforms**, Vijay K. Kalivarapu, Anastacia MacAllister, Anthony Civitate, Melynda T. Hoover, Iowa State Univ. (USA); Phillip Thompkins, Jesse Smith, Univ. of Maryland, Baltimore County (USA); Janae Hoyle, Tufts Univ. (USA); Eliot Winer, Shubang Sridhar, Jonathan Schlueter, Gerrit Chernoff, Iowa State Univ. (USA) . . . . . [9392-1]

8:50 am: **archAR: an archaeological augmented reality experience**, Bridgette Wiley, Jürgen P. Schulze, Univ. of California, San Diego (USA) . . . . . [9392-2]

9:10 am: **Photorealistic 3D omni-directional stereo simulator**, Dirk Reiners, Carolina Cruz-Neira, Univ. of Arkansas at Little Rock (USA) . . . . . [9392-3]

9:30 am: **Composing a model of outer space through virtual experiences**, Julieta C. Aguilera, Adler Planetarium & Astronomy Museum (USA) . . . . . [9392-4]

9:50 am: **How to avoid simulation sickness in virtual environments during user displacement**, Andras Kemeny, Renault Technocentre (France) and Ecole Nationale Supérieure d'Arts et Métiers (France); Florent Colombet, Thomas Denoual, THEORIS (France) . . . . . [9392-5]

Coffee Break . . . . . Mon 10:10 am to 10:50 am

#### Session 2

Location: Golden Gate 6 . . . . . Mon 10:50 am to 12:30 pm

#### Bringing New Energy to AR/VR

Session Chair: **Margaret Dolinsky**, Indiana Univ. (USA)

10:50 am: **Development of simulation interfaces for evaluation task with the use of physiological data and virtual reality applied to a vehicle simulator**, Mateus R. Miranda, Diana G. Domingues, Alessandro Oliveira, Cristiano J. Miosso, Carla Silva Rocha Aguiar, Thiago Bernardes, Henrik Costa, Luiz Oliveira, Univ. de Brasília (Brazil) . . . . . [9392-6]

11:10 am: **An indoor augmented reality mobile application for simulation of building evacuation**, Sharad Sharma, Shanmukha Jerripothula, Bowie State Univ. (USA) . . . . . [9392-7]

11:30 am: **Programmable immersive peripheral environmental system (PIPES): a prototype control system for environmental feedback devices**, Chauncey E. Friend, Michael J. Boyles, Indiana Univ. (USA) . . . . . [9392-8]

11:50 am: **Explorations in dual-view, co-located VR**, Silvia P. Ruzanka, Benjamin C. Chang, Rensselaer Polytechnic Institute (USA) . . . . . [9392-9]

12:10 pm: **From CAVEWoman to VR diva: breaking the mold**, Carolina Cruz-Neira, Univ. of Arkansas at Little Rock (USA) . . . . . [9392-10]

Lunch Break . . . . . Mon 12:30 pm to 2:00 pm

#### Session 3

Location: Golden Gate 6 . . . . . Mon 2:00 pm to 3:20 pm

#### Pushing the Boundaries in Data, Dimensions, and Cognition

Session Chair: **Ian E. McDowall**, Fakespace Labs, Inc. (USA)

2:00 pm: **The use of virtual reality to reimagine two-dimensional representations of three-dimensional spaces**, Elaine Fath, Indiana University Bloomington (USA) . . . . . [9392-11]

2:20 pm: **Theory review and interaction design space of body image and body schema (BIBS) for embodied cognition in virtual reality**, Xin Tong, Diane Gromala, Simon Fraser Univ. (Canada); Owen Williamson, Monash Univ. (Australia); Christopher D. Shaw, Ozgun E. Iscen, Simon Fraser Univ. (Canada) . . . . . [9392-12]

2:40 pm: **Embodied information behavior, mixed reality systems, and big data**, Ruth G. West, Univ. of North Texas (USA) . . . . . [9392-13]

3:00 pm: **GoTime: a storytelling platform for SAGE2**, Todd Margolis, Univ. of California, San Diego (USA) . . . . . [9392-14]

Coffee Break . . . . . Mon 3:20 pm to 3:50 pm

#### Session 4

Location: Golden Gate 6 . . . . . Mon 3:50 pm to 5:30 pm

#### Be Here Now: Art and Science of Being in AR/VR

Session Chair: **Margaret Dolinsky**, Indiana Univ. (USA)

3:50 pm: **System for augmented reality authoring (SARA): a new way of authoring augmented reality systems**, Bhaskar Bhattacharya, Eliot Winer, Iowa State Univ. (USA) . . . . . [9392-15]

4:10 pm: **Free-body gesture tracking and augmented reality improvisation for floor and aerial dance**, Tammuz Dubnov, Cheng-i Wang, Shlomo Dubnov, Univ. of California, San Diego (USA) . . . [9392-16]

4:30 pm: **Marker-less AR system based on line segment feature**, Yusuke Nakayama, Hideo Saito, Keio Univ. (Japan); Masayoshi Shimizu, Nobuyasu Yamaguchi, Fujitsu Labs., Ltd. (Japan) . . . . . [9392-17]

4:50 pm: **On the usefulness of the concept of presence in virtual reality applications**, Daniel R. Mestre, Aix-Marseille Univ. (France) . . . [9392-18]

5:10 pm: **Bringing scientific visualization to the virtual reality environments using VTK and VRUI**, William R. Sherman, Indiana Univ. (USA) . . . . . [9392-23]

### Tuesday 10 February

Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

# Conference 9392 · Location: Golden Gate 6

**Location: Continental Ballroom 4  
and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm**

## **Interactive Paper Session**

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Building the metaverse**, Ben Fineman, Internet2 (USA) . . . . . [9392-19]

**A passage for transmutation and transition**, Hyejin Kang, Indiana Univ. (USA) . . . . . [9392-20]

**A framework of augmented reality for a geotagged video**, Kyoung Ho Choi, Mokpo National Univ. (Korea, Republic of) . . . . . [9392-21]

**The application of virtual reality in medical study**, Shan Yu, Indiana Univ. (USA) . . . . . [9392-22]

**Reduce blurring and distortion in a projection type virtual image display using integrated small optics**, Tatsuya Hasegawa, Tomohiro Yendo, Nagaoka Univ. of Technology (Japan) . . . . . [9392-24]

**Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm**

## **Symposium Demonstration Session**

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## **Wednesday 11 February**

**Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am**

## **Plenary Session and Conference Award Presentations**

8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

# Conference 9393 • Location: Continental Ballroom 3

Tuesday–Thursday 10–12 February 2015 • Proceedings of IS&T/SPIE Vol. 9393

## Three-Dimensional Image Processing, Measurement (3DIPM), and Applications 2015

*Conference Chairs:* **Robert Sitnik**, Warsaw Univ. of Technology (Poland); **William Puech**, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France)

*Program Committee:* **Atila M. Baskurt**, Univ. de Lyon (France); **Hugues Benoit-Cattin**, Institut National des Sciences Appliquées de Lyon (France); **Silvia Biasotti**, Consiglio Nazionale delle Ricerche (Italy); **Adrian G. Bors**, The Univ. of York (United Kingdom); **Saida Bouakaz**, Univ. Claude Bernard Lyon 1 (France); **Benjamin Bustos**, Univ. de Chile (Chile); **Eduardo da Silva**, UFRJ (Brazil); **Mohamed Daoudi**, Télécom Lille 1 (France); **Florent Dupont**, Univ. Claude Bernard Lyon 1 (France); **Gilles Gesquière**, Lab. des Sciences de l'Information et des Systèmes (France); **Afzal Godil**, National Institute of Standards and Technology (USA); **Serge Miguet**, Univ. Lumière Lyon 2 (France); **Eric Paquet**, National Research Council Canada (Canada); **Tobias Schreck**, Univ. Konstanz (Germany); **Frédéric Truchetet**, Univ. de Bourgogne (France); **Stefano Tubaro**, Politecnico di Milano (Italy)

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

**Location: Continental Ballroom 4 and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm**

#### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Crosstalk characterization of PMD pixels using the spatial response function at subpixel level**, Miguel Heredia Conde, Klaus Hartmann, Otmar Löffel, Zess Univ. Siegen (Germany) . . . . . [9393-20]

**Unified crosstalk measurement method for various distances on multi-view autostereoscopic displays**, Bernd Duckstein, René de la Barré, Thomas Ebner, Roland Bartmann, Silvio Jurk, Ronny Netzbandt, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) . . . . . [9393-21]

**Registration between point clouds and image data based on moment invariant features**, Liu Sheng, Chang'an Univ. (China) . . . . . [9393-22]

**An evaluation method of 3D road slope deformation trend based on image analysis and three-dimensional laser scanning technology**, Zhiwei Wang, Chang'an Univ. (China) . . . . . [9393-23]

**About using Pockels cell for time-of-flight imaging**, Frédéric Truchetet, Le2i - Lab. d'Electronique Informatique et Image (France) and Univ. de Bourgogne (France); Jing Min Teow, Mei Chen Tay, Univ. Teknologi Petronas (Malaysia) . . . . . [9393-24]

**Towards automated firearm identification based on high-resolution 3D data: rotation-invariant features for multiple line-profile-measurement of firing-pin shapes**, Robert Fischer, Fachhochschule Brandenburg (Germany); Claus Vielhauer, Fachhochschule Brandenburg (Germany) and Otto-von-Guericke Univ. Magdeburg (Germany) . . . . . [9393-25]

**Continuous section extraction and over underbreak detection of tunnel based on 3D laser technology and image analysis**, Xin Zhang, Chang'an Univ. (China) . . . . . [9393-26]

**Efficient edge-awareness propagation via single-map filtering for edge-preserving stereo matching**, Takuya Matsuo, Shu Fujita, Norishige Fukushima, Yutaka Ishibashi, Nagoya Institute of Technology (Japan) . . . . . [9393-27]

**Disparity fusion using depth and stereo cameras for accurate stereo correspondence**, Woo-Seok Jang, Yo-Sung Ho, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [9393-28]

**Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm**

#### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

### Wednesday 11 February

**Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am**

#### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:20 am

#### Session 1

**Location: Continental Ballroom 3 . . Wed 10:20 am to 11:20 am**

#### Video, 3D, 4D, and Multimodal Imaging Systems

Session Chair: **Robert Sitnik**, Warsaw Univ. of Technology (Poland)

10:20 am: **Object matching in videos using rotational signal descriptor**, Darshan Venkatrayappa, Philippe Montesinos, Daniel Diep, Mines Alès (France) . . . . . [9393-1]

10:40 am: **Depth propagation for semi-automatic 2D to 3D conversion**, Ekaterina V. Tolstaya, Petr Pohl, SAMSUNG Electronics Co., Ltd. (Russian Federation); Michael N. Rychagov, Samsung Advanced Institute of Technology (Russian Federation) . . . . . [9393-2]

11:00 am: **Exploiting time multiplexing structured light with picoprojectors**, Mario Valerio Giuffrida, Giovanni M. Farinella, Sebastiano Battiato, Univ. degli Studi di Catania (Italy); Mirko Guarnera, STMicroelectronics (Italy) . . . . . [9393-3]

#### Session 2

**Location: Continental Ballroom 3 . . Wed 11:20 am to 12:20 pm**

#### Security and Compression

Session Chair: **William Puech**, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France)

11:20 am: **Joint synchronization and high capacity data hiding for 3D meshes**, Vincent Itier, William Puech, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France); Gilles Gesquière, Lab. des Sciences de l'Information et des Systèmes (France); Jean-Pierre Pedeboy, Stratégies S.A. (France) . . . . . [9393-4]

# Conference 9393 · Location: Continental Ballroom 3

11:40 am: **Digitized crime scene forensics: automated trace separation of toolmarks on high-resolution 2D/3D CLSM surface data**, Eric Clausing, Claus Vielhauer, Otto-von-Guericke Univ. Magdeburg (Germany) and Fachhochschule Brandenburg (Germany) . . . . . [9393-5]

12:00 pm: **A non-uniform mapping technique for precise depth representation**, Wenxiu Sun, Zibin Wang, Lenovo (Hong Kong) Ltd. (Hong Kong, China) . . . . . [9393-6]

Lunch Break . . . . . Wed 12:20 pm to 2:00 pm

## Session 3

**Location: Continental Ballroom 3 . . . . Wed 2:00 pm to 3:20 pm**

### 3D/4D Imaging Metrology and Technology

Session Chair: **Robert Sitnik**, Warsaw Univ. of Technology (Poland)

2:00 pm: **3D puzzle reconstruction for archeological fragments**, Frédéric Truchetet, Univ. de Bourgogne (France) and Le2i - Lab. d'Electronique, Informatique et Image (France); Florian Jampy, Le2i - Lab. d'Electronique, Informatique et Image (France); Antony Hostein, Univ. Paris 1 Panthéon Sorbonne (France); Eric Fauvet, Olivier Laligant, Le2i - Lab. d'Electronique, Informatique et Image (France) . . . . . [9393-7]

2:20 pm: **Stereo matching with space-constrained cost aggregation and segmentation-based disparity refinement**, Yi Peng, Ronggang Wang, Ge Li, Peking Univ. (China) . . . . . [9393-8]

2:40 pm: **A real-time 3D range image sensor based on a novel tip-tilt-piston micromirror and dual frequency phase shifting**, Øystein Skotheim, Henrik Schumann-Olsen, Jostein Thorstensen, Anna N. Kim, Matthieu Lacolle, Karl H. Haugholt, Thor Bakke, SINTEF (Norway) [9393-9]

3:00 pm: **A no-reference stereoscopic quality metric**, Alessandro R. Silva, Centro Federal de Educação Tecnológica de Goiás (Brazil); Mylène C. Q. Farias, Univ. de Brasília (Brazil) . . . . . [9393-10]

Coffee Break . . . . . Wed 3:20 pm to 4:00 pm

## Session 4

**Location: Continental Ballroom 3 . . . . Wed 4:00 pm to 5:20 pm**

### 3D Data Processing and Imaging Technology

Session Chair: **William Puech**, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France)

4:00 pm: **Coarse to fine: toward an intelligent 3D acquisition system**, Frédéric Truchetet, Vincent Daval, Olivier Aubreton, Univ. de Bourgogne (France) . . . . . [9393-11]

4:20 pm: **Mesh saliency with adaptive local patches**, Anass Nouri, ENSICAEN (France); Christophe M. Charrier, Olivier Lézoray, Univ. de Caen Basse-Normandie (France) . . . . . [9393-12]

4:40 pm: **Phase-aware-candidate-selection for time-of-flight depth map denoising**, Thomas Hach, ARRI AG (Germany); Tamara N. Seybold, Arnold & Richter Cine Technik GmbH & Co. Betriebs KG (Germany); Hendrik Böttcher, Technische Univ. München (Germany) . . . . . [9393-13]

5:00 pm: **Camera model compensation for image integration of time-of-flight depth video and color video**, Hiromu Yamashita, Shogo Tokai, Shunpei Uchino, Univ. of Fukui (Japan) . . . . . [9393-14]

## Thursday 12 February

### Session 5

**Location: Continental Ballroom 3 . . . . Thu 8:30 am to 10:10 am**

### Stereo and Multi-View Reconstruction

Session Chair: **Robert Sitnik**, Warsaw Univ. of Technology (Poland)

8:30 am: **A practical implementation of free viewpoint video system for soccer games**, Ryo Suenaga, Kazuyoshi Suzuki, Tomoyuki Tezuka, Mehrdad Panahpour Tehrani, Keita Takahashi, Toshiaki Fujii, Nagoya Univ. (Japan) . . . . . [9393-15]

8:50 am: **Observing atmospheric clouds through stereo reconstruction**, Rusen Oktem, Univ. of California, Berkeley (USA); David M. Romps, Univ. of California, Berkeley (USA) and Lawrence Berkeley National Lab. (USA) . . . . . [9393-16]

9:10 am: **Robust stereo matching based on probabilistic Laplacian propagation with weighted mutual information**, Junhyung Kim, Seungchul Ryu, Seungryong Kim, Kwanghoon Sohn, Yonsei Univ. (Korea, Republic of) . . . . . [9393-17]

9:30 am: **Structure-aware depth super-resolution using Gaussian mixture model**, Sunok Kim, Changjae Oh, Youngjung Kim, Kwanghoon Sohn, Yonsei Univ. (Korea, Republic of) . . . . . [9393-18]

9:50 am: **A new fast-matching method for adaptive compression of stereoscopic images**, Alessandro Ortis, Sebastiano Battiato, Univ. degli Studi di Catania (Italy) . . . . . [9393-19]

# Conference 9394 • Location: Golden Gate 2

Monday–Thursday 9–12 February 2015 • Proceedings of IS&T/SPIE Vol. 9394

## Human Vision and Electronic Imaging XX

**Conference Chairs:** **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA); **Thrasylvoulos N. Pappas**, Northwestern Univ. (USA); **Huib de Ridder**, Technische Univ. Delft (Netherlands)

**Program Committee:** **Albert J. Ahumada Jr.**, NASA Ames Research Ctr. (USA); **Jan P. Allebach**, Purdue Univ. (USA); **Erhardt Barth**, Univ. zu Lübeck (Germany); **Walter R. Bender**, Sugar Labs (USA); **Michael H. Brill**, Datacolor (USA); **Damon M. Chandler**, Oklahoma State Univ. (USA); **John C. Dalton**, Synthetik Software (USA); **Scott J. Daly**, Dolby Labs., Inc. (USA); **Ulrich Engelke**, Commonwealth Scientific and Industrial Research Organisation (Australia); **Elena A. Fedorovskaya**, Rochester Institute of Technology (USA); **James A. Ferwerda**, Rochester Institute of Technology (USA); **Jennifer L. Gille**, Qualcomm Technologies Inc. (USA); **Sergio R. Goma**, Qualcomm Inc. (USA); **Sheila S. Hemami**, Northeastern Univ. (USA); **Hari Kalva**, Florida Atlantic Univ. (USA); **Stanley A. Klein**, Univ. of California, Berkeley (USA); **Patrick Le Callet**, Univ. de Nantes (France); **Lora T. Likova**, The Smith-Kettlewell Eye Research Institute (USA); **John J. McCann**, McCann Imaging (USA); **Jeffrey B. Mulligan**, NASA Ames Research Ctr. (USA); **Karol Myszkowski**, Max-Planck-Institut für Informatik (Germany); **Adar Pelah**, The Univ. of York (United Kingdom); **Eliezer Peli**, Schepens Eye Research Institute (USA); **Judith A. Redi**, Technische Univ. Delft (Netherlands); **Hawley K. Rising III**, Consultant (USA); **Sabine Süsstrunk**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Christopher W. Tyler**, The Smith-Kettlewell Eye Research Institute (USA); **Andrew B. Watson**, NASA Ames Research Ctr. (USA); **Michael A. Webster**, Univ. of Nevada, Reno (USA)

### Monday 9 February

**Location: Golden Gate 2** ..... Mon 10:00 am to 11:50 am

#### Keynote Session

Session Chairs: **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA); **Thrasylvoulos N. Pappas**, Northwestern Univ. (USA); **Huib de Ridder**, Technische Univ. Delft (Netherlands)

Introduction 10:00 to 10:10 am

10:10 am: **Up periscope! Designing a new perceptual metric for imaging system performance** (*Keynote Presentation*), Andrew B. Watson, NASA Ames Research Ctr. (USA) ..... [9394-1]

11:00 am: **Cognitive psychology meets art: studying creativity, language, and emotion through live musical improvisation in film and theatre** (*Keynote Presentation*), Monica Lopez-Gonzalez, La Petite Noiseuse Productions (USA) and Maryland Institute College of Art (USA) and Johns Hopkins Univ. (USA) ..... [9394-40]

Lunch Break ..... Mon 11:50 am to 2:00 pm

#### Session 1

**Location: Golden Gate 2** ..... Mon 2:00 pm to 5:30 pm

#### New Frontiers in Perceptual Image Quality: New Trends, Emerging Technologies, and Novel Evaluation Techniques

Session Chairs: **Damon M. Chandler**, Oklahoma State Univ. (USA); **Huib de Ridder**, Technische Univ. Delft (Netherlands)

2:00 pm: **Use of a local cone model to predict the essential CSF behavior used in the design of luminance quantization nonlinearities** (*Invited Paper*), Scott J. Daly, Dolby Labs., Inc. (USA); Seyedalireza Golestaneh, Arizona State Univ. (USA) ..... [9394-2]

2:20 pm: **Display device-adapted video quality-of-experience assessment**, Abdul Rehman, Kai Zeng, Zhou Wang, Univ. of Waterloo (Canada) ..... [9394-3]

2:40 pm: **About subjective evaluation of adaptive video streaming** (*Invited Paper*), Samira Tavakoli, Univ. Politécnica de Madrid (Spain); Kjell E. Brunnström, Acreo Swedish ICT AB (Sweden); Narciso García, Univ. Politécnica de Madrid (Spain) ..... [9394-4]

3:00 pm: **A transformation-aware perceptual image metric**, Petr Kellnhofer, Max-Planck-Institut für Informatik (Germany); Tobias Ritschel, Max-Planck-Institut für Informatik (Germany) and Univ. des Saarlandes (Germany); Karol Myszkowski, Hans-Peter Seidel, Max-Planck-Institut für Informatik (Germany) ..... [9394-5]

Coffee Break ..... Mon 3:20 pm to 3:50 pm

3:50 pm: **Designing a biased specification-based subjective test of image quality** (*Invited Paper*), Amy R. Reibman, AT&T Labs. Research (USA) ..... [9394-6]

4:10 pm: **Towards a model for personalized prediction of quality of visual experiences**, Yi Zhu, Technische Univ. Delft (Netherlands); Ingrid Heynderickx, Eindhoven Univ. of Technology (Netherlands); Judith A. Redi, Technische Univ. Delft (Netherlands) ..... [9394-7]

4:30 pm: **Quality labeled faces in the wild (QLFW): a database for studying face recognition in real-world environments** (*Invited Paper*), Lina J. Karam, Tong Zhu, Arizona State Univ. (USA) ..... [9394-8]

4:50 pm: **Parameterized framework for the analysis of visual quality assessments using crowdsourcing**, Anthony Fremuth, Velibor Adzic, Hari Kalva, Florida Atlantic Univ. (USA) ..... [9394-9]

5:10 pm: **What do you think of my picture?: Investigating factors of influence in profile images context perception** (*Invited Paper*), Filippo Mazza, Ecole Centrale de Nantes (France); Matthieu Perreira Da Silva, Patrick Le Callet, Univ. de Nantes (France); Ingrid E. J. Heynderickx, Philips Research Nederland B.V. (Netherlands) ..... [9394-10]

**Location: Golden Gate 2** ..... Mon 5:30 pm to 6:30 pm

#### Discussion Session

Session Chairs: **Thrasylvoulos N. Pappas**, Northwestern Univ. (USA); **Maria Valezka Ortiz Segovia**, Océ Print Logic Technologies (France)

Join us for an interactive discussion of the day's papers. Meet the authors and chat about their work. This is a wonderful opportunity to explore topics from diverse perspectives with members of the HVEI community.

**Location: Golden Gate 2** ..... Mon 7:30 pm to 10:30 pm

#### Human Vision and Electronic Imaging Banquet

Guest speaker: **Steve M. Kosslyn**, Minerva Project, Keck Graduate Institute (USA)

#### The science of learning: insights from Minerva on what we teach and how we can use technology to help

Abstract: Minerva is a new approach to higher education, which rests in part on research in psychology, neuroscience, and technology. The goal is to build a new curriculum that fosters critical thinking, creative thinking, and effective communication. New computer methodologies have been developed that allow the students to interact with their professors remotely in real time, to enable "fully-active" learning. After the first year, the concept of distributed learning is taken to a new level-- students live in various cities around the world, and each city's resources are integrated into the curriculum. Minerva is a test-bed for designing new empirically based, technology-mediated technologies, which will improve the way we foster the creativity of the next generation's world thinkers.

# Conference 9394 · Location: Golden Gate 2

Tuesday 10 February

Session 3

Location: Continental Ballroom 5 ..... Tue 8:30 am to 9:50 am

## Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) ..... [9391-500]

Coffee Break ..... Tue 9:50 am to 10:10 am

## Session 2

Location: Golden Gate 2 ..... Tue 10:10 am to 12:40 pm

### Perception of Texture, Gloss, and Color in Materials: Joint Session with Conferences 9394 and 9398

Session Chairs: **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA); **Maria Valezka Ortiz Segovia**, Océ Print Logic Technologies (France); **Andreas Hoepe**, Physikalisch-Technische Bundesanstalt (Germany)

10:10 am: **Texture, illumination, and material perception**, Sylvia C. Pont, Andrea Jacoba van Doorn, Maarten W. A. Wijnjtes, Jan J. Koenderink, Technische Univ. Delft (Netherlands) ..... [9394-11]

10:40 am: **Extended visual appearance texture features**, Simon-Frédéric Désage, Gilles Pitard, Maurice Pillet, Hugues Favrelière, Fabrice Frelin, Univ. de Savoie (France); Serge Samper, Univ. de Rennes 1 (France); Gaetan Le Goic, Univ. de Bourgogne (France) ..... [9398-20]

11:00 am: **Effects of contrast adjustment on visual gloss of natural textures**, Jing Wang, Thrasyvoulos N. Pappas, Northwestern Univ. (USA) ..... [9394-12]

11:20 am: **Goniochromatic-difference between effect coatings: is the whole more than the sum of its parts?**, Jana Blahová, Technische Univ. Darmstadt (Germany); Eric J. J. Kirchner, Niels Dekker, Akzo Nobel Coating B.V. (Netherlands); Marcel P. Lucassen, LUCASSEN Colour Research (Netherlands); Lan Njo, Ivo van der Lans, Akzo Nobel Coating B.V. (Netherlands); Philipp Urban, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Rafael Huertas, Univ. de Granada (Spain) ..... [9398-21]

11:40 am: **Visual comparison testing of automotive paint simulation**, Gary W. Meyer, Univ. of Minnesota, Twin Cities (USA); Curtis Evey, Dassault Systemes (USA); Jan Meseth, Dassault Systemes (Germany); Ryan Schnackenberg, Dassault Systemes (USA); Charles Fan, General Motors Co. (USA); Chris Seubert, Ford Motor Co. (United States) [9398-22]

12:00 pm: **A subjective study and an objective metric to quantify the granularity level of textures**, Mahesh M. Subedar, Lina J. Karam, Arizona State Univ. (USA) ..... [9394-13]

12:20 pm: **Texture synthesis models and material perception in the visual periphery**, Benjamin Balas, North Dakota State Univ. (USA) ..... [9394-14]

Lunch Break ..... Tue 12:40 pm to 2:00 pm

Location: Golden Gate 2 ..... Tue 2:00 pm to 2:20 pm

## Posters Fast Forward

Session Chair: **Patrick Le Callet**, Univ. de Nantes (France)

In this session, the interactive paper authors will each present one slide introducing their poster.

Location: Golden Gate 2 ..... Tue 2:20 pm to 4:30 pm

## New Frontiers in Perceptual Image Quality: Natural Scenes and Higher-Level Statistical Features

Session Chair: **Damon M. Chandler**, Oklahoma State Univ. (USA)

2:20 pm: **Feature maps driven no-reference image quality prediction of authentically distorted images (Invited Paper)**, Deepti Ghadiyaram, Alan Bovik, The Univ. of Texas at Austin (USA) ..... [9394-15]

2:40 pm: **Combining of full-reference image visual quality metrics by neural network (Invited Paper)**, Vladimir V Lukin, Nikolay N Ponomarenko, Oleg I. Ieremeiev, National Aerospace Univ. (Ukraine); Karen O Egiazarian, Jaakko T Astola, Tampere University of Technology (Finland) ... [9394-16]

3:00 pm: **Geometrical and statistical properties of vision models obtained via maximum differentiation (Invited Paper)**, Jesus Malo, Univ. de Valencia (Spain); Eero Somincelli, New York Univ. (USA) ... [9394-17]

Coffee Break ..... Tue 3:20 pm to 3:50 pm

3:50 pm: **Relations between models of local masking in natural images and perceptual quality (Invited Paper)**, Md Mushfiqul Alam, Pranita Patil, Martin T. Hagan, Damon M Chandler, Oklahoma State Univ. (USA) ..... [9394-18]

4:10 pm: **Building structural similarity database for metric learning (Invited Paper)**, Guoxin Jin, Thrasyvoulos N. Pappas, Northwestern Univ. (USA) ..... [9394-19]

## PANEL DISCUSSION

Location: Golden Gate 2 ..... Tue 4:30 pm to 5:30 pm

### Panel Discussion: Can We Replace Human Judgments with Databases and Algorithms?

Panel Moderators: **Damon Chandler**, Oklahoma State Univ. (USA) and **Thrasyvoulos N. Pappas**, Northwestern Univ. (USA)

Panel Members: **Amy Reibman**, Purdue Univ. (USA); **Kjell Brunnstrom**, Acreo Swedish ICT AB (Sweden) and Mid Sweden Univ. (Sweden); **Al Bovik**, The Univ. of Texas at Austin (USA); **Tom Carney**, ModelFest (USA); **Stan Klein**, Univ. of California, Berkeley (USA); **Andrew B. Watson**, NASA Ames Research Ctr. (USA); **Sabine Süsstrunk**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Lina Karam**, Arizona State Univ. (USA); **Patrick Le Callet** Univ. de Nantes (France); **Michael H. Brill**, Datacolor (USA); **Nikolay N. Ponomarenko**, National Aerospace University (Ukraine).

Location: Continental Ballroom 4 and Golden Gate Foyer ..... Tue 5:30 pm to 7:00 pm

## Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Do curved displays make for a more pleasant experience?**, Nooree Na, Kyeong-Ah Jeong, Hyeon-Jeong Suk, KAIST (Korea, Republic of) [9394-41]

**The importance of accurate convergence in addressing stereoscopic visual fatigue**, Christopher A. Mayhew, Stephen M. Bier, Vision III Imaging, Inc. (USA) ..... [9394-42]

**Improvement in perception of image sharpness through the addition of noise and its relationship with memory texture**, Xiazi Wan, Hiroyuki Kobayashi, Naokazu Aoki, Chiba Univ. (Japan) ..... [9394-43]

**Depth image enhancement using perceptual texture priors**, Duhyeon Bang, Hyunjung Shim, Yonsei Univ. (Korea, Republic of) ..... [9394-44]

**A perceptual masking model for natural image with additive defects and detail loss based on adjacent visual channel inhibition**, Yucheng Liu, Jan P. Allebach, Purdue Univ. (USA) ..... [9394-45]

# Conference 9394 · Location: Golden Gate 2

**Influence of high ambient illuminance and display luminance on readability and subjective preference**, Katrien De Moor, Norwegian Univ. of Science and Technology (Norway); Börje Andrén, Acreo Swedish ICT AB (Sweden); Guo Yi, Acreo Swedish ICT AB (Sweden) and KTH Royal Institute of Technology (Sweden); Kjell E. Brunnström, Acreo Swedish ICT AB (Sweden) and Mid Sweden Univ. (Sweden); Kun Wang, Acreo Swedish ICT AB (Sweden) and KTH Royal Institute of Technology (Sweden); Anton Drott, David S. Hermann, Volvo Car Corp. (Sweden) . . . . . [9394-46]

**A no-reference bitstream-based perceptual model for video quality estimation of videos affected by coding artifacts and packet losses**, Katerina Pandremmenou, Univ. of Ioannina (Greece); Muhammad Shahid, Blekinge Institute of Technology (Sweden); Lisimachos P. Kondi, Univ. of Ioannina (Greece); Benny Lovstrom, Blekinge Institute of Technology (Sweden) . . . . . [9394-47]

**Saliency detection for videos using 3D FFT local spectra**, Zhiling Long, Ghassan AlRegib, Georgia Institute of Technology (USA) . . . . . [9394-48]

**Perceived interest versus overt visual attention in image quality assessment**, Ulrich Engelke, Commonwealth Scientific and Industrial Research Organisation (Australia); Patrick Le Callet, Univ. de Nantes (France); Hantao Liu, The Univ. of Hull (United Kingdom) . . . . . [9394-49]

**A tone mapping operator based on neural and psychophysical models of visual perception**, Praveen Cyriac, Marcelo Bertalmio, David Kane, Javier Vazquez-Corral, Univ. Pompeu Fabra (Spain) . . . . . [9394-50]

**Illuminant color estimation based on pigmentation separation from human skin color**, Satomi Tanaka, Chiba Univ. (Japan); Akihiro Kakinuma, Naohiro Kamijo, Hiroshi Takahashi, Ricoh Co., Ltd. (Japan); Norimichi Tsumura, Chiba Univ. (Japan) . . . . . [9394-51]

**Evaluation of color encodings for high dynamic range pixels**, Ronan Boitard, Technicolor S.A. (France); Rafal K. Mantiuk, Bangor Univ. (United Kingdom); Tania Pouli, Technicolor S.A. (France) . . . . . [9394-52]

**Using false colors to protect visual privacy of sensitive content**, Serdar Ciftci, Middle East Technical Univ. (Turkey); Pavel Korshunov, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Ahmet O. Akyuz, Middle East Technical Univ. (Turkey); Touradj Ebrahimi, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [9394-53]

**The visual light field in paintings of museum Prinsenhof: comparing settings in empty space and on objects**, Tatiana Kartashova, Technische Univ. Delft (Netherlands); Susan te Pas, Utrecht Univ. (Netherlands); Sylvia C. Pont, Huib de Ridder, Technische Univ. Delft (Netherlands); Marga Schoemaker, Museum Prinsenhof Delft (Netherlands) . . . . . [9394-54]

**Using V1-based models for difference perception and change detection**, Pei Ying Chua, DSO National Labs. (Singapore); K. Kwok, DSO National Labs. (Singapore) and Temasek Labs. (Singapore) . . . . [9394-55]

## Location: Continental Ballroom Foyer . Tue 5:30 pm to 7:30 pm Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

## Location: Continental Ballroom 5 . . . . Wed 8:30 am to 9:50 am Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:10 am

## Session 4

Location: Golden Gate 2 . . . . . Wed 10:10 am to 12:00 pm

### Lighting, Light, and Lightness

Session Chair: **Sylvia C. Pont**, Technische Univ. Delft (Netherlands)

10:10 am: **Effect of daylight on atmosphere perception: comparison of a real space and visualizations** (*Invited Paper*), Mariska G. M. Stokkermans, Yuexu Chen, Technische Univ. Eindhoven (Netherlands); Michael J. Murdoch, Ingrid M. L. C. Vogels, Philips Research Nederland B.V. (Netherlands); Ingrid E. J. Heynderickx, Technische Univ. Eindhoven (Netherlands) and Philips Research Nederland B.V. (Netherlands) [9394-20]

10:40 am: **The role of natural lighting diffuseness in human visual perception** (*Invited Paper*), Yaniv Morgenstern, Univ. of Minnesota, Twin Cities (USA); Wilson S. Geisler, The Univ. of Texas at Austin (USA); Richard F. Murray, York Univ. (Canada) . . . . . [9394-21]

11:00 am: **The influence of lighting on visual perception of material qualities** (*Invited Paper*), Fan Zhang, Huib de Ridder, Sylvia Pont, Technische Univ. Delft (Netherlands) . . . . . [9394-22]

11:20 am: **Effect of fixation positions on perception of lightness** (*Invited Paper*), Matteo Toscani, Justus-Liebig-Universität Giessen (Germany) [9394-23]

11:40 am: **Perception of light source distance from shading and shadows** (*Invited Paper*), Roland W. Fleming, Justus-Liebig-Universität Giessen (Germany) . . . . . [9394-24]

Lunch Break . . . . . Wed 12:00 pm to 2:00 pm

Location: Golden Gate 2 . . . . . Wed 2:00 pm to 2:40 pm

### Keynote: Joint Session with Conferences 9394 and 9395

Session Chairs: **John J. McCann**, McCann Imaging (USA); **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA)

2:00 pm: **Next gen perception and cognition: augmenting perception and enhancing cognition through mobile technologies** (*Keynote Presentation*), Sergio R. Goma, Qualcomm Inc. (USA) . . . . . [9394-57]

## Session 5

Location: Golden Gate 2 . . . . . Wed 2:40 pm to 5:00 pm

### Color in New Technologies from Mobile to Cinema: Joint Session with Conferences 9394 and 9395

Session Chair: **John J. McCann**, McCann Imaging (USA)

2:40 pm: **Challenges in display color management (DCM) for mobile devices**, Reza Safaee-Rad, Qualcomm Inc. (Canada); Jennifer L. Gille, Miliivoje Aleksic, Qualcomm Inc. (USA) . . . . . [9395-28]

3:00 pm: **White balance for mobile device displays: navigating various image-quality demands**, Jennifer L. Gille, Qualcomm Inc. (USA); Reza Safaee-Rad, Qualcomm Inc. (Canada); Miliivoje Aleksic, Qualcomm Inc. (USA) . . . . . [9395-29]

Coffee Break . . . . . Wed 3:20 pm to 3:40 pm

3:40 pm: **A comparative study of psychophysical judgment of color reproductions on mobile displays in Europe and Asia**, Kyungah Choi, Hyeon-Jeong Suk, KAIST (Korea, Republic of) . . . . . [9395-30]

4:00 pm: **Perceived image quality assessment for color images on mobile displays**, Hyesung Jang, Choon-Woo Kim, Inha Univ. (Korea, Republic of) . . . . . [9395-31]

4:20 pm: **Reducing observer metamerism in wide-gamut multiprimary displays**, David Long, Mark D. Fairchild, Rochester Institute of Technology (USA) . . . . . [9394-25]

4:40 pm: **Gamut extension for cinema: psychophysical evaluation of the state of the art and a new algorithm**, Syed Waqas Zamir, Javier Vazquez-Corral, Marcelo Bertalmio, Univ. Pompeu Fabra (Spain) [9394-26]

# Conference 9394 · Location: Golden Gate 2

Location: Golden Gate 2 ..... Wed 5:20 pm to 6:30 pm

## Discussion Session

Session Chairs: **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA); **Thrasylvoulos N. Pappas**, Northwestern Univ. (USA); **Huib de Ridder**, Technische Univ. Delft (Netherlands)

Join us for an interactive discussion of the day's papers. Meet the authors and chat about their work. This is a wonderful opportunity to explore topics from diverse perspectives with members of the HVEL community.

## Thursday 12 February

### Session 6

Location: Golden Gate 2 ..... Thu 8:30 am to 10:10 am

## Attention and Visual Saliency

Session Chair: **Huib de Ridder**, Technische Univ. Delft (Netherlands)

8:30 am: **Are faces equally important?**, Bin Jin, Gökhan Yildirim, Cheryl Lau, Appu Shaji, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Maria V. Ortiz Segovia, Océ Print Logic Technologies (France); Sabine Süssstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [9394-27]

8:50 am: **Bridging the gap between eye tracking and crowdsourcing**, Pierre Lebreton, Technische Univ. Berlin (Germany); Evangelos Skodras, Univ. of Patras (Greece); Toni Mäki, VTT Technical Research Ctr. of Finland (Finland); Isabelle Hupont Torres, Instituto Tecnológico de Aragón (Spain); Matthias Hirth, Julius-Maximilians-Univ. Würzburg (Germany) ... [9394-28]

9:10 am: **Visual saliency in MPEG-4 AVC video stream**, Marwa Ammar, Marwen Hasnaoui, Mihai Mitrea, Télécom SudParis (France); Patrick Le Callet, Univ. de Nantes (France) ..... [9394-29]

9:30 am: **Learning visual balance from large scale datasets of aesthetically highly rated images**, Ali Jahanian, S. V. N. Vishwanathan, Jan P. Allebach, Purdue Univ. (USA) ..... [9394-30]

9:50 am: **Assessing the influence of combinations of blockiness, blurriness, and packet loss impairments on visual attention deployment**, Alexandre F. Silva, Mylène C. Q. Farias, Univ. de Brasília (Brazil); Judith A. Redi, Technische Univ. Delft (Netherlands) ... [9394-31]

Coffee Break ..... Thu 10:10 am to 10:40 am

### Session 7

Location: Golden Gate 2 ..... Thu 10:40 am to 12:00 pm

## Perceptual Dynamics in Visualization and Computer Graphics

Session Chair: **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA)

10:40 am: **Hue tinting for interactive data visualization**, Jonathan I. Helfman, Agilent Technologies, Inc. (USA) ..... [9394-32]

11:00 am: **On the visualization of tetrachromatic images**, Alfredo Restrepo, Univ. de los Andes (Colombia) ..... [9394-33]

11:20 am: **Evaluating the perception of different matching strategies for time-coherent animations**, Javier Villegas, The Univ. of Arizona (USA); Ronak Etemadpour, Oklahoma State Univ. (USA); Angus G. Forbes, Univ. of Illinois at Chicago (USA) ..... [9394-34]

11:40 am: **Shared digital spaces**, Bernice E. Rogowitz, Visual Perspectives Research and Consulting (USA); Paul Borrel, IBMEC/RJ (Brazil) ..... [9394-35]

Lunch Break ..... Thu 12:00 pm to 2:00 pm

### Session 8

Location: Golden Gate 2 ..... Thu 2:00 pm to 4:40 pm

## Digital Humanities: Imaging, Visualization, and Analytics in the Social Sciences

Session Chair: **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA)

2:00 pm: **Examples of challenges and opportunities in visual analysis in the digital humanities** (*Invited Paper*), Holly E. Rushmeier, Yale Univ. (USA); Ruggero Pintus, Ctr. for Advanced Studies, Research and Development in Sardinia (Italy); Ying Yang, Yale Univ (USA); Christiana Wong, David Li, Yale Univ. (USA) ..... [9394-36]

2:30 pm: **From A to B via Z: strategic interface design in the digital humanities** (*Invited Paper*), Milena Radzikowska, Mount Royal College (Canada); Stan Ruecker, Illinois Institute of Technology (USA); Stefan Sinclair, McGill Univ. (Canada) ..... [9394-37]

3:00 pm: **Public art, citizen data, and combining multiple types of data for understanding** (*Invited Paper*), Lyn Bartram, Simon Fraser Univ. (Canada) ..... [9394-38]

Coffee Break ..... Thu 3:20 pm to 4:00 pm

4:00 pm: **Can brain changes from art training reveal commonalities between the mechanisms of drawing and of music?**, Lora T. Likova, The Smith-Kettlewell Eye Research Institute (USA) ..... [9394-56]

4:20 pm: **Introducing digital humanities in an engineering school: new data; new approaches** (*Invited Paper*), Sabine Süssstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [9394-39]

Location: Golden Gate 2 ..... Thu 4:40 pm to 5:40 pm

## Closing Reception and Discussion Session

Join us for an interactive discussion of the day's papers. Meet the authors and chat about their work. This is a wonderful opportunity to explore topics from diverse perspectives with members of the HVEL community. Since this is the last discussion session of the week and the last session of the conference, we will also use this opportunity to formulate emergent themes to guide future research.

## Friday 13 February

**de Young Museum Visit** ..... 11:00 am to 2:00 pm

We will be meeting at the de Young museum to view the "Celebrating the Spectrum" exhibit, which shows how artistic greats such as Josef Albers, Anni Albers, Jasper Johns, Roy Lichtenstein, Ad Reinhardt, and Frank Stella have explored and used color. There is also an exhibit by Keith Haring, whose works of art from subway graffiti to large tableaux use visual elements to draw attention, denote motion, and add emotional intensity

Details regarding the museum visit will be announced onsite.



# Conference 9395 • Location: Continental Ballroom 2 and Golden Gate 2

Monday–Thursday 9–12 February 2015 • Proceedings of IS&T/SPIE Vol. 9395

## Color Imaging XX: Displaying, Processing, Hardcopy, and Applications

*Conference Chairs:* **Reiner Eschbach**, Xerox Corp. (USA); **Gabriel G. Marcu**, Apple Inc. (USA); **Alessandro Rizzi**, Univ. degli Studi di Milano (Italy)

*Program Committee:* **Jan P. Allebach**, Purdue Univ. (USA); **Scott J. Daly**, Dolby Labs., Inc. (USA); **Phil J. Green**, Gjøvik Univ. College (United Kingdom); **Roger D. Hersch**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Choon-Woo Kim**, Inha Univ. (Korea, Republic of); **Michael A. Kriss**, MAK Consultants (USA); **Fritz Lebowsky**, STMicroelectronics (France); **Nathan Moroney**, Hewlett-Packard Labs. (USA); **Carinna E. Parraman**, Univ. of the West of England (United Kingdom); **Shoji Tominaga**, Chiba Univ. (Japan); **Stephen Westland**, Univ. of Leeds (United Kingdom)

### Monday 9 February

#### Session 1

**Location: Continental Ballroom 2 . . . . Mon 2:00 pm to 3:20 pm**

#### Displays and Camera

Session Chair: **Reiner Eschbach**, Xerox Corp. (USA)

2:00 pm: **Optimizing color fidelity for display devices using vectorized interpolation steered locally by perceptual error quantities**, Marina M Nicolas, Fritz Lebowsky, STMicroelectronics (France) . . . . . [9395-1]

2:20 pm: **Demosaicking algorithm for the Kodak-RGBW color filter array**, Mina Rafi Nazari, Eric Dubois, Univ. of Ottawa (Canada) . . . [9395-2]

2:40 pm: **Subjective comparison of brightness preservation methods for local backlight dimming displays**, Jari Korhonen, Claire Mantel, Søren O. Forchhammer, DTU Fotonik (Denmark) . . . . . [9395-3]

3:00 pm: **Shading correction of camera captured document image with depth map information**, Chyuan-Tyng Wu, Jan P. Allebach, Purdue Univ. (USA) . . . . . [9395-4]

11:30 am: **Video enhancement method with color-protection post-processing**, Youn Jin Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Youngshin Kwak, Ulsan National Institute of Science and Technology (Korea, Republic of) . . . . . [9395-9]

11:50 am: **Fast algorithm for visibility enhancement of the images with low local contrast**, Ilya V. Kurilin, Samsung Advanced Institute of Technology (Russian Federation); Ilya V. Safonov, National Research Nuclear Univ. MEPhI (Russian Federation); Michael N. Rychagov, Sergey S. Zavalishin, Samsung Advanced Institute of Technology (Russian Federation); Donghyeop Han, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Sang Ho Kim, Samsung Digital City (Korea, Republic of) . . . . . [9395-10]

12:10 pm: **Online image classification under monotonic decision boundary constraint**, Cheng Lu, Jan P. Allebach, Purdue Univ. (USA); Jerry K. Wagner, Brandi Pitta, David Larson, Hewlett-Packard Co. (USA); Yandong Guo, Purdue Univ (USA) . . . . . [9395-11]

Lunch Break . . . . . Tue 12:30 pm to 2:00 pm

#### Session 3

**Location: Continental Ballroom 2 . . . . . Tue 2:00 pm to 5:00 pm**

#### Halftone and Printing

Session Chair: **Jon Yngve Hardeberg**, Gjøvik Univ. College (Norway)

2:00 pm: **An evaluation of the transferability of Munsell's colour notation methodology to modern inkjet printing technology**, Melissa K. Olen, Adrian Geisow, Carinna E. Parraman, Univ. of the West of England (United Kingdom) . . . . . [9395-12]

2:20 pm: **Effect of ink spreading and ink amount on the accuracy of the Yule-Nielsen modified spectral Neugebauer model**, Radovan Slavuj, Ludovic G. Coppel, Jon Yngve Hardeberg, Gjøvik Univ. College (Norway) . . . . . [9395-13]

2:40 pm: **The precise prediction model of spectral reflectance for color halftone images**, Dongwen Tian, Shanghai Research Institute of Publishing & Media (China); Fengwen Tian, Shanghai Maritime Univ. (China) . . . . . [9395-14]

3:00 pm: **Ink thickness control based on spectral reflectance model**, Dongwen Tian, Shanghai Research Institute of Publishing & Media (China) . . . . . [9395-15]

Coffee Break . . . . . Tue 3:20 pm to 3:40 pm

3:40 pm: **Yule-Nielsen based multi-angle reflectance prediction of metallic halftones**, Vahid Babaei, Roger D. Hersch, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [9395-16]

4:00 pm: **Multichannel DBS halftoning for improved texture quality**, Radovan Slavuj, Marius Pedersen, Gjøvik Univ. College (Norway) [9395-17]

4:20 pm: **Color dithering methods for LEGO-like 3D printing**, Pei-Li Sun, Yuping Sie, National Taiwan Univ. of Science and Technology (Taiwan) . . . . . [9395-18]

4:40 pm: **Design of irregular screen sets that generate maximally smooth halftone patterns**, Altyngul Jumabayeva, Yi-Ting Chen, Purdue Univ. (USA); Tal Frank, Indigo Ltd. (Israel); Robert A. Ulichney, Hewlett-Packard Co. (USA); Jan P. Allebach, Purdue Univ. (USA) . . . . . [9395-19]

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

#### Session 2

**Location: Continental Ballroom 2 . . . Tue 10:10 am to 12:30 pm**

#### Processing

Session Chair: **Fritz Lebowsky**, STMicroelectronics (France)

10:10 am: **A robust segmentation of scanned documents**, Hyung Jun Park, Ji Young Yi, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . [9395-5]

10:30 am: **Text line detection based on cost optimized local text line direction estimation**, Yandong Guo, Microsoft Corp. (USA); Yufang Sun, Purdue Univ. (USA); Peter Bauer, Hewlett-Packard Co. (USA); Jan P. Allebach, Charles A. Bouman, Purdue Univ. (USA) . . . . . [9395-6]

10:50 am: **Color image enhancement based on particle swarm optimization with Gaussian mixture**, Shibudas Kattakkalil Subhashdas, Bong-Seok Choi, Ji-hoon Yoo, Yeong-Ho Ha, Kyungpook National Univ. (Korea, Republic of) . . . . . [9395-7]

11:10 am: **Image enhancement for low resolution display panels**, Rakshit S. Kothari, Eli Saber, Rochester Institute of Technology (USA); Marvin Nelson, Michael A. Stauffer, Dave Bohan, Hewlett-Packard Co. (USA) . . . . . [9395-8]

# Conference 9395 · Location: Continental Ballroom 2 and Golden Gate 2

Location: Continental Ballroom 4  
and Golden Gate Foyer ..... Tue 5:30 pm to 7:00 pm

## Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

Representation of chromatic distribution for lighting system, Maurizio Rossi, Fulvio Musante, Politecnico di Milano (Italy) ..... [9395-45]

Location: Continental Ballroom Foyer ..... 5:30 pm to 7:30 pm

## Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

Location: Continental Ballroom 5 ..... Wed 8:30 am to 9:50 am

## Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (Plenary), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) ..... [9391-501]

Coffee Break ..... Wed 9:50 am to 10:30 am

### Session 4

Location: Continental Ballroom 2 .. Wed 10:30 am to 12:30 pm

## Applied Color

Session Chair: **Phil Green**, Gjøvik Univ. College (Norway)

10:30 am: **Introducing iccMAX: new frontiers in color management**, Maxim W. Derhak, Onyx Graphics (USA); Phil Green, Gjøvik Univ. College (Norway); Tom Lianza, Photo Research, Inc. (USA) ..... [9395-20]

10:50 am: **Baseline gamut mapping method for the perceptual reference medium gamut**, Phil Green, Gjøvik Univ. College (Norway) ..... [9395-22]

11:10 am: **False-colour palette generation using a reference colour gamut**, Phil Green, Gjøvik Univ. College (Norway) ..... [9395-23]

11:30 am: **Color correction using 3D multi-view geometry**, Dong-Won Shin, Yo-Sung Ho, Gwangju Institute of Science and Technology (Korea, Republic of) ..... [9395-24]

11:50 am: **Real-time subsurface scattering volume rendering for reproduction of realistic skin color in 3D ultrasound volume**, Yun-Tae Kim, Sungchan Park, Kyuhong Kim, Jooyoung Kang, Jung-Ho Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) ..... [9395-25]

12:10 pm: **Vague color image enhancement on fractional differential and improved retinex**, Xin Zhang, Weixing Wang, Xiaojun Huang, Lingxiao Huang, Zhiwei Wang, Chang'an Univ. (China) ..... [9395-26]

Lunch Break ..... Wed 12:30 pm to 2:00 pm

Location: Golden Gate 2 ..... Wed 2:00 pm to 2:40 pm

## Keynote: Joint Session with Conferences 9394 and 9395

Session Chairs: **John J. McCann**, McCann Imaging (USA); **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA)

**Please note the room change for this session.**

2:00 pm: **Next gen perception and cognition: augmenting perception and enhancing cognition through mobile technologies** (Keynote Presentation), Sergio R. Goma, Qualcomm Inc. (USA) ..... [9394-57]

### Session 5

Location: Golden Gate 2 ..... Wed 2:40 pm to 5:00 pm

## Color in New Technologies from Mobile to Cinema: Joint Session with Conferences 9394 and 9395

Session Chair: **John J. McCann**, McCann Imaging (USA)

**Please note the room change for this session.**

2:40 pm: **Challenges in display color management (DCM) for mobile devices**, Reza Safaee-Rad, Qualcomm Inc. (Canada); Jennifer L. Gille, Milivoje Aleksic, Qualcomm Inc. (USA) ..... [9395-28]

3:00 pm: **White balance for mobile device displays: navigating various image-quality demands**, Jennifer L. Gille, Qualcomm Inc. (USA); Reza Safaee-Rad, Qualcomm Inc. (Canada); Milivoje Aleksic, Qualcomm Inc. (USA) ..... [9395-29]

Coffee Break ..... Wed 3:20 pm to 3:40 pm

3:40 pm: **A comparative study of psychophysical judgment of color reproductions on mobile displays in Europe and Asia**, Kyungah Choi, Hyeon-Jeong Suk, KAIST (Korea, Republic of) ..... [9395-30]

4:00 pm: **Perceived image quality assessment for color images on mobile displays**, Hyesung Jang, Choon-Woo Kim, Inha Univ. (Korea, Republic of) ..... [9395-31]

4:20 pm: **Reducing observer metamerism in wide-gamut multiprimary displays**, David Long, Mark D. Fairchild, Rochester Institute of Technology (USA) ..... [9394-25]

4:40 pm: **Gamut extension for cinema: psychophysical evaluation of the state of the art and a new algorithm**, Syed Waqas Zamir, Javier Vazquez-Corral, Marcelo Bertalmio, Univ. Pompeu Fabra (Spain) [9394-26]

## Thursday 12 February

### Session 6

Location: Continental Ballroom 2 ... Thu 10:30 am to 12:10 pm

## Appearance of Color

Session Chair: **Alessandro Rizzi**, Univ. degli Studi di Milano (Italy)

10:30 am: **Illumination estimation based on estimation of dominant chromaticity in nonnegative matrix factorization with sparseness constraints**, Ji-Heon Lee, Ji-hoon Yoo, Jung-Min Sung, Yeong-Ho Ha, Kyungpook National Univ. (Korea, Republic of) ..... [9395-32]

10:50 am: **Clarifying color category border according to color vision**, Takumi Ichihara, Yasuyo G. Ichihara, Kogakuin Univ. (Japan) ... [9395-33]

11:10 am: **Investigation of the Helmholtz-Kohlrausch effect using wide-gamut display**, Semin Oh, Youngshin Kwak, Ulsan National Institute of Science and Technology (Korea, Republic of) ..... [9395-34]

11:30 am: **Preferred tone curve characteristics of transparent display under various viewing conditions**, Sooyeon Lee, Hye-young Ha, Youngshin Kwak, Ulsan National Institute of Science and Technology (Korea, Republic of); Hyosun Kim, Youngjun Seo, Byungchoon Yang, Samsung Display Co., Ltd. (Korea, Republic of) ..... [9395-35]

11:50 am: **A method for estimating colors of scene illuminants under spatially non-uniform environments**, Harumi Kawamura, Ayumi Matsumoto, Akira Kojima, Nippon Telegraph and Telephone Corp. (Japan) ..... [9395-36]

Lunch Break ..... Thu 12:10 pm to 2:00 pm

# Conference 9395 · Location: Continental Ballroom 2 and Golden Gate 2

## Session 7

Location: Continental Ballroom 2 . . . . .Thu 2:00 pm to 2:40 pm

### Dark Side

Session Chair: **Gabriel G. Marcu**, Apple Inc. (USA)

2:00 pm: **How colorful! A feature it is, isn't it?**, Fritz Lebowsky, STMicroelectronics (France) . . . . . [9395-37]

2:20 pm: **Why simulations of colour for CVD observers might not be what they seem**, Phil Green, Gjøvik Univ. College (Norway) . . . . [9395-38]

## Session 8

Location: Continental Ballroom 2 . . . . .Thu 2:40 pm to 5:00 pm

### Color Deficiency

Session Chairs: **Po-Chieh Hung**, Konica Minolta Lab., U.S.A. Inc. (USA); **Gaurav Sharma**, Univ. of Rochester (USA)

2:40 pm: **An interactive app for color deficient viewers**, Cheryl Lau, Nicolas Perdu, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Carlos E. Rodriguez Pardo, Univ. of Rochester (USA); Sabine Süssstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Gaurav Sharma, Univ. of Rochester (USA) . . . . . [9395-39]

3:00 pm: **Evaluating color deficiency simulation and daltonization methods through visual search and sample-to-match: SaMSEM and ViSDEM**, Joschua Simon-Liedtke, Ivar Farup, Gjøvik Univ. College (Norway); Bruno Laeng, University of Oslo (Norway) . . . . . [9395-40]

Coffee Break . . . . . Thu 3:20 pm to 3:40 pm

3:40 pm: **Image color reduction method for color-defective observers using a color palette composed of 20 particular colors**, Takashi Sakamoto, National Institute of Advanced Industrial Science and Technology (Japan) . . . . . [9395-41]

4:00 pm: **Adaptive color rendering of maps for users with color vision deficiencies**, Anne Kristin Kvitle, Phil Green, Peter Nussbaum, Gjøvik Univ. College (Norway) . . . . . [9395-42]

4:20 pm: **Spatial Intensity Channel Replacement Daltonization (SiChARDa)**, Joschua Simon-Liedtke, Ivar Farup, Gjøvik Univ. College (Norway) . . . . . [9395-43]

4:40 pm: **Preferred memory color difference between the deuteranomalous and normal color vision**, YeSeul Baek, Youngshin Kwak, Ulsan National Institute of Science and Technology (Korea, Republic of); Sungju Woo, Chongwook Park, KAIST (Korea, Republic of) . [9395-44]

# Conference 9396 • Location: Golden Gate 5 and 7

Tuesday–Thursday 10–12 February 2015 • Proceedings of IS&T/SPIE Vol. 9396

## Image Quality and System Performance XII

*Conference Chairs:* **Mohamed-Chaker Larabi**, Univ. de Poitiers (France); **Sophie Triantaphillidou**, Univ. of Westminster (United Kingdom)

*Program Committee:* **Nicolas Bonnier**, Canon Information Systems Research Australia Pty. Ltd. (Australia); **Peter D. Burns**, Burns Digital Imaging (USA); **Majed Chambah**, Univ. de Reims Champagne-Ardenne (France); **Luke C. Cui**, Microsoft Corp. (USA); **Mark D. Fairchild**, Rochester Institute of Technology (USA); **Susan P. Farnand**, Rochester Institute of Technology (USA); **Robert D. Fiete**, ITT Exelis (USA); **Frans Gaykema**, Océ Technologies B.V. (Netherlands); **Dirk W. Hertel**, E Ink Corp. (USA); **Robin B. Jenkin**, Apple, Inc. (USA); **Elaine W. Jin**, Intel Corp. (USA); **Sang Ho Kim**, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); **Toshiya Nakaguchi**, Chiba Univ. (Japan); **Göte S. Nyman**, Univ. of Helsinki (Finland); **Stuart W. Perry**, Canon Information Systems Research Australia Pty. Ltd. (Australia); **D. René Rasmussen**, Qi Analytics LLC (USA); **Safae Rad Reza**, Qualcomm Inc. (USA); **Eric K. Zeise**, Kodak's Graphic Communications Group (USA)

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Reh, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

**Location: Golden Gate 5 . . . . . 10:10 am to 10:20 am**

#### Opening Session

Session Chairs: **Mohamed-Chaker Larabi**, Univ. de Poitiers (France); **Sophie Triantaphillidou**, Univ. of Westminster (United Kingdom)

#### Session 1

**Location: Golden Gate 5 . . . . . Tue 10:20 am to 12:00 pm**

#### Image Quality and Imaging Processing

Session Chair: **Mohamed-Chaker Larabi**, Univ. de Poitiers (France)

10:20 am: **Advanced mechanisms for delivering high-quality digital content**, Mikolaj I. Leszczuk, Lucjan Janowski, AGH Univ. of Science and Technology (Poland) . . . . . [9396-1]

10:40 am: **Towards assessment of the image quality in the high-content screening**, Yury Tsoy, Institut Pasteur Korea (Korea, Republic of) . . . . . [9396-2]

11:00 am: **Information theoretic methods for image processing algorithm optimization**, Sergey F. Prokushkin, DCG Systems Inc. (USA); Erez Galil, Univ. of California, Santa Cruz (USA) . . . . . [9396-4]

11:20 am: **Forward and backward tone mapping of high dynamic range images based on subband architecture**, Ines Bouzidi, Azza Ouled Zaid, National Engineering School of Tunis (Tunisia) . . . . . [9396-5]

11:40 pm: **Perceptual patch-based specular reflection removal for laparoscopic video enhancement**, Bilel Sdiri, Univ. Paris 13 (France) and Gjøvik Univ. College (Norway); Azeddine Beghdadi, Univ. Paris 13 (France); Faouzi Alaya Cheikh, Gjøvik Univ. College (Norway) . . . . . [9396-6]

Lunch Break . . . . . Tue 12:00 pm to 2:00 pm

### Session 2

**Location: Golden Gate 7 . . . . . Tue 2:00 pm to 3:20 pm**

#### Digital Photography and Image Quality I, Joint Session with Conferences 9396 and 9404

Session Chairs: **Sophie Triantaphillidou**, Univ. of Westminster (United Kingdom); **Kevin J. Matherson**, Microsoft Corp. (USA)

**Please note the room change for this session.**

2:00 pm: **Aberration characteristics of conicoidal conformal optical domes**, Wang Zhang, Dongsheng Wang, Shouqian Chen, Zhigang Fan, Harbin Institute of Technology (China) . . . . . [9396-7]

2:20 pm: **MTF evaluation of white pixel sensors**, Albrecht J. Lindner, Kalin Atanassov, Jiafu Luo, Sergio R. Goma, Qualcomm Inc. (USA) [9396-8]

2:40 pm: **Intrinsic camera resolution measurement**, Peter D. Burns, Burns Digital Imaging (USA); Judit Martinez Bauza, Qualcomm Inc. (USA) . . . . . [9396-9]

3:00 pm: **Image quality assessment using the dead leaves target: experience with the latest approach and further investigations**, Uwe Artmann, Image Engineering GmbH & Co. KG (Germany) . . . . . [9404-18]

Coffee Break . . . . . Tue 3:20 pm to 3:40 pm

### Session 3

**Location: Golden Gate 7 . . . . . Tue 3:40 pm to 5:00 pm**

#### Digital Photography and Image Quality II, Joint Session with Conferences 9396 and 9404

Session Chairs: **Robin B. Jenkin**, Apple, Inc. (USA); **Kevin J. Matherson**, Microsoft Corp. (USA)

**Please note the room change for this session.**

3:40 pm: **An ISO standard for measuring low light performance**, Dietmar Wüller, Image Engineering GmbH & Co. KG (Germany) . [9404-19]

4:00 pm: **ISO-less?**, Henry G. Dietz, Univ. of Kentucky (USA) . . [9404-20]

4:20 pm: **Mobile phone camera benchmarking in low light environment**, Veli-Tapani Peltoketo, Sofica Ltd. (Finland) . . . . . [9396-10]

4:40 pm: **Luminance and gamma optimization for mobile display in low ambient conditions**, Seonmee Lee, Taeyong Park, Junwoo Jang, Woongjin Seo, Taeuk Kim, Jongjin Park, Moojong Lim, Jongsang Baek, LG Display (Korea, Republic of) . . . . . [9396-11]

# Conference 9396 · Location: Golden Gate 5 and 7

## PANEL DISCUSSION

Location: Golden Gate 7 ..... Tue 5:00 pm to 5:30 pm

### Challenges of Handheld Device Displays: Joint Panel with Conferences 9396 and 9404

Please note the room change for this session.

Panel Moderator: **Dietmar Wüller**, Image Engineering GmbH & Co. KG (Germany)

Location: Continental Ballroom Foyer .... 5:30 pm to 7:30 pm

### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

Location: Continental Ballroom 5 .... Wed 8:30 am to 9:50 am

### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) ..... [9391-501]

Coffee Break ..... Wed 9:50 am to 10:10 am

Location: Golden Gate 5 ..... Wed 10:10 am to 11:10 am

### Keynote Session

Session Chair: **Mohamed-Chaker Larabi**, Univ. de Poitiers (France)

10:10 am: **Print quality and image quality: kissing cousins or feuding in-laws?** (*Keynote Presentation*), Jan P. Allebach, Purdue Univ. (USA) ..... [9396-12]

### Session 4

Location: Golden Gate 5 ..... Wed 11:10 am to 12:10 pm

### Print Quality I

Session Chair: **Susan P. Farnand**, Rochester Institute of Technology (USA)

11:10 am: **A new method to evaluate the perceptual resolution**, Miho Uno, Shinji Sasahara, Fuji Xerox Co., Ltd. (Japan) ..... [9396-13]

11:30 am: **MFP scanner motion characterization using self-printed target**, Minwoong Kim, Purdue Univ. (USA); Peter Bauer, Jerry K. Wagner, Hewlett-Packard Co. (USA); Jan P. Allebach, Purdue Univ. (USA) [9396-14]

11:50 am: **Autonomous detection of ISO fade point with color laser printers**, Ni Yan, Purdue Univ. (USA); Eric Maggard, Roberta Fothergill, Renee J. Jessome, Hewlett-Packard Co. (USA); Jan P. Allebach, Purdue Univ. (USA) ..... [9396-15]

Lunch Break ..... Wed 12:10 pm to 2:00 pm

### Session 5

Location: Golden Gate 5 ..... Wed 2:00 pm to 3:20 pm

### Print Quality II

Session Chair: **Frans Gaykema**, Océ Technologies B.V. (Netherlands)

2:00 pm: **Autonomous detection of text fade point with color laser printers**, Yanling Ju, Purdue Univ. (USA); Eric Maggard, Renee J. Jessome, Hewlett-Packard Co. (USA); Jan P. Allebach, Purdue Univ. (USA) ..... [9396-16]

2:20 pm: **Photoconductor surface modeling for defect compensation based on printed images**, Ahmed H. Eid, Brian E. Cooper, Lexmark International, Inc. (USA) ..... [9396-17]

2:40 pm: **Controlling misses and false alarms in a machine learning framework for predicting uniformity of printed pages**, Minh Q. Nguyen, Jan P. Allebach, Purdue Univ. (USA) ..... [9396-18]

3:00 pm: **Estimation of repetitive interval of periodic bands in laser electrophotographic printer output**, Jia Zhang, Jan P. Allebach, Purdue Univ. (USA) ..... [9396-19]

Coffee Break ..... Wed 3:20 pm to 4:00 pm

### Session 6

Location: Golden Gate 5 ..... Wed 4:00 pm to 5:20 pm

### Imaging Performance

Session Chair: **Peter D. Burns**, Burns Digital Imaging (USA)

4:00 pm: **Image quality optimization, via application of contextual contrast sensitivity and discrimination functions**, Edward W. S. Fry, Sophie Triantaphillidou, John Jarvis, Gaurav Gupta, Univ. of Westminster (United Kingdom) ..... [9396-20]

4:20 pm: **A study of slanted-edge MTF stability and repeatability**, Jackson K. M. Roland, Imatest LLC (USA) ..... [9396-21]

4:40 pm: **Comparative performance between human and automated face recognition systems, using CCTV imagery, different compression levels and scene parameters**, Anastasia Tsifouti, Home Office (United Kingdom) and Univ. of Westminster (United Kingdom); Sophie Triantaphillidou, Univ. of Westminster (United Kingdom); Mohamed-Chaker Larabi, Univ. de Poitiers (France); Efthimia Bilissi, Alexandra Psarrou, Univ. of Westminster (United Kingdom) ..... [9396-22]

5:00 pm: **A study of image exposure for the stereoscopic visualization of sparkling materials**, Victor J. Medina, Mines ParisTech (France) and Peugeot Citroën Automobiles S.A. (France); Alexis Paljic, Mines ParisTech (France); Dominique Lafon-Pham, Mines Alès (France) ..... [9396-23]

## Thursday 12 February

### Session 7

Location: Golden Gate 5 ..... Thu 8:30 am to 10:30 am

### Subjective Quality Assessment

Session Chair: **Göte S. Nyman**, Univ. of Helsinki (Finland)

8:30 am: **QuickEval: a web application for psychometric scaling experiments**, Khai Van Ngo, Jehans Jr. Storvik, Christopher A. Dokkeberg, Ivar Farup, Marius Pedersen, Gjøvik Univ. College (Norway) ..... [9396-24]

8:50 am: **A database for spectral image quality**, Steven Le Moan, Technische Univ. Darmstadt (Germany); Sony T. George, Marius Pedersen, Gjøvik Univ. College (Norway); Jana Blahová, Technische Univ. Darmstadt (Germany); Jon Yngve Hardeberg, Gjøvik Univ. College (Norway) [9396-25]

9:10 am: **Alternative performance metrics and target values for the CID2013 database**, Toni I. O. Virtanen, Mikko Nuutinen, Jenni E. Radun, Tuomas M. Leisti, Jukka P. Häkkinen, Univ. of Helsinki (Finland). [9396-26]

9:30 am: **Extending subjective experiments for image quality assessment with baseline adjustments**, Ping Zhao, Marius Pedersen, Gjøvik Univ. College (Norway) ..... [9396-27]

9:50 am: **Subjective quality of video sequences rendered on LCD with local backlight dimming at different lighting conditions**, Claire Mantel, Jari Korhonen, DTU Fotonik (Denmark); Jesper M. Pedersen, Søren Bech, Bang & Olufsen (Denmark); Jakob Dahl Andersen, Søren O. Forchhammer, DTU Fotonik (Denmark) ..... [9396-28]

10:10 am: **Study of the impact of transmission parameters on the QoE of video calling services over the LTE/4G network**, Maty Ndiaye, Orange SA (France) and Univ. of Poitiers (France); Gwenaél Le Lay, Orange SA (France); Hakim Saadane, Mohamed-Chaker Larabi, Univ. de Poitiers (France); Catherine Quinquis, Orange SA (France); Clency Perrine, Univ. de Poitiers (France) ..... [9396-29]

Coffee Break ..... Thu 10:30 am to 10:50 am

# Conference 9396 · Location: Golden Gate 5 and 7

## Session 8

Location: Golden Gate 5 ..... Thu 10:50 am to 12:30 pm

### Subjective and Objective Quality Assessment

Session Chair: **Sang Ho Kim**, Samsung Digital City (Korea, Republic of)

10:50 am: **RGB-NIR color image fusion: metric and psychophysical experiments**, Alex E. Hayes, Graham D. Finlayson, Univ. of East Anglia (United Kingdom); Roberto Montagna, Spectral Edge Ltd. (United Kingdom) ..... [9396-30]

11:10 am: **Non-reference quality assessment of infrared images reconstructed by compressive sensing**, Juan Esteban Ospina, Hernan Dario Benitez Restrepo, Pontificia Univ. Javeriana, Cali (Colombia) ..... [9396-31]

11:30 am: **Study of the effects of video content on quality of experience**, Pradip Paudyal, Federica Battisti, Marco Carli, Univ. degli Studi di Roma Tre (Italy) ..... [9396-32]

11:50 am: **The effects of scene content parameters, compression and frame rate on the performance of analytics systems**, Anastasia Tsifouti, Home Office (United Kingdom) and Univ. of Westminster (United Kingdom); Sophie Triantaphillidou, Univ. of Westminster (United Kingdom); Mohamed-Chaker Larabi, Univ. of Poitiers (France); Graham Doré, Home Office Centre for Applied Science and Technology (United Kingdom); Efthimia Bilissi, Alexandra Psarrou, Univ. of Westminster (United Kingdom) ..... [9396-33]

12:10 pm: **How perception of ultra-high definition is modified by viewing distance and screen size**, Amélie Lachat, Jean-Charles Gicquel, Jérôme Fournier, Orange SA (France) ..... [9396-34]

Lunch Break ..... Thu 12:30 pm to 2:00 pm

## Session 9

Location: Golden Gate 5 ..... Thu 2:00 pm to 3:20 pm

### Objective Quality Assessment

Session Chair: **Stuart W. Perry**, Canon Information Systems Research Australia Pty. Ltd. (Australia)

2:00 pm: **A no-reference video quality assessment metric based on ROI**, Lixiu Jia, Xuefei Zhong, Yan Tu, Wenjuan Niu, Southeast Univ. (China) ..... [9396-35]

2:20 pm: **Comparison of no-reference image quality assessment machine learning-based algorithms on compressed images**, Christophe M. Charrier, Univ. de Caen Basse-Normandie (France); Hakim Saadane, XLIM-SIC (France) and Univ. de Nantes (France); Christine Fernandez-Maloigne, Univ. de Poitiers (France) ..... [9396-36]

2:40 pm: **Objective evaluation of slanted edge charts**, Harvey H. Hornung, Marvell Semiconductor, Inc. (USA) ..... [9396-37]

3:00 pm: **Evaluating the multi-scale iCID metric**, Steven Le Moan, Jens Preiss, Technische Univ. Darmstadt (Germany); Philipp Urban, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) ..... [9396-38]

Coffee Break ..... Thu 3:20 pm to 4:00 pm

## Session 10

Location: Golden Gate 5 ..... Thu 4:00 pm to 4:40 pm

### Display Quality

Session Chair: **Elaine W. Jin**, Intel Corp. (USA)

4:00 pm: **Image quality evaluation of LCDs based on novel RGBW sub-pixel structure**, Sungjin Kim, Dong-Woo Kang, Jinsang Lee, Jaekyeom Kim, Yongmin Park, Taeseong Han, Sooyeon Jung, Jang Jin Yoo, Moojong Lim, Jongsang Baek, LG Display (Korea, Republic of) ..... [9396-39]

4:20 pm: **Is there a preference for linearity when viewing natural images?**, David Kane, Marcelo Bertamio, Universitat Pompeu Fabra (Spain) ..... [9396-41]

# Conference 9397 • Location: Golden Gate 1

Monday–Wednesday 9–11 February 2015 • Proceedings of IS&T/SPIE Vol. 9397

## Visualization and Data Analysis 2015

*Conference Chairs:* **David L. Kao**, NASA Ames Research Ctr. (USA); **Ming C. Hao**, Hewlett-Packard Labs. (USA); **Mark A. Livingston**, U.S. Naval Research Lab. (USA); **Thomas Wischgoll**, Wright State Univ. (USA)

*Conference Co-Chairs:* **E. Wes Bethel**, Lawrence Berkeley National Lab. (USA); **Alark Joshi**, Univ. of San Francisco (USA); **Ian Roberts**, Pacific Northwest National Lab. (USA); **Christopher D. Shaw**, Simon Fraser Univ. (Canada)

*Program Committee:* **Madjid Allili**, Bishop's Univ. (Canada); **Barry G. Becker**, Pros (USA); **Guoning Chen**, Univ. of Houston System (USA); **Yi-Jen Chiang**, New York Univ. (USA); **Hank Childs**, Univ. of Oregon (USA); **Jaegul Choo**, Georgia Institute of Technology (USA); **Joseph A. Cottam**, Indiana Univ. (USA); **Sussan Einakian**, The Univ. of Alabama in Huntsville (USA); **Christoph Garth**, Technische Univ. Kaiserslautern (Germany); **John Gerth**, Stanford Univ. (USA); **Matti T. Gröhn**, Finnish Institute of Occupational Health (Finland); **Christopher G. Healey**, North Carolina State Univ. (USA); **Andreas Kerren**, Linnaeus Univ. (Sweden); **Halldor Janetzko**, Univ. Konstanz (Germany); **Ming Jiang**, Lawrence Livermore National Lab. (USA); **Oliver Kreylos**, Univ. of California, Davis (USA); **Harinarayan Krishnan**, Lawrence Livermore National Lab. (USA); **Robert R. Lewis**, Washington State Univ. (USA); **Peter Lindstrom**, Lawrence Livermore National Lab. (USA); **Lars Linsen**, Jacobs Univ. Bremen gGmbH (Germany); **Zhanping Liu**, Kentucky State Univ. (USA); **Aidong Lu**, The Univ. of North Carolina at Charlotte (USA); **Richard May**, Pacific Northwest National Lab. (USA); **Joerg Meyer**, Magic Leap, Inc. (USA); **Dmitriy Morozov**, Lawrence Livermore National Lab. (USA); **Harald Obermaier**, Univ. of California, Davis (USA); **Donald A. Pellegrino**, The Dow Chemical Co. (USA); **Theresa-Marie Rhyne**, Computer Graphics and E-Learning (USA); **Rene Rosenbaum**, meeCoda (Germany); **Inga Scheler**, Technische Univ. Kaiserslautern (Germany); **Tobias Schreck**, Univ. Konstanz (Germany); **Jürgen P. Schulze**, Univ. of California, San Diego (USA); **Chad A. Steed**, Oak Ridge National Lab. (USA); **Kalpathi R. Subramanian**, The Univ. of North Carolina at Charlotte (USA); **Shigeo Takahashi**, The Univ. of Tokyo (Japan); **Chaoli Wang**, Michigan Technological Univ. (USA); **Yingcai Wu**, Microsoft Research Asia (China); **Hsu-Chun Yen**, National Taiwan Univ. (Taiwan); **Caixia Zhang**, Google (USA); **Song Zhang**, Mississippi Valley State Univ. (USA); **Caroline Ziemkiewicz**, Brown Univ. (USA)



Sponsored by:



### Monday 9 February

**Location: Golden Gate 1 . . . . . 8:30 am to 8:35 am**

#### Opening Remarks

Session Chair: **David L. Kao**, NASA Ames Research Ctr. (USA)

#### Session 1

**Location: Golden Gate 1 . . . . . Mon 8:35 am to 9:50 am**

#### Remote Visualization and Mobile Visualization

Session Chair: **David L. Kao**, NASA Ames Research Ctr. (USA)

8:35 am: **An evaluation-guided approach for effective data visualization on tablets**, Peter S. Games, Boise State Univ. (USA); Alark Joshi, Boise State Univ. (USA) and Univ. of San Francisco (USA) . [9397-1]

9:00 am: **Plugin free remote visualization in the browser**, Georg Tamm, Philipp Slusallek, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany) . . . . . [9397-2]

9:25 am: **Ensemble visual analysis architecture with high mobility for large-scale critical infrastructure simulations**, Todd Eaglin, Xiaoyu Wang, William Ribarsky, William J. Tolone, The Univ. of North Carolina at Charlotte (USA) . . . . . [9397-3]

#### Session 2

**Location: Golden Gate 1 . . . . . Mon 9:50 am to 10:15 am**

#### Graphs and Exploratory Data Visualization I

Session Chair: **Ming C. Hao**, Hewlett-Packard Labs. (USA)

9:50 am: **OSNAP! Introducing the open semantic network analysis platform**, Peter J. Radics, Nicholas F. Polys, Shawn P. Neuman, William H. Lund, Virginia Polytechnic Institute and State Univ. (USA) . . . . [9397-4]

Coffee Break . . . . . Mon 10:15 am to 10:35 am

### PANEL DISCUSSION

**Location: Golden Gate 1 . . . . . Mon 10:35 am to 11:35 am**

#### Panel Discussion: How Field Studies Can Contribute to Visualization and Visual Analytics

*Panel Moderator:* **Jean Scholtz**, Pacific Northwest National Lab. (USA)

*Panel Members:* **Brian Fisher**, Simon Fraser Univ. (Canada) and Univ. of British Columbia (Canada); **Laura McNamara**, Sandia National Labs. (USA); **Ben Shneiderman**, Univ. of Maryland (USA)

#### Session 3

**Location: Golden Gate 1 . . . . . Mon 11:40 am to 12:30 pm**

#### Graphs and Exploratory Data Visualization II

Session Chair: **Alark Joshi**, Univ. of San Francisco (USA)

11:40 am: **iGraph: a graph-based technique for visual analytics of image and text collections**, Yi Gu, Chaoli Wang, Univ. of Notre Dame (USA); Jun Ma, Robert J. Nemiroff, Michigan Technological Univ. (USA); David L. Kao, NASA Ames Research Ctr. (USA) . . . . . [9397-5]

12:05 pm: **Exploring hierarchical visualization designs using phylogenetic trees**, Shaomeng Li, Univ. of Oregon (USA); R. Jordan Crouser, MIT Lincoln Lab. (USA); Garth Griffin, Tufts Univ. (USA); Connor Gramazio, Brown Univ. (USA); Hans-Joerg Schulz, Univ. Rostock (Germany); Hank Childs, Univ. of Oregon (USA); Remco Chang, Tufts Univ. (USA) . . . . . [9397-6]

Lunch Break . . . . . Mon 12:30 pm to 2:00 pm

**Location: Golden Gate 1 . . . . . Mon 2:00 pm to 3:00 pm**

### Keynote Session I

Session Chair: **Ming C. Hao**, Hewlett-Packard Labs. (USA)

2:00 pm: **The Palomar transient factory (Keynote Presentation)**, Peter E Nugent, Lawrence Berkeley National Lab. (USA) and University of California, Berkeley (USA); Yi Cao, Caltech (USA); Mansi Kasliwal, The Carnegie Observatories (USA) . . . . . [9397-7]

# Conference 9397 · Location: Golden Gate 1

## Session 4

Location: Golden Gate 1 ..... Mon 3:00 pm to 3:25 pm

### Human Factors

Session Chair: **Guoning Chen**, Univ. of Houston (USA)

3:00 pm: **Emotion-prints: interaction-driven emotion visualization on multi-touch interfaces**, Daniel Cernea, Technische Univ. Kaiserslautern (Germany) and Linnaeus Univ. (Sweden); Christopher Weber, Achim Ebert, Technische Univ. Kaiserslautern (Germany); Andreas Kerren, Linnaeus Univ. (Sweden) ..... [9397-8]

Coffee Break ..... Mon 3:25 pm to 3:50 pm

Location: Golden Gate 1 ..... Mon 4:00 pm to 5:00 pm

### Posters Fast Forward I

Session Chair: **Christopher D. Shaw**, Simon Fraser Univ. (Canada)

In addition to their interactive paper presentations, the interactive paper authors will provide short oral presentations during the conference.

## Tuesday 10 February

Location: Continental Ballroom 5 ..... Tue 8:30 am to 9:50 am

### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) ..... [9391-500]

Coffee Break ..... Tue 9:50 am to 10:20 am

## Session 5

Location: Golden Gate 1 ..... Tue 10:20 am to 11:35 am

### Volume Visualization

Session Chair: **E. Wes Bethel**, Lawrence Berkeley National Lab. (USA)

10:20 am: **GPU surface extraction using the closest point embedding**, Mark Kim, Charles Hansen, The Univ. of Utah (USA) and Scientific Computing and Imaging Institute (USA) ..... [9397-9]

10:45 am: **Advanced texture filtering: a versatile framework for reconstructing multi-dimensional image data on heterogeneous architectures**, Stefan Zellmann, Yvonne Percan, Ulrich Lang, Univ. zu Köln (Germany) ..... [9397-10]

11:10 am: **A client-server, view-dependent isosurfacing approach with support for local view changes**, Matthew Couch, Timothy S. Newman, The Univ. of Alabama in Huntsville (USA) ..... [9397-11]

## Session 6

Location: Golden Gate 1 ..... Tue 11:35 am to 12:25 pm

### Biomedical Visualization

Session Chair: **Song Zhang**, Mississippi State Univ. (USA)

11:35 am: **Comparative visualization of protein conformations using large high resolution displays with gestures and body tracking**, Matthew Marangoni, Thomas Wischgoll, Wright State Univ. (USA) [9397-12]

12:00 pm: **FuryExplorer: visual-interactive exploration of horse motion capture data**, Nils Wilhelm, Anna Vögele, Univ. Bonn (Germany); Rebeka Zsoldos, Univ. für Bodenkultur Wien (Austria); Theresia Licka, Univ. für Bodenkultur Wien (Austria) and Veterinaermedizinische Univ. Wien (Austria); Björn Krüger, Univ. Bonn (Germany); Jürgen Bernard, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) ..... [9397-13]

Lunch Break ..... Tue 12:25 pm to 2:00 pm

Location: Golden Gate 1 ..... Tue 2:00 pm to 3:00 pm

### Keynote Session II

Session Chair: **Thomas Wischgoll**, Wright State Univ. (USA)

2:00 pm: **Some difficult visualization problems: big science, big computer systems, and big data (Keynote Presentation)**, Kenneth I. Joy, Univ. of California, Davis (USA) ..... [9397-14]

## Session 7

Location: Golden Gate 1 ..... Tue 3:00 pm to 3:25 pm

### Geographical Visualization

Session Chair: **Ming C. Hao**, Hewlett-Packard Labs. (USA)

3:00 pm: **Weighted maps: treemap visualization of geolocated quantitative data**, Mohammad Ghoniem, Maël Cornil, Bertjan Broeksema, Mickaël Stéfas, Benoît Otjacques, Ctr. de Recherche Public - Gabriel Lippmann (Luxembourg) ..... [9397-15]

Coffee Break ..... Tue 3:25 pm to 4:00 pm

## Session 8

Location: Golden Gate 1 ..... Tue 4:00 pm to 4:25 pm

### Visualization Evaluation

Session Chair: **Ming C. Hao**, Hewlett-Packard Labs. (USA)

4:00 pm: **Evaluating lossiness and fidelity in information visualization**, Richard Brath, Ebad Banissi, London South Bank Univ. (United Kingdom) ..... [9397-16]

Location: Golden Gate 1 ..... Tue 4:30 pm to 5:15 pm

### Poster Fast Forward II

Session Chair: **Guoning Chen**, Univ. of Houston (USA)

In addition to their interactive paper presentations, the interactive paper authors will provide short oral presentations during the conference.

Location: Continental Ballroom 4  
and Golden Gate Foyer ..... Tue 5:30 pm to 7:00 pm

### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Reactive data visualizations**, Curran Kelleher, Haim Levkowitz, Univ. of Massachusetts Lowell (USA) ..... [9397-22]

**Visualization and classification of physiological failure modes in ensemble hemorrhage simulation**, Song Zhang, Mississippi State Univ. (USA); William A. Pruett, Robert Hester, The Univ. of Mississippi Medical Ctr. (USA) ..... [9397-24]

**Time-synchronized visualization of arbitrary data streams**, Paul Kolano, NASA Ames Research Ctr. (USA) ..... [9397-25]

**3D chromosome rendering from Hi-C data using virtual reality**, Yixin Zhu, Siddarth Selvaraj, Philip Weber, Jennifer Fang, Jürgen P. Schulze, Bing Ren, Univ. of California, San Diego (USA) ..... [9397-26]

**Visualizing uncertainty of river model ensembles**, John van der Zwaag, Song Zhang, Robert J. Moorhead, Mississippi State Univ. (USA); David Welch, Lower Mississippi River Forecast Ctr. (USA); Jamie Dyer, Mississippi State Univ. (USA) ..... [9397-27]

**Remote visualization system based on particle based volume rendering**, Takuma Kawamura, Yasuhiro Idomura, Hiroko N. Miyamura, Hiroshi Takemiya, Japan Atomic Energy Agency (Japan); Naohisa Sakamoto, Koji Koyamada, Kyoto Univ. (Japan) ..... [9397-28]



# Conference 9397 · Location: Golden Gate 1

Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm

## Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am

## Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:10 am

## Session 9

Location: Golden Gate 1 . . . . . Wed 10:10 am to 11:25 am

## Flow Visualization

Session Chair: **David L. Kao**, NASA Ames Research Ctr. (USA)

10:10 am: **An image-space Morse decomposition for 2D vector fields**, Guoning Chen, Univ. of Houston (USA); Shuyu Xu, Univ. of Houston (USA) . . . . . [9397-17]

10:35 am: **Subsampling-based compression and flow visualization**, Alexy Agranovsky, Univ. of California, Davis (USA) and Lawrence Berkeley National Lab. (USA); David Camp, Lawrence Berkeley National Lab. (USA); Kenneth I. Joy, Univ. of California, Davis (USA); Hank Childs, Univ. of Oregon (USA) and Lawrence Berkeley National Lab. (USA) . . . . . [9397-18]

11:00 am: **A multi-resolution interpolation scheme for pathline based Lagrangian flow representations**, Alexy Agranovsky, Harald Obermaier, Univ. of California, Davis (USA); Christoph Garth, Technische Univ. Kaiserslautern (Germany); Kenneth I. Joy, Univ. of California, Davis (USA) . . . . . [9397-19]

## Session 10

Location: Golden Gate 1 . . . . . Wed 11:25 am to 12:15 pm

## Multi-Dimensional Data Visualization

Session Chair: **Alark Joshi**, Univ. of San Francisco (USA)

11:25 am: **Enhancing multidimensional data projection using density-based motion**, Ronak Etemadpour, Oklahoma State Univ. (USA); Angus G. Forbes, Univ. of Illinois at Chicago (USA) . . . . . [9397-20]

11:50 am: **A survey and task-based quality assessment of static 2D colormaps**, Jürgen Bernard, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) and Technische Univ. Darmstadt (Germany); Martin Steiger, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Sebastian Mittelstädt, Univ. Konstanz (Germany); Simon Thum, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Daniel A. Keim, Univ. Konstanz (Germany); Jörn Kohlhammer, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) and Technische Univ. Darmstadt (Germany) . . . . . [9397-21]

Location: Golden Gate 1 . . . . . 12:15 pm to 12:30 pm

## Closing Remarks

Session Chair: **David L. Kao**, NASA Ames Research Ctr. (USA)

# Conference 9398 • Location: Continental Ballroom 3 and Golden Gate 2

Monday–Tuesday 9–10 February 2015 • Proceedings of IS&T/SPIE Vol. 9398

## Measuring, Modeling, and Reproducing Material Appearance 2015

*Conference Chairs:* **Maria V. Ortiz Segovia**, Océ Print Logic Technologies (France); **Philipp Urban**, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); **Francisco H. Imai**, Canon U.S.A., Inc. (USA)

*Program Committee:* **Jan P. Allebach**, Purdue Univ. (USA); **Susan P. Farnand**, Rochester Institute of Technology (USA); **James A. Ferwerda**, Rochester Institute of Technology (USA); **Jon Yngve Hardeberg**, Gjøvik Univ. College (Norway); **Andreas Hoepe**, Physikalisch-Technische Bundesanstalt (Germany); **Matthias B. Hullin**, Univ. Bonn (Germany); **Gael Obein**, Conservatoire National des Arts et Metiers (France); **Carinna E. Parraman**, Univ. of the West of England (United Kingdom); **Sabine Süsstrunk**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Ingeborg Tastl**, Hewlett-Packard Labs. (USA); **Greg Ward**, Dolby Labs., Inc. (USA)

Sponsored by:



Canon

A CANON COMPANY

### Monday 9 February

**Location: Continental Ballroom 3 . . . . Mon 8:30 am to 9:20 am**

#### Keynote Session

Session Chair: **Maria Valezka Ortiz Segovia**, Océ Print Logic Technologies (France)

8:30 am: **Generative appearance models in the perception of materials and their properties** (*Keynote Presentation*), Roland W. Fleming, Justus-Liebig-Universität Giessen (Germany) . . . . . [9398-1]

#### Session 1

**Location: Continental Ballroom 3 . . . . Mon 9:20 am to 12:50 pm**

#### Rendering and Modeling

Session Chairs: **Maria Valezka Ortiz Segovia**, Océ Print Logic Technologies (France); **Greg Ward**, Dolby Labs., Inc. (USA)

9:20 am: **Imaging artwork in a studio environment for computer graphics rendering**, Brittany D. Cox, Roy S. Berns, Rochester Institute of Technology (USA) . . . . . [9398-2]

9:40 am: **Predictive rendering of composite materials: a multi-scale approach**, Thomas Muller, Patrick Callet, Alexis Paljic, Philippe Porral, Mines ParisTech (France) . . . . . [9398-3]

10:00 am: **Estimating reflectance property from multi-focus images by light field camera and its application**, Norimichi Tsumura, Kaori Baba, Chiba Univ. (Japan); Shoji Yamamoto, Tokyo Metropolitan College of Industrial Technology (Japan); Masao Sambongi, Olympus Corp. (Japan) . . . . . [9398-4]

Coffee Break . . . . . Mon 10:20 am to 10:40 am

10:40 am: **Experiments with a low-cost system for computer graphics material model acquisition** (*Invited Paper*), Holly E. Rushmeier, Yitzhak Lockerman, Luke Cartwright, David Pitera, Yale Univ. (USA) . . . . . [9398-5]

11:10 am: **BTF Potts compound texture model**, Michal Haindl, Vaclav Remes, Vojtech Havlicek, Institute of Information Theory and Automation (Czech Republic) . . . . . [9398-6]

11:30 am: **Statistical analysis of bidirectional reflectance distribution functions**, Carlos Zubiaga Peña, INRIA Bordeaux (France); Carles Bosch, Univ. de Girona (Spain); Adolfo Muñoz, Univ. de Zaragoza (Spain); Laurent Belcour, Univ. de Montréal (Canada); Pascal Barla, INRIA Bordeaux (France) . . . . . [9398-7]

11:50 am: **Principal component analysis for surface reflection components and structure in the facial image and synthesis of the facial image in various ages**, Misa Hirose, Saori Toyota, Chiba Univ. (Japan); Nobutoshi Ojima, KAO Corp. (Japan); Keiko Ogawa-Ochiai, Kanazawa Univ. Hospital (Japan); Norimichi Tsumura, Chiba Univ. (Japan) . . . . . [9398-8]

12:10 pm: **Extrapolation of bidirectional texture functions using texture synthesis guided by photometric normals**, Heinz C. Steinhausen, Rodrigo Martín, Dennis den Brok, Matthias B. Hullin, Reinhard Klein, Univ. Bonn (Germany) . . . . . [9398-9]

12:30 pm: **Using line-scan camera based structure from motion for high resolution 3D reconstruction**, Pengchang Zhang, Tomoyuki Takeda, Jay Arre O. Toque, Ari Ide-Ektessabi, Kyoto Univ. (Japan) . . . . . [9398-10]

Lunch Break . . . . . Mon 12:50 pm to 1:50 pm

#### Session 2

**Location: Continental Ballroom 3 . . . . Mon 1:50 pm to 5:00 pm**

#### Measuring

Session Chairs: **Francisco H. Imai**, Canon U.S.A., Inc. (USA); **Gaël Obein**, Conservatoire National des Arts et Metiers (France)

1:50 pm: **NIST appearance metrology program** (*Invited Paper*), Maria E. Nadal, National Institute of Standards and Technology (USA) . . . [9398-11]

2:20 pm: **Metrological issues related to BRDF measurements around the specular reflection direction in the particular case of glossy surfaces**, Gaël Obein, Conservatoire National des Arts et Metiers (France); Jan Audenaert, Katholieke Univ. Leuven (Belgium); Guillaume Ged, Conservatoire National des Arts et Metiers (France); Frédéric B. Leloup, Katholieke Univ. Leuven (Belgium) . . . . . [9398-12]

2:40 pm: **Upgrade of goniospectrophotometer GEFE for near-field scattering and fluorescence radiance measurements**, Berta Bernad, Alejandro Ferrero, Alicia A. Pons, María Luisa Hernanz, Joaquín Campos Acosta, Consejo Superior de Investigaciones Científicas (Spain) . [9398-13]

3:00 pm: **Rapid acquisition of bidirectional texture functions for materials**, Dennis den Brok, Heinz C. Steinhausen, Matthias B. Hullin, Univ. Bonn (Germany); Reinhard Klein, Rheinische Friedrich-Wilhelms-Universität Bonn (Germany) . . . . . [9398-14]

3:20 pm: **An abridged goniometer for material appearance measurements**, Adria Fores Herranz, Mark D. Fairchild, Rochester Institute of Technology (USA); Ingeborg Tastl, Hewlett-Packard Labs. (USA) . . . . . [9398-15]

Coffee Break . . . . . Mon 3:40 pm to 4:00 pm

4:00 pm: **New generation of Fourier optics instruments for rapid multispectral BRDF characterization**, Pierre M. Boher, Thierry Leroux, Véronique Collomb-Patton, Thibault Bignon, ELDIM (France) . . . [9398-16]

4:20 pm: **Color calibration of an RGB digital camera for the microscopic observation of highly specular materials**, Juan Martínez-García, Mathieu Hébert, Alain Trémeau, Univ. Jean Monnet Saint-Etienne (France) . . . . . [9398-17]

4:40 pm: **An image-based multi-directional reflectance measurement setup for flexible objects**, Aditya S. Sole, Ivar Farup, Gjøvik Univ. College (Norway); Shoji Tominaga, Chiba Univ. (Japan) . . . . . [9398-18]

# Conference 9398 • Location: Continental Ballroom 3 and Golden Gate 2

## Tuesday 10 February

Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am

### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

### Session 3

Location: Golden Gate 2 . . . . . Tue 10:10 am to 12:40 pm

### Perception of Texture, Gloss, and Color in Materials: Joint Session with Conferences 9394 and 9398

Session Chairs: **Bernice E. Rogowitz**, Visual Perspectives Research and Consulting (USA); **Maria Valezcka Ortiz Segovia**, Océ Print Logic Technologies (France); **Andreas Hoepe**, Physikalisch-Technische Bundesanstalt (Germany)

**Please note the room change for this session.**

10:10 am: **Texture, illumination, and material perception**, Sylvia C. Pont, Andrea Jacoba van Doorn, Maarten W. A. Wijnjtes, Jan J. Koenderink, Technische Univ. Delft (Netherlands) . . . . . [9394-11]

10:40 am: **Extended visual appearance texture features**, Simon-Frédéric Désage, Gilles Pitard, Maurice Pillet, Hugues Favrelière, Fabrice Frelin, Univ. de Savoie (France); Serge Samper, Univ. de Rennes 1 (France); Gaetan Le Goic, Univ. de Bourgogne (France) . . . . . [9398-20]

11:00 am: **Effects of contrast adjustment on visual gloss of natural textures**, Jing Wang, Thrasyvoulos N. Pappas, Northwestern Univ. (USA) . . . . . [9394-12]

11:20 am: **Goniochromatic-difference between effect coatings: is the whole more than the sum of its parts?**, Jana Blahová, Technische Univ. Darmstadt (Germany); Eric J. J. Kirchner, Niels Dekker, Akzo Nobel Coating B.V. (Netherlands); Marcel P. Lucassen, LUCASSEN Colour Research (Netherlands); Lan Njo, Ivo van der Lans, Akzo Nobel Coating B.V. (Netherlands); Philipp Urban, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Rafael Huertas, Univ. de Granada (Spain) . . . . . [9398-21]

11:40 am: **Visual comparison testing of automotive paint simulation**, Gary W. Meyer, Univ. of Minnesota, Twin Cities (USA); Curtis Evey, Dassault Systemes (USA); Jan Meseth, Dassault Systemes (Germany); Ryan Schnackenberg, Dassault Systemes (USA); Charles Fan, General Motors Co. (USA); Chris Seubert, Ford Motor Co. (United States) [9398-22]

12:00 pm: **A subjective study and an objective metric to quantify the granularity level of textures**, Mahesh M. Subedar, Lina J. Karam, Arizona State Univ. (USA) . . . . . [9394-13]

12:20 pm: **Texture synthesis models and material perception in the visual periphery**, Benjamin Balas, North Dakota State Univ. (USA) . . . . . [9394-14]

Lunch Break . . . . . Tue 12:40 pm to 1:40 pm

### Session 4

Location: Continental Ballroom 3 . . . . . Tue 1:40 pm to 3:00 pm

### Appearance

Session Chairs: **Jan P. Allebach**, Purdue Univ. (USA); **Francisco H. Imai**, Canon U.S.A., Inc. (USA)

1:40 pm: **Goniometric properties of paints and varnish**, Paola Iacomussi, Michela Radis, Giuseppe Rossi, Istituto Nazionale di Ricerca Metrologica (Italy) . . . . . [9398-23]

2:00 pm: **Goniochromatic and sparkle properties of effect pigmented samples in multidimensional configuration**, Andreas Hoepe, Kai-Olaf Hauer, Sven Teichert, Dirk Huenerhoff, Christian Strothkaemper, Physikalisch-Technische Bundesanstalt (Germany) . . . . . [9398-24]

2:20 pm: **Anisotropic materials appearance analysis using ellipsoidal mirror**, Jiri Filip, Radomir Vavra, Institute of Information Theory and Automation (Czech Republic) . . . . . [9398-25]

2:40 pm: **Changing the color of textiles with realistic visual rendering**, Mathieu Hébert, Univ. Jean Monnet Saint-Etienne (France) and Institut d'Optique Graduate School (France); Lambert Henckens, Lembart S.A.S. (France); Justine Barbier, Lucie Leboulleux, Marine Page, Lucie Roujas, Institut d'Optique Graduate School (France); Anthony Cazier, Univ. Jean Monnet Saint-Etienne (France) and Institut d'Optique Graduate School (France) . . . . . [9398-26]

Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

### Session 5

Location: Continental Ballroom 3 . . . . . Tue 3:30 pm to 6:00 pm

### Reproduction

Session Chairs: **Philipp Urban**, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); **Ingeborg Tastl**, Hewlett-Packard Labs. (USA)

3:30 pm: **3D printed glass: surface finish and bulk properties as a function of the printing process (Invited Paper)**, Susanne Klein, Hewlett-Packard Co. (United Kingdom); Michael Avery, Ctr. for Functional Nanomaterials (United Kingdom); Robert Richardson, Paul Bartlett, Univ. of Bristol (United Kingdom); Regina Frei, Univ. of Portsmouth (United Kingdom); Steven J. Simske, Hewlett-Packard Co. (USA) . . . . . [9398-27]

4:00 pm: **Color-managed 3D printing with highly translucent printing materials**, Can Ates Arikan, Alan Brunton, Tejas Madan Tanksale, Philipp Urban, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) . . . . . [9398-28]

4:20 pm: **Towards gloss control in fine art reproduction**, Teun Baar, Océ Print Logic Technologies (France) and Télécom ParisTech (France); Maria V. Ortiz Segovia, Océ Print Logic Technologies (France); Hans Brettel, Télécom ParisTech (France) . . . . . [9398-29]

4:40 pm: **Exploring the bronzing effect at the surface of ink layers**, Mathieu Hébert, Univ. Jean Monnet Saint-Etienne (France) and Lab. Hubert Curien (France); Maxime Mallet, Alexis Deboos, Institut d'Optique Graduate School (France); Pierre H. Chavel, Lab. Charles Fabry (France); Deng-Feng Kuang, Institut d'Optique Graduate School (France); Jean-Paul Hugonin, Mondher Besbes, Lab. Charles Fabry (France); Anthony Cazier, Univ. Jean Monnet Saint-Etienne (France) and Institut d'Optique Graduate School (France) . . . . . [9398-30]

# Conference 9398 • Location: Continental Ballroom 3, and Golden Gate 2

5:00 pm: **Controlling colour-printed gloss by varnish-halftones**, Sepideh Samadzadegan, Technische Univ. Darmstadt (Germany); Teun Baar, Océ Print Logic Technologies (France) and Mines ParisTech (France) and Télécom ParisTech (France); Philipp Urban, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Maria V. Ortiz Segovia, Océ Print Logic Technologies (France); Jana Blahová, Technische Univ. Darmstadt (Germany) . . . . . [9398-31]

5:20 pm: **Reproducing oil paint gloss in print for the purpose of creating reproductions of old masters**, Willemijn S. Elkhuizen, Boris A. J. Lenseigne, Technische Univ. Delft (Netherlands); Teun Baar, Océ Print Logic Technologies (France) and Institut Mines-Télécom (France); Wim Verhofstad, Océ Technologies B.V. (Netherlands); Erik Tempelman, Technische Univ. Delft (Netherlands); Jo M. P. Geraedts, Technische Univ. Delft (Netherlands) and Océ Technologies B.V. (Netherlands); Joris Dik, Technische Univ. Delft (Netherlands) . . . . . [9398-32]

5:40 pm: **3D printing awareness: the future of making things**, Fabrizio Valpreda, Politecnico di Torino (Italy) . . . . . [9398-33]

**Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm**  
**Symposium Demonstration Session**  
A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

**Location: Continental Ballroom 5 . . . . .Wed 8:30 am to 9:50 am**  
**Plenary Session and Conference Award Presentations**  
8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

# Conference 9399 • Location: Continental Ballroom 7

Tuesday–Wednesday 10–11 February 2015 • Proceedings of IS&T/SPIE Vol. 9399

## Image Processing: Algorithms and Systems XIII

*Conference Chairs:* **Karen O. Egiazarian**, Tampere Univ. of Technology (Finland); **Sos S. Aгаian**, The Univ. of Texas at San Antonio (USA); **Atanas P. Gotchev**, Tampere Univ. of Technology (Finland)

*Program Committee:* **Gözde Bozdagi Akar**, Middle East Technical Univ. (Turkey); **Junior Barrera**, Univ. de São Paulo (Brazil); **Jenny Benois-Pineau**, Bordeaux Univ. (France); **Giacomo Boracchi**, Politecnico di Milano (Italy); **Reiner Creutzburg**, Fachhochschule Brandenburg (Germany); **Alessandro Foi**, Tampere Univ. of Technology (Finland); **Paul D. Gader**, Univ. of Florida (USA); **John C. Handley**, Xerox Corp. (USA); **Vladimir V. Lukin**, National Aerospace Univ. (Ukraine); **Stephen Marshall**, Univ. of Strathclyde (United Kingdom); **Alessandro Neri**, RadioLabs (Italy); **Marek R. Ogiela**, AGH Univ. of Science and Technology (Poland); **Ljiljana Platiša**, Univ. Gent (Belgium); **Françoise Prêteux**, Mines ParisTech (France); **Gianni Ramponi**, Univ. degli Studi di Trieste (Italy); **Ivan W. Selesnick**, Polytechnic Institute of New York Univ. (USA); **Damir Sersic**, Univ. of Zagreb (Croatia)

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

**8:30 am: Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:20 am

#### Session 1

**Location: Continental Ballroom 7 . . . Tue 10:20 am to 12:20 pm**

#### Pattern Classification and Recognition

Session Chair: **Karen O. Egiazarian**, Tampere Univ. of Technology (Finland)

**10:20 am: Links between binary classification and the assignment problem in ordered hypothesis machines**, Reid B. Porter, Los Alamos National Lab. (USA); Beate G. Zimmer, Texas A&M Univ. Corpus Christi (USA) . . . . . [9399-1]

**10:40 am: Optimized curve design for image analysis using localized geodesic distance transformations**, Billy Braithwaite, Harri Niska, Irene Pöllänen, Tiia Ikonen, Keijo Haataja, Pekka J. Toivanen, Univ. of Eastern Finland (Finland); Teemu Tolonen, Univ. of Tampere (Finland) . . . . . [9399-2]

**11:00 am: Adaptive graph construction for Isomap manifold learning**, Loc Tran, Jiang Li, Old Dominion Univ. (USA) . . . . . [9399-3]

**11:20 am: Genetic algorithm for segmentation and classification of colony images automatically**, Weixing Wang, Chang'an Univ. (China) . . . . . [9399-4]

**11:40 am: Real-time affine invariant gesture recognition for LED smart lighting control**, Xu Chen, Miao Liao, Xiao-Fan Feng, Sharp Labs. of America, Inc. (USA) . . . . . [9399-5]

**12:00 pm: Steganography in clustered-dot halftones using orientation modulation and modification of direct binary search**, Yung-Yao Chen, Sheng-Yi Hong, Kai-Wen Chen, National Taipei Univ. of Technology (Taiwan) . . . . . [9399-6]

Lunch Break . . . . . Tue 12:20 pm to 2:00 pm

#### Session 2

**Location: Continental Ballroom 7 . . . . . Tue 2:00 pm to 3:20 pm**

#### Image Analysis and Filtering

Session Chair: **Atanas P. Gotchev**, Tampere Univ. of Technology (Finland)

**2:00 pm: Machine learning for adaptive bilateral filtering**, Iuri Frosio, NVIDIA Corp. (USA); Karen O. Egiazarian, Tampere Univ. of Technology (Finland) and NVIDIA Corp. (USA); Kari A. Pulli, NVIDIA Corp. (USA) . . . . . [9399-7]

**2:20 pm: Real-time 3D adaptive filtering for portable imaging systems**, Olivier Bockenbach, TechGmbH.com (Germany); Murtaza Ali, Texas Instruments Inc. (USA); Ian Wainwright, ContextVision AB (Sweden); Mark Nadeski, Texas Instruments Inc. (USA) . . . . . [9399-8]

**2:40 pm: Joint demosaicking and integer-ratio downsampling algorithm for color filter array image**, Sangyoon Lee, Moon Gi Kang, Yonsei Univ. (Korea, Republic of) . . . . . [9399-9]

**3:00 pm: Intermediate color interpolation for color filter array containing the white channel**, Jonghyun Kim, Sang Wook Park, Moon Gi Kang, Yonsei Univ. (Korea, Republic of) . . . . . [9399-10]

Coffee Break . . . . . Tue 3:20 pm to 3:50 pm

#### Session 3

**Location: Continental Ballroom 7 . . . . . Tue 3:50 pm to 5:20 pm**

#### Special Session: Panorama: Ultra Wide Context and Content Aware Imaging I

Session Chair: **Ljiljana Platiša**, Univ. Gent (Belgium)

**3:50 pm: The future of consumer cameras (Invited Paper)**, Sebastiano Battiato, Marco Moltisanti, Univ. degli Studi di Catania (Italy) . . . [9399-11]

**4:20 pm: Challenges towards a smart security camera (Invited Paper)**, Lucien Meijer, Ildiko Suveg, Bosch Security Systems (Netherlands) . . . . . [9399-12]

**4:40 pm: Image quality based x-ray dose control in cardiac imaging**, Andrew G. Davies, Stephen M. Kengyelics, Amber J. Gislason-Lee, Univ. of Leeds (United Kingdom) . . . . . [9399-13]

**5:00 pm: Selecting stimuli parameters for video quality assessment studies based on quality similarity distances**, Asli E. Kumcu, Ljiljana Platiša, Univ. Gent (Belgium); Heng Chen, Vrije Univ. Brussel (Belgium); Amber J. Gislason-Lee, Andrew G. Davies, Univ. of Leeds (United Kingdom); Peter Schelkens, Vrije Univ. Brussel (Belgium); Yves Taeymans, Univ. Ziekenhuis Gent (Belgium); Wilfried Philips, Univ. Gent (Belgium) . . . . . [9399-14]

**Location: Continental Ballroom 4 and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm**

#### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**No-reference visual quality assessment for image inpainting**, Viacheslav V. Voronin, Vladimir A. Frantc, Vladimir I. Marchuk, Alexander I. Sherstobitov, Don State Technical Univ. (Russian Federation); Karen O. Egiazarian, Tampere Univ. of Technology (Finland) . . . . . [9399-29]

**Round colour space for pentachromacy**, Alfredo Restrepo, Univ. de los Andes (Colombia) . . . . . [9399-30]

**A comparative study of two prediction models for brain tumor progression**, Deqi Zhou, Princess Anne High School (USA); Loc Tran, Old Dominion Univ. (USA); Jihong Wang, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Jiang Li, Old Dominion Univ. (USA) . . . . . [9399-31]

**Enhancement of galaxy images for improved classification**, John A. Jenkinson, Artyom M. Grigoryan, Sos S. Aгаian, The Univ. of Texas at San Antonio (USA) . . . . . [9399-32]

**Face retrieval in video sequences using web images database**, Marco Leo, RadioLabs (Italy); Federica Battisti, Marco Carli, Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) . . . . . [9399-33]

# Conference 9399 · Location: Continental Ballroom 7

**Development and validation of an improved smartphone heart rate acquisition system**, Gevorg Karapetyan, Rafayel Barseghyan, Hakob G. Sarukhanyan, Institute for Informatics and Automation Problems (Armenia); Sos S. Agaian, The Univ. of Texas at San Antonio (USA) . . . . . [9399-34]

**New 2D discrete Fourier transforms in image processing**, Artyom M. Grigoryan, Sos S. Agaian, The Univ. of Texas at San Antonio (USA) . . . . . [9399-35]

**Printed Arabic optical character segmentation**, Khader Mohammad, Muna Ayyesh, Birzeit Univ. (Palestinian Territory, Occupied); Aziz Qaroush, Iyad Tumar, Birzeit University (Palestinian Territory, Occupied) . . [9399-36]

**Highly accelerated dynamic contrast enhanced MRI using region of interest compressed sensing**, Amaresha S. Konar, Nithin N. Vajuvalli, Rashmi Rao, C. K. Dharmendra Kumar, Sairam Geethanath, Dayananda Sagar Institutions (India) . . . . . [9399-37]

**Real-time super resolution algorithm for CCTVs**, Seiichi Gohshi, Kogakuin Univ. (Japan) . . . . . [9399-38]

**Intended motion estimation using fuzzy Kalman filtering for UAV image stabilization with large drifting**, Tiantian Xin, Hongying Zhao, Sijie Liu, Lu Wang, Peking Univ. (China) . . . . . [9399-39]

**On-line rock fragment delineation on simple thresholding using fuzzy comprehensive evaluation**, Zhongpu Jia, Henan Polytechnic Univ. (China) . . . . . [9399-40]

**A perceptual quality metric for high-definition stereoscopic 3D video**, Federica Battisti, Marco Carli, Alessio Stramacci, Univ. degli Studi di Roma Tre (Italy); Atanas Boev, Atanas P Gotchev, Tampere Univ. of Technology (Finland) . . . . . [9399-41]

**Content-aware video quality assessment: predicting human perception of quality using peak signal to noise ratio and spatial/temporal activity**, Benhur Ortiz-Jaramillo, Jorge Oswaldo Niño-Castaneda, Ljiljana Platiša, Wilfried Philips, Univ. Gent (Belgium) [9399-42]

**Real-time multi-resolution volume fusion for RGBD mapping and tracking systems**, Lingni Ma, Egor Bondarev, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) . . . . . [9399-43]

**Preserving natural lighting by strobe-lit video**, Olli J. Suominen, Atanas P. Gotchev, Tampere Univ. of Technology (Finland) . . . . . [9399-44]

10:40 am: **Person re-identification by pose priors**, Slawomir Bak, Filipe Martins de Melo, Francois Bremond, INRIA Sophia Antipolis - Méditerranée (France) . . . . . [9399-24]

11:00 am: **Fast planar segmentation of depth images**, Hani Javan Hemmat, Arash Pourtaherian, Egor Bondarev, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) . . . . . [9399-25]

11:20 am: **Machine vision image quality measurement in cardiac x-ray imaging**, Stephen M. Kengyelics, Amber J. Gislason-Lee, Derek R. Magee, Andrew G. Davies, Univ. of Leeds (United Kingdom) . . . . . [9399-26]

11:40 am: **Multiview image sequence enhancement**, Ljubomir Jovanov, Hiệp Q. Luong, Tijana Ruzic, Wilfried Philips, Univ. Gent (Belgium) . . . . . [9399-27]

12:00 pm: **How much image noise can be added in cardiac x-ray imaging without loss in perceived image quality?**, Amber J. Gislason-Lee, Univ. of Leeds (United Kingdom); Asli E. Kumcu, Univ. Gent (Belgium); Stephen M. Kengyelics, Laura A. Rhodes, Andrew G. Davies, Univ. of Leeds (United Kingdom) . . . . . [9399-28]

Lunch Break . . . . . Wed 12:20 pm to 2:00 pm

## Session 5

**Location: Continental Ballroom 7 . . . . Wed 2:00 pm to 3:20 pm**

### Transform-Domain Image Processing

Session Chair: **Karen O. Egiazarian**, Tampere Univ. of Technology (Finland)

2:00 pm: **Metamerism in the context of aperture sampling reconstruction**, Alfredo Restrepo, Univ. de los Andes (Colombia) [9399-15]

2:20 pm: **Tensor representation of color images and fast 2D quaternion discrete Fourier transform**, Artyom M. Grigoryan, Sos S. Agaian, The Univ. of Texas at San Antonio (USA) . . . . . [9399-16]

2:40 pm: **Algorithms of the  $q^{2^r} \times q^{2^r}$ -point 2D discrete Fourier transform**, Artyom M. Grigoryan, Sos S. Agaian, The Univ. of Texas at San Antonio (USA) . . . . . [9399-17]

3:00 pm: **A method for predicting DCT-based denoising efficiency for grayscale images corrupted by AWGN and additive spatially correlated noise**, Aleksey S. Rubel, Vladimir V. Lukin, National Aerospace Univ. (Ukraine); Karen O. Egiazarian, Tampere Univ. of Technology (Finland) . . . . . [9399-18]

Coffee Break . . . . . Wed 3:20 pm to 4:00 pm

## Session 6

**Location: Continental Ballroom 7 . . . . Wed 4:00 pm to 5:20 pm**

### Multi-Dimensional and Multi-Modal Image Processing

Session Chair: **Atanas P. Gotchev**, Tampere Univ. of Technology (Finland)

4:00 pm: **Cost volume refinement filter for post filtering of visual corresponding**, Shu Fujita, Takuya Matsuo, Norishige Fukushima, Yutaka Ishibashi, Nagoya Institute of Technology (Japan) . . . . . [9399-19]

4:20 pm: **Depth remapping using seam carving for depth image based rendering**, Ikuko Tsubaki, Kenichi Iwauchi, Sharp Corp. (Japan) [9399-20]

4:40 pm: **Depth map occlusion filling and scene reconstruction using modified exemplar-based inpainting**, Viacheslav V. Voronin, Vladimir I. Marchuk, Alexander V. Fisunov, Svetlana V. Tokareva, Don State Technical Univ. (Russian Federation); Karen O. Egiazarian, Tampere Univ. of Technology (Finland) . . . . . [9399-21]

5:00 pm: **Real-time depth image-based rendering with layered dis-occlusion compensation and aliasing-free composition**, Sergey Smirnov, Atanas P Gotchev, Tampere Univ. of Technology (Finland) . . . . . [9399-22]

**Location: Continental Ballroom Foyer . . . . 5:30 pm to 7:30 pm**

### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

**Location: Continental Ballroom 5 . . . . Wed 8:30 am to 9:50 am**

### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (Plenary), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:10 am

## Session 4

**Location: Continental Ballroom 7 . . Wed 10:10 am to 12:20 pm**

### Special Session: Panorama: Ultra Wide Context and Content Aware Imaging II

Session Chair: **Ljiljana Platiša**, Univ. Gent (Belgium)

10:10 am: **On detailed 3D reconstruction of large indoor environments** (Invited Paper), Egor Y Bondarev, Technische Univ. Eindhoven (Netherlands) . . . . . [9399-23]

# Conference 9400 • Location: Golden Gate 4

Tuesday 10 February 2015 • Proceedings of IS&T/SPIE Vol. 9400

## Real-Time Image and Video Processing 2015

*Conference Chairs:* **Nasser Kehtarnavaz**, The Univ. of Texas at Dallas (USA); **Matthias F. Carlsohn**, Computer Vision and Image Communication at Bremen (Germany)

*Program Committee:* **Mohamed Akil**, Ecole Supérieure d'Ingénieurs en Electronique et Electrotechnique (France); **Guillermo Botella**, Univ. Computense de Madrid (Spain); **Roy Davies**, Univ. of London (United Kingdom); **Philip P. Dang**, Intel Corp. (USA); **Barak Fishbain**, Technion-Israel Institute of Technology (Israel); **M. Emre Celebi**, Louisiana State Univ. Shreveport (USA); **Sergio R. Goma**, Qualcomm Inc. (USA); **Christos Grecos**, Univ. of the West of Scotland (United Kingdom); **Mehrube Mehrübeoglu**, Texas A&M Univ. Corpus Christi (USA); **Antonio J. Plaza**, Univ. de Extremadura (Spain); **Volodymyr Ponomaryov**, Instituto Politécnico Nacional (Mexico); **Luis Salgado**, Univ. Politécnica de Madrid (Spain); **Sergio Saponara**, Univ. di Pisa (Italy); **Vinay Sharma**, Texas Instruments Inc. (USA); **Mukul V. Shirvaikar**, The Univ. of Texas at Tyler (USA); **Athanassios N. Skodras**, Univ. of Patras (Greece); **Juan P. Wachs**, Purdue Univ. (USA)

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

#### Session 1

**Location: Golden Gate 4 . . . . . Tue 10:10 am to 12:10 pm**

#### Real-Time Hardware

Session Chair: **Nasser Kehtarnavaz**, The Univ. of Texas at Dallas (USA)

10:10 am: **Customized Nios II multicycle instructions to accelerate block-matching techniques**, Diego González, Guillermo Botella, Carlos Garcia, Univ. Complutense de Madrid (Spain); Uwe Meyer-Baese, Anke Meyer-Baese, Florida State Univ. (USA); Manuel Prieto-Matias, Univ. Complutense de Madrid (Spain) . . . . . [9400-1]

10:30 am: **Hardware design to accelerate PNG encoder for binary mask compression on FPGA**, Rostom Kachouri, ESIEE Paris (France); Mohamed Akil, Ecole Supérieure d'Ingénieurs en Electronique et Electrotechnique (France) . . . . . [9400-2]

10:50 am: **Real-time algorithms enabling high dynamic range imaging and high frame rate exploitation for custom CMOS image sensor system implemented by FPGA with co-processor**, Blake C. Jacquot, Nathan G. Johnson-Williams, The Aerospace Corp. (USA) . . . . . [9400-3]

11:10 am: **Fast semivariogram computation using FPGA architectures**, Mukul V. Shirvaikar, Yamuna Lagadapati, Xuanliang Dong, The Univ. of Texas at Tyler (USA) . . . . . [9400-4]

11:30 am: **2D to 3D conversion implemented in different hardware**, Eduardo Ramos-Diaz, Univ. Autónoma de la Ciudad de México (Mexico); Victor Gonzalez-Huitron, Volodymyr Ponomaryov, Instituto Politécnico Nacional (Mexico); Araceli Hernandez-Fragoso, Colegio de Estudios de Posgrado de la Ciudad de México (Mexico) . . . . . [9400-5]

11:50 am: **A real-time GPU implementation of the SIFT algorithm for large-scale video analysis tasks**, Hannes Fassold, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); Jakub Rosner, Silesian Univ. of Technology (Poland) . . . . . [9400-6]

Lunch Break . . . . . Tue 12:10 pm to 2:00 pm

#### Session 2

**Location: Golden Gate 4 . . . . . Tue 2:00 pm to 3:20 pm**

#### Real-Time Algorithms I

Session Chair: **Mukul V. Shirvaikar**, The Univ. of Texas at Tyler (USA)

2:00 pm: **Real-time deblurring of handshake blurred images on smartphones**, Reza Pourrez-Shahri, Chih-Hsiang Chang, Nasser Kehtarnavaz, The Univ. of Texas at Dallas (USA) . . . . . [9400-7]

2:20 pm: **Real-time object tracking for moving target auto-focus in digital camera**, Haike Guan, Norikatsu Niinami, Ricoh Co., Ltd. (Japan); Tong Liu, Ricoh Software Research Ctr. (China) . . . . . [9400-8]

2:40 pm: **Embedded wavelet-based face recognition under variable position**, Pascal Cotret, Stéphane Chevobbe, Mehdi Darouich, Commissariat à l'Énergie Atomique (France) . . . . . [9400-9]

3:00 pm: **Embedded application specific signal processor (ASSP) for real-time computation of 3D depth maps**, Rajashekar Reddy Merugu, Ushakiran Thoyyeti, Alekhya Darsi, Venu Kandadai, Manjeera Digital Systems Pvt. Ltd. (India) . . . . . [9400-10]

Coffee Break . . . . . Tue 3:20 pm to 3:50 pm

#### Session 3

**Location: Golden Gate 4 . . . . . Tue 3:50 pm to 5:10 pm**

#### Real-Time Algorithms II

Session Chair: **Matthias F. Carlsohn**, Computer Vision and Image Communication at Bremen (Germany)

3:50 pm: **FIR filters for hardware-based real-time multi-band image blending**, Vladan Popovic, Yusuf Leblebici, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [9400-11]

4:10 pm: **An FPGA-based design for a real-time iris recognition system in an embedded system**, Matthew T. Carothers, Hau T. Ngo, Ryan N. Rakvic, U.S. Naval Academy (USA) . . . . . [9400-12]

4:30 pm: **Real-time joint deflickering and denoising for digital video**, Zhimin Xu, Fan Zhang, Sijie Ren, Lenovo Group Ltd. (Hong Kong, China); Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China) . . [9400-13]

4:50 pm: **Real-time object tracking using robust subspace learning in particle filter**, Wen Lu, Institute of Optics and Electronics (China) and Univ. of the Chinese Academy of Sciences (China); Yuxing Wei, Institute of Optics and Electronics (China) . . . . . [9400-14]

# Conference 9400 • Location: Golden Gate 4

**Location: Continental Ballroom 4  
and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm**

## Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Efficient fast thumbnail extraction algorithm for HEVC**, Wonjin Lee, Hanyang Univ. (Korea, Republic of); Gwanggil Jeon, Univ. of Incheon (Korea, Republic of); Jechang Jeong, Hanyang Univ. (Korea, Republic of) . . . . . [9400-15]

**Parallel hybrid algorithm for solution in electrical impedance equation**, Volodymyr Ponomaryov, Marco Robles-Gonzalez, Ari Bucio-Ramirez, Marco Ramirez-Tachiquin, Instituto Politécnico Nacional (Mexico); Eduardo Ramos-Diaz, Univ. Autónoma de la Ciudad de Mexico (Mexico) . [9400-17]

**Fast-coding robust motion estimation model in a GPU**, Carlos Garcia, Guillermo Botella, Univ. Complutense de Madrid (Spain); Francisco de Sande, Univ. de Las Palmas de Gran Canaria (Spain); Manuel Prieto-Matias, Univ. Complutense de Madrid (Spain) . . . . . [9400-18]

**Real-time single-exposure ROI-driven HDR adaptation based on focal-plane reconfiguration**, Jorge Fernández-Berni, Ricardo A. Carmona-Galán, Rocío del Río, Instituto de Microelectrónica de Sevilla (Spain); Richard Kleihorst, Wilfried Philips, Univ. Gent (Belgium); Ángel B. Rodríguez-Vázquez, Instituto de Microelectrónica de Sevilla (Spain) . . . . . [9400-19]

**Edge pattern analysis on GPU**, Bo Jiang, Guangzhou Institute of Biomedicine and Health (China) . . . . . [9400-20]

**Task-oriented quality assessment and adaptation in real-time mission-critical video streaming applications**, James M. Nightingale, Qi Wang, Christos Grecos, Univ. of the West of Scotland (United Kingdom) . . . . . [9400-21]

**A simulator tool set for evaluating HEVC/SHVC streaming**, James M. Nightingale, Tawfik A. Al Hadhrami, Qi Wang, Christos Grecos, Univ. of the West of Scotland (United Kingdom); Nasser Kehtarnavaz, The Univ. of Texas at Dallas (USA) . . . . . [9400-22]

**Dynamic resource allocation engine for cloud-based real-time video transcoding in mobile cloud computing environments**, Adedayo A. Bada, Jose Alcaraz-Calero, Qi Wang, Christos Grecos, Univ. of the West of Scotland (United Kingdom) . . . . . [9400-23]

**Subjective evaluation of H.265/HEVC based dynamic adaptive video streaming over HTTP (HEVC-DASH)**, Iheanyi C. Irondi, Qi Wang, Christos Grecos, Univ. of the West of Scotland (United Kingdom) . . . . . [9400-24]

**Impact of different cloud deployments on real-time video applications for mobile video cloud users**, Kashif A. Khan, Qi Wang, Chunbo Luo, Xinheng Wang, Christos Grecos, Univ. of the West of Scotland (United Kingdom) . . . . . [9400-25]

**Improving wavelet denoising based on an in-depth analysis of the camera color processing**, Tamara N. Seybold, Arnold & Richter Cine Technik GmbH & Co. Betriebs KG (Germany); Mathias Plichta, Walter Stechele, Technische Univ. München (Germany) . . . . . [9400-26]

**Impulsive noise suppression in color images based on the geodesic digital paths**, Bogdan Smolka, Silesian Univ. of Technology (Poland); Boguslaw Cyganek, AGH Univ. of Science and Technology (Poland) . . . . . [9400-27]

**Optimal camera exposure for video surveillance systems by predictive control of shutter speed, aperture, and gain**, Juan Torres, Jose Manuel Menendez, Univ. Politécnica de Madrid (Spain) . . . . . [9400-28]

**Real-time object recognition in multidimensional images based on joined extended structural tensor and higher-order tensor decomposition methods**, Boguslaw Cyganek, AGH Univ. of Science and Technology (Poland); Bogdan Smolka, Silesian Univ. of Technology (Poland) . . . . . [9400-29]

**A near infrared real-time video retrieval projection system based on Da Vinci platform and DMD**, Aly Ahmed A. Khalifa, Hussein A. Aly, Military Technical College (Egypt) . . . . . [9400-30]

**Using public image database for ground vehicle navigation**, Ehsan A. Ali, Samuel Kozaitis, Florida Institute of Technology (USA) . . . . . [9400-31]

**Efficient FPGA-based design of hexagonal search algorithm for motion estimation**, Baishik Biswas, Rohan Mukherjee, Indrajit Chakrabarti, Pranab K. Dutta, Indian Institute of Technology Kharagpur (India) . . . . . [9400-32]

**Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm**

## Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

**Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am**

## Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]



# Conference 9401 • Location: Continental Ballroom 4

Tuesday–Wednesday 10–11 February 2015 • Proceedings of IS&T/SPIE Vol. 9401

## Computational Imaging XIII

Conference Chairs: **Charles A. Bouman**, Purdue Univ. (USA); **Ken D. Sauer**, Univ. of Notre Dame (USA)

### Tuesday 10 February

Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging** (*Plenary*), James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Location: Continental Ballroom 4  
and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm

#### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**ISAR for concealed objects imaging**, Andrey Zhuravlev, Vladimir Razevig, Igor A. Vasiliev, Sergey I. Ivashov, Bauman Moscow State Technical Univ. (Russian Federation); Viacheslav V. Voronin, Don State Technical Univ. (Russian Federation) . . . . . [9401-16]

**Three-dimensional gas temperature measurements by computed tomography with incident angle variable interferometer**, Satoshi Tomioka, Shusuke Nishiyama, Samia Heshmat, Yasuhiro Hashimoto, Kodai Kurita, Hokkaido Univ. (Japan) . . . . . [9401-17]

**An MRI myocarditis index defined by a PCA-based object recognition algorithm**, Rocco Romano, Univ. degli Studi di Salerno (Italy); Igino De Giorgi, Azienda Ospedaliera Univ. (Italy); Fausto Acernese, Gerardo Giordano, Univ. degli Studi di Salerno (Italy); Antonio Orientale, Giovanni Babino, Azienda Ospedaliera Univ. (Italy); Fabrizio Barone, Univ. degli Studi di Salerno (Italy) . . . . . [9401-18]

**Recovering all frequency lighting using Haar wavelets**, Junsuk Choe, Hyunjung Shim, Yonsei Univ. (Korea, Republic of) . . . . . [9401-19]

**A quantum algorithm for multipath time-delay detection and estimation**, John J. Tran, Information Sciences Institute (USA); Kevin J. Scully, Darren L. Semmen, The Aerospace Corp. (USA); Robert F. Lucas, Information Sciences Institute (USA) . . . . . [9401-20]

**A no-reference perceptual blurriness metric based fast super-resolution of still pictures using sparse representation**, Jae-Seok Choi, Sung-Ho Bae, Munchurl Kim, KAIST (Korea, Republic of) . . . . . [9401-21]

**Efficient capacitive touch sensing using structured matrices**, Humza Akhtar, Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore) . . . . . [9401-22]

Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm

#### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

### Wednesday 11 February

Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am

#### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:20 am

#### Session 1

Location: Continental Ballroom 4 . . Wed 10:20 am to 12:20 pm

#### Image Representation and Recovery

Session Chairs: **Charles A. Bouman**, Purdue Univ. (USA); **Ken D. Sauer**, Univ. of Notre Dame (USA)

10:20 am: **Motion compensated content adaptive mesh reconstruction of 4D cardiac SPECT data**, Francisc Massanes, Jovan G. Brankov, Illinois Institute of Technology (USA) . . . . . [9401-1]

10:40 am: **Image reconstruction in the presence of non-linear mixtures utilizing wavelet variable-dependency modeling in compressed sensing algorithms**, Lynn M. Keuthan, The George Washington Univ. (USA); Jefferson M. Willey, U.S. Naval Research Lab. (USA); Robert J. Harrington, The George Washington Univ. (USA) . . . . . [9401-2]

11:00 am: **Machine learning deconvolution filter kernels for image restoration**, Pradip Mainali, Rimmert Wittebrood, TP Vision (Belgium) . . . . . [9401-3]

11:20 am: **Sparsity based noise removal from low dose scanning electron microscopy images**, Alina Lazar, Youngstown State Univ. (USA); Petru S. Fodor, Cleveland State Univ. (USA) . . . . . [9401-4]

11:40 am: **Recovery of quantized compressed sensing measurements**, Grigorios Tsagkatakis, Foundation for Research and Technology-Hellas (Greece); Panagiotis Tsakalides, Foundation for Research and Technology-Hellas (Greece) and Univ. of Crete (Greece) . . . . . [9401-5]

12:00 pm: **Mobile image based color correction using deblurring**, Yu Wang, Purdue Univ. (USA); Chang Xu, Qualcomm Inc. (USA); Carol J. Boushey, Univ. of Hawai'i Cancer Ctr. (USA) and Purdue Univ. (USA); Edward J. Delp III, Purdue Univ. (USA) . . . . . [9401-6]

Lunch Break . . . . . Wed 12:20 pm to 1:40 pm

# Conference 9401 • Location: Continental Ballroom 4

## Session 2

Location: Continental Ballroom 4 . . . . Wed 1:40 pm to 3:20 pm

### Nondestructive Evaluation

Session Chairs: **Charles A. Bouman**, Purdue Univ. (USA); **Ken D. Sauer**, Univ. of Notre Dame (USA)

1:40 pm: **Rotationally-invariant non-local means for image denoising and tomography**, Suhas Sreehari, Singanallur Venkatakrishnan, Purdue Univ. (United States); Lawrence F. Drummy, Jeffrey P. Simmons, Air Force Research Lab. (United States); Charles A. Bouman, Purdue Univ. (United States) . . . . . [9401-23]

2:00 pm: **Spectral x-ray diffraction using a 6 megapixel photon counting array detector**, Ryan D. Muir, Nicholas R. Pogranichniy, Purdue Univ. (USA); J. Lewis Muir, Argonne National Lab. (USA); Shane Z. Sullivan, Purdue Univ. (USA); Kevin Battaille, Anne M. Mulichak, Argonne National Lab. (USA); Scott J. Toth, Purdue Univ. (USA); Lisa J. Keefe, Argonne National Lab. (USA); Garth J. Simpson, Purdue Univ. (USA) . . . . . [9401-7]

2:20 pm: **Anomaly detection of microstructural defects in continuous fiber reinforced composites**, Stephen E. Bricker, Univ. of Dayton Research Institute (USA); Craig Przybyla, Air Force Research Lab. (USA); Russell C. Hardie, Univ. of Dayton (USA); Jeffrey P. Simmons, Air Force Research Lab. (USA) . . . . . [9401-8]

2:40 pm: **Phase retrieval in arbitrarily-shaped aperture with the transport-of-intensity equation**, Lei Huang, Brookhaven National Laboratory (USA) . . . . . [9401-9]

3:00 pm: **Acceleration of iterative image reconstruction for x-ray imaging for security applications**, David G. Politte, Washington Univ. in St. Louis (USA); Soysal Degirmenci, Washington Univ. in St. Louis (USA); Carl M. Bosch, Nawfel Tricha, SureScan Corp. (USA); Joseph A. O'Sullivan, Washington Univ. in St. Louis (USA) . . . . . [9401-10]

Coffee Break . . . . . Wed 3:20 pm to 3:40 pm

## Session 3

Location: Continental Ballroom 4 . . . . Wed 3:40 pm to 5:20 pm

### Image and System Analysis

Session Chairs: **Charles A. Bouman**, Purdue Univ. (USA); **Ken D. Sauer**, Univ. of Notre Dame (USA)

3:40 pm: **Image recovery of Granular Mirror Space Telescope images**, Xiaopeng Peng, Garreth J. Ruane, Alexandra B. Artusio-Glimpse, Grover A Swartzlander Jr., Rochester Institute of Technology (USA) . . . . . [9401-11]

4:00 pm: **Regularized image registration with line search optimization**, Lin Gan, Gady Agam, Illinois Institute of Technology (USA) . . . . . [9401-12]

4:20 pm: **Rectangular approximation of buildings from single satellite image using shadow analysis**, Gurshamjot Singh, Mark Jouppi, Avideh Zakhor, Univ. of California, Berkeley (USA) . . . . . [9401-13]

4:40 pm: **Webcam classification using simple features**, Thitiporn Pramoun, King Mongkut's Univ. of Technology Thonburi (Thailand); Jeehyun Choe, He Li, Qingshuang Chen, Purdue Univ. (USA); Thumrongrat Amornraksa, King Mongkut's Institute of Technology Thonburi (Thailand); Yung-Hsiang Lu, Edward J. Delp III, Purdue Univ. (USA) . . . . . [9401-14]

5:00 pm: **Flatbed scanner simulation to analyze the effect of detector's size on color artifacts**, Mohammed Yousefhussien, Roger L. Easton Jr., Raymond Ptucha, Rochester Institute of Technology (USA); Mark Q. Shaw, Brent Bradburn, Jerry K. Wagner, David Larson, Hewlett-Packard Co. (USA); Eli Saber, Rochester Institute of Technology (USA) . . . . . [9401-15]

# Conference 9402 • Location: Golden Gate 8

Wednesday–Thursday 11–12 February 2015 • Proceedings of IS&T/SPIE Vol. 9402

## Document Recognition and Retrieval XXII

Conference Chairs: **Eric K. Ringger**, Brigham Young Univ. (USA); **Bart Lamiroy**, Univ. de Lorraine (France)

Program Committee: **Gady Agam**, Illinois Institute of Technology (USA); **Sameer K. Antani**, National Library of Medicine (USA); **Elisa H. Barney Smith**, Boise State Univ. (USA); **William A. Barrett**, Brigham Young Univ. (USA); **Kathrin Berkner**, Ricoh Innovations, Inc. (USA); **Bertrand Couasnon**, Institut National des Sciences Appliquées de Rennes (France); **Hervé Déjean**, Xerox Research Ctr. Europe Grenoble (France); **Xiaoqing Ding**, Tsinghua Univ. (China); **Jianying Hu**, IBM Thomas J. Watson Research Ctr. (USA); **Ergina Kavallieratou**, Univ. of the Aegean (Greece); **Christopher Kermorvant**, A2iA SA (France); **Laurence Likforman-Sulem**, Télécom ParisTech (France); **Xiaofan Lin**, A9.com, Inc. (USA); **Marcus Liwicki**, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); **Daniel P. Lopresti**, Lehigh Univ. (USA); **Umapada Pal**, Indian Statistical Institute (India); **Sargur N. Srihari**, Univ. at Buffalo (USA); **Venkata Subramaniam**, IBM Research - India (India); **Kazem Taghva**, Univ. of Nevada, Las Vegas (USA); **George R. Thoma**, National Library of Medicine (USA); **Christian Viard-Gaudin**, Univ. de Nantes (France); **Pingping Xiu**, Microsoft Corp. (USA); **Berrin Yanikoglu**, Sabanci Univ. (Turkey); **Richard Zanibbi**, Rochester Institute of Technology (USA); **Jie Zou**, National Library of Medicine (USA)

Sponsored by



### Tuesday 10 February

Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Location: Continental Ballroom Foyer . Tue 5:30 pm to 7:30 pm

#### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

### Wednesday 11 February

Location: Continental Ballroom 5 . . . . .Wed 8:30 am to 9:50 am

#### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:00 am

Location: Golden Gate 8 . . . . . Wed 10:00 am to 11:00 am

#### Keynote Session I

Session Chairs: **Bart Lamiroy**, Univ. de Lorraine (France); **Eric K. Ringger**, Brigham Young Univ. (USA)

10:00 am: **Printing presses and polyphonic pianos: unsupervised transcription for documents and music (Keynote Presentation)**, Dan Klein, Univ. of California, Berkeley (USA) . . . . . [9402-1]

### Session 1

Location: Golden Gate 8 . . . . . Wed 11:00 am to 12:10 pm

#### Document Layout Analysis and Understanding

Session Chair: **Richard Zanibbi**, Rochester Institute of Technology (USA)

Session Introduction 11:00 to 11:10 am

11:10 am: **Ground truth model, tool, and dataset for layout analysis of historical documents**, Kai Chen, Ecole d'ingénieurs et d'architectes de Fribourg (Switzerland); Mathias Seuret, Hao Wei, Univ. de Fribourg (Switzerland); Marcus Liwicki, Univ. de Fribourg (Switzerland) and Technische Univ. Kaiserslautern (Germany); Jean Hennebert, Univ. de Fribourg (Switzerland) and Haute Ecole Spécialisée de Suisse occidentale (Switzerland); Rolf Ingold, Univ. de Fribourg (Switzerland) . . . . . [9402-2]

11:30 am: **Use of SLIC superpixels for ancient document image enhancement and segmentation**, Maroua M. Mehri, Univ. de La Rochelle (France); Nabil Siliti, Univ. de Sousse (Tunisia); Pierre Héroux, Univ. de Rouen (France); Petra Gomez-Krämer, Univ. de La Rochelle (France); Najoua Essoukri Ben Amara, Univ. de Sousse (Tunisia); Rémy Mullot, Univ. de La Rochelle (France) . . . . . [9402-3]

11:50 am: **Software workflow for the automatic tagging of medieval manuscript images (SWATI)**, Swati Chandna, Danah Tonne, Thomas Jejkal, Rainer Stotzka, Karlsruher Institut für Technologie (Germany); Celia Krause, Technische Univ. Darmstadt (Germany); Philipp Vanscheidt, Hannah Busch, Univ. Trier (Germany); Ajinkya Prabhune, Karlsruher Institut für Technologie (Germany) . . . . . [9402-4]

Lunch Break . . . . . Wed 12:10 pm to 1:50 pm

### Session 2

Location: Golden Gate 8 . . . . . Wed 1:50 pm to 3:20 pm

#### Document Structure Semantics, Forms, and Tables

Session Chair: **Xiaofan Lin**, A9.com, Inc. (USA)

Session Introduction 1:50 to 2:00 pm

2:00 pm: **Math expression retrieval using an inverted index over symbol pairs**, David Stalnaker, Richard Zanibbi, Rochester Institute of Technology (USA) . . . . . [9402-5]

2:20 pm: **Min-cut segmentation of cursive handwriting in tabular documents**, Brian L. Davis, William A. Barrett, Scott D. Swingle, Brigham Young Univ. (USA) . . . . . [9402-6]

2:40 pm: **Cross-reference identification within a PDF document**, Sida Li, Liangcai Gao, Zhi Tang, Yinyan Yu, Peking Univ. (China) . . . . . [9402-7]

3:00 pm: **Intelligent indexing: a semi-automated, trainable system for field labeling**, Robert Clawson, William A. Barrett, Brigham Young Univ. (USA) . . . . . [9402-8]

Coffee Break . . . . . Wed 3:20 pm to 3:50 pm

# Conference 9402 · Location: Golden Gate 8

## Session 3

Location: Golden Gate 8 ..... Wed 3:50 pm to 5:20 pm

### Text Analysis

Session Chair: **Eric K. Ringger**, Brigham Young Univ. (USA)

Session Introduction 3:50 to 4:00 pm

4:00 pm: **Re-typograph phase I: a proof-of-concept for typeface parameter extraction from historical documents**, Bart Lamiroy, Univ. de Lorraine (France); Thomas Bouville, Atelier National de Recherche Typographique (France); Blégean Julien, Hongliu Cao, Salah Ghamizi, Univ. de Lorraine (France); Romain Houpin, Univ. de Lorraine (France); Matthias Lloyd, Univ. de Lorraine (France). ..... [9402-9]

4:20 pm: **Clustering of Farsi sub-word images for whole-book recognition**, Mohammad Reza Soheili, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); Ehsanollah Kabir, Tarbiat Modares Univ. (Iran, Islamic Republic of); Didier Stricker, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany). ..... [9402-10]

4:40 pm: **Gaussian process style transfer mapping for historical Chinese character recognition**, Jixiong Feng, Liangrui Peng, Tsinghua Univ. (China); Franck Lebourgeois, Institut National des Sciences Appliquées de Lyon (France). ..... [9402-11]

5:00 pm: **Boost OCR accuracy using iVector based system combination approach**, Xujun Peng, Huaigu Cao, Raytheon BBN Technologies (USA); Premkumar Natarajan, The Univ. of Southern California, Marina del Rey (USA). ..... [9402-12]

## Thursday 12 February

### Session 4

Location: Golden Gate 8 ..... Thu 8:20 am to 10:10 am

### Handwriting I

Session Chair: **Daniel P. Lopresti**, Lehigh Univ. (USA)

Session Introduction 8:20 to 8:30 am

8:30 am: **Exploring multiple feature combination strategies with a recurrent neural network architecture for off-line handwriting recognition**, Luc Mioulet, Univ. de Rouen (France) and Airbus Defence and Space (France); Gautier Bideault, Univ. de Rouen (France); Clément Chatelain, Institut National des Sciences Appliquées de Rouen (France); Thierry Paquet, Univ. de Rouen (France); Stephan Brunessaux, Airbus Defence and Space (France). ..... [9402-13]

8:50 am: **Spotting handwritten words and REGEX using a two stage BLSTM-HMM architecture**, Gautier Bideault, Luc Mioulet, Univ. de Rouen (France); Clément Chatelain, Institut National des Sciences Appliquées de Rouen (France); Thierry Paquet, Univ. de Rouen (France). ..... [9402-14]

9:10 am: **A comparison of 1D and 2D LSTM architectures for the recognition of handwritten Arabic**, Mohammad Reza Yousefi, Mohammad Reza Soheili, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); Thomas M. Breuel, Technische Univ. Kaiserslautern (Germany); Didier Stricker, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany). ..... [9402-15]

9:30 am: **Aligning transcript of historical documents using dynamic programming**, Irina Rabaev, Rafi Cohen, Jihad A. El-Sana, Klara Kedem, Ben-Gurion Univ. of the Negev (Israel). ..... [9402-16]

9:50 am: **Offline handwritten word recognition using MQDF-HMMs**, Sitaram N. Ramachandrala, Hewlett-Packard Labs. India (India); Mangesh Hambarde, Hewlett-Packard India Sales Pvt Ltd. (India); Ajay Patial, Hewlett Packard India Sales Pvt Ltd. (India); Dushyant Sahoo, Indian Institute of Technology Delhi (India); Shaivi Kochar, Jamia Millia Islamia Univ. (India). ..... [9402-17]

Coffee Break ..... Thu 10:10 am to 10:40 am

Location: Golden Gate 8 ..... Thu 10:40 am to 11:40 am

### Keynote Session II

Session Chairs: **Bart Lamiroy**, Univ. de Lorraine (France); **Eric K. Ringger**, Brigham Young Univ. (USA)

10:40 am: **The internet archive: challenges and solutions for large scale document repositories** (Keynote Presentation), Brewster O. Kahle, Internet Archive (USA). ..... [9402-18]

### Session 5

Location: Golden Gate 8 ..... Thu 11:40 am to 12:30 pm

### Quality and Compression

Session Chair: **William A. Barrett**, Brigham Young Univ. (USA)

Session Introduction 11:40 to 11:50 am

11:50 am: **Separation of text and background regions for high performance document image compression**, Wei Fan, Jun Sun, Satoshi Naoi, Fujitsu Research and Development Center Co., Ltd. (China)[9402-19]

12:10 pm: **Metric-based no-reference quality assessment of heterogeneous document images**, Nibal Nayef, Jean-Marc Ogier, Univ. de La Rochelle (France). ..... [9402-20]

Lunch Break ..... Thu 12:30 pm to 2:10 pm

### Session 6

Location: Golden Gate 8 ..... Thu 2:10 pm to 3:20 pm

### Graphics and Structure

Session Chair: **Bart Lamiroy**, Univ. de Lorraine (France)

Session Introduction 2:10 to 2:20 pm

2:20 pm: **Clustering header categories extracted from web tables**, George Nagy, Rensselaer Polytechnic Institute (USA); David W. Embley, Brigham Young Univ. (USA); Mukkai Krishnamoorthy, Rensselaer Polytechnic Institute (USA); Sharad Seth, Univ. of Nebraska-Lincoln (USA). ..... [9402-21]

2:40 pm: **A diagram retrieval method with multi-label learning**, Songping Fu, Xiaoqing Lu, Peking Univ. (China); Lu Liu, Jingwei Qu, Institute of Computer Science & Technology, Peking University (China); Zhi Tang, Institute of Computer Science & Technology, Peking University (China) and State Key Laboratory of Digital Publishing Technology, Beijing (China). ..... [9402-22]

3:00 pm: **Detection of electrical circuit elements from documents images**, Paramita De, Sekhar Mandal, Amit Kumar Das, Indian Institute of Engineering & Technology, Shibpur (India); Bhabatosh Chanda, Indian Statistical Institute, Kolkata (India). ..... [9402-24]

Coffee Break ..... Thu 3:20 pm to 3:50 pm

### Session 7

Location: Golden Gate 8 ..... Thu 3:50 pm to 4:10 pm

### Handwriting II

Session Chair: **Daniel P. Lopresti**, Lehigh Univ. (USA)

3:50 pm: **Missing value imputation: with application to handwriting data**, Zhen Xu, Sargur N. Srihari, Univ. at Buffalo (USA). ..... [9402-25]

### PANEL DISCUSSION

Location: Golden Gate 8 ..... 4:10 pm to 5:00 pm

# Conference 9403 • Location: Continental Ballroom 1

Monday–Tuesday 9–10 February 2015 • Proceedings of IS&T/SPIE Vol. 9403

## Image Sensors and Imaging Systems 2015

Conference Chairs: **Ralf Widenhorn**, Portland State Univ. (USA); **Antoine Dupret**, Commissariat à l'Énergie Atomique (France)

Program Committee: **Morley M. Blouke**, Portland State Univ. (USA); **Erik Bodegom**, Portland State Univ. (USA); **Calvin Chao**, Taiwan Semiconductor Manufacturing Co. Ltd. (Taiwan); **Glenn H. Chapman**, Simon Fraser Univ. (Canada); **Arnaud Darmont**, Aphesa SPRL (Belgium); **James A. DiBella Sr.**, Truesense Imaging, Inc. (USA); **Boyd A. Fowler**, BAE Systems (USA); **Bumsuk Kim**, Samsung Electronics Co., Ltd. (Korea, Republic of); **Rihito Kuroda**, Tohoku Univ. (Japan); **Kevin J. Matherson**, Microsoft Corp. (USA); **Alice L. Reinheimer**, e2v (USA); **Nobukazu Teranishi**, Univ. of Hyogo (Japan); **Jean-Michel Tualle**, Univ. Paris 13 (France); **Gordon Wan**, Google (USA); **Xinyang Wang**, Chinese Academy of Sciences (China)

Sponsored by:



### Monday 9 February

#### Session 1

Location: Continental Ballroom 1 . . . Mon 8:30 am to 10:10 am

#### High-Performance Sensors

Session Chair: **Xinyang Wang**, Chinese Academy of Sciences (China)

8:30 am: **2.2um BSI CMOS image sensor with two layer photo-detector**, Hiroki Sasaki, Ai Mochizuki, Yuki Sugiura, Ryoji Hasumi, Kentaro Eda, Yoshitaka Egawa, Hirofumi Yamashita, Kenji Honda, Toshiba Corp. (Japan); Tatsuya Ohguro, Hisayo S. Momose, Toshiba Materials Co., Ltd. (Japan); Hiroshi Ootani, Toshiba Corp. (Japan); Yoshiaki Toyoshima, Toshiba Materials Co., Ltd. (Japan); Tetsuya Asami, Toshiba Corp. (Japan) . . . . . [9403-1]

8:50 am: **A compact THz imaging system**, Aleksander Sešek, Andrej Švigelj, Janez Trontelj, Univ. of Ljubljana (Slovenia) . . . . . [9403-2]

9:10 am: **Signal conditioning circuits for 3D-integrated burst image sensor with on-chip A/D conversion**, Rémi Bonnard, Fabrice Guellec, Josep Segura Puchades, CEA-LETI (France); Wilfried Uhring, Institut de Physique et Chimie des Matériaux de Strasbourg (France) . . . . . [9403-3]

9:30 am: **A 4M high-dynamic range, low-noise CMOS image sensor**, Cheng Ma, Jilin Univ. (China) and Gpixel Inc. (China); Yang Liu, Jing Li, Quan Zhou, Xinyang Wang, Gpixel Inc. (China); Yuchun Chang, Jilin Univ. (China) . . . . . [9403-4]

9:50 am: **Multi-camera synchronization core implemented on USB3-based FPGA platform**, Ricardo M. Sousa, Univ. da Madeira (Portugal); Martin Wány, Pedro Santos, AWAIBA Lda. (Portugal); Morgado Dias, Univ. da Madeira (Portugal) and Madeira Interactive Technologies Institute (Portugal) . . . . . [9403-5]

Coffee Break . . . . . Mon 10:10 am to 10:40 am

#### Session 2

Location: Continental Ballroom 1 . . Mon 10:40 am to 12:40 pm

#### Sensors, Color, and Spectroscopy

Session Chair: **Gordon Wan**, Google (USA)

10:40 am: **Compressed hyperspectral sensing**, Grigorios Tsagkatakis, Foundation for Research and Technology-Hellas (Greece); Panagiotis Tsakalides, Foundation for Research and Technology-Hellas (Greece) and Univ. of Crete (Greece) . . . . . [9403-6]

11:00 am: **Acousto-optic imaging with a smart-pixels sensor**, Kinia Barjean, Univ. Paris 13 (France); Kevin Contreras, Jean-Baptiste Laudereau, Institut Langevin (France); Eric Tinet, Dominique Etti, Univ. Paris 13 (France); François Ramaz, Institut Langevin (France); Jean-Michel Tualle, Univ. Paris 13 (France) . . . . . [9403-29]

11:20 am: **Hyperspectral atmospheric CO<sub>2</sub> imaging system based on planar reflective grating**, Xueqian Zhu, Lei Ding, Xinhua Niu, Shanghai Institute of Technical Physics (China) . . . . . [9403-8]

11:40 am: **Design, fabrication and characterization of a polarization-sensitive focal plane array**, Dmitry Vorobiev, Zoran Ninkov, Rochester Institute of Technology (USA) . . . . . [9403-9]

12:00 pm: **High dynamic, spectral, and polarized natural light environment acquisition**, Philippe Porral, Patrick Callet, Philippe Fuchs, Thomas Muller, Mines ParisTech (France); Etienne Sandré-Chardonnel, Eclat Digital Recherche (France) . . . . . [9403-10]

12:20 pm: **A high-sensitivity 2x2 multi-aperture color camera based on selective averaging**, Bo Zhang, Keiichiro Kagawa, Taishi Takasawa, Min-Woong Seo, Keita Yasutomi, Shoji Kawahito, Shizuoka Univ. (Japan) . . . . . [9403-11]

Lunch Break . . . . . Mon 12:40 pm to 1:50 pm

#### Session 3

Location: Continental Ballroom 1 . . . . Mon 1:50 pm to 3:30 pm

#### Sensor Performance and Modeling

Session Chair: **Jean-Michel Tualle**, Univ. Paris 13 (France)

1:50 pm: **Simulation analysis of a backside illuminated multi-collection gate image sensor**, Vu Truong Son Dao, Takeharu Goji Etoh, Ritsumeikan Univ. (Japan); Edoardo Charbon, Zhang Chao, Technische Univ. Delft (Netherlands); Yoshinari Kamakura, Osaka Univ. (Japan) . . . . . [9403-12]

2:10 pm: **Analysis of pixel gain and linearity of CMOS image sensor using floating capacitor load readout operation**, Shunichi Wakashima, Fumiaki Kusuhara, Rihito Kuroda, Shigetoshi Sugawa, Tohoku Univ. (Japan) . . . . . [9403-13]

2:30 pm: **Addressing challenges of modulation transfer function measurement with fisheye lens cameras**, Brian M. Deegan, Patrick E. Denny, Vladimir Zlokolica, Barry Dever, Laura Russell, Valeo Vision Systems (Ireland) . . . . . [9403-14]

2:50 pm: **Designing a simulation tool for smart image sensors**, Michel Paindavoine, Univ. de Bourgogne (France); Laurent Soulier, Stéphane Chevobbe, CEA LIST (France); Pierre Bouchain, Univ. de Bourgogne (France) . . . . . [9403-15]

3:10 pm: **An ASIC for speckle patterns statistical analysis**, Jean-Michel Tualle, Kinia Barjean, Eric Tinet, Univ. Paris 13 (France); Dominique Etti, Univ. Paris-Nord (France); Antoine Dupret, Commissariat à l'Énergie Atomique (France); Marius Vasiliu, Univ. Paris-Sud 11 (France) . . [9403-16]

Coffee Break . . . . . Mon 3:30 pm to 4:00 pm

# Conference 9403 • Location: Continental Ballroom 1

## Session 4

Location: Continental Ballroom 1 . . . . Mon 4:00 pm to 5:20 pm

### Smart Sensors

Session Chair: **Antoine Dupret**, Commissariat à l'Énergie Atomique (France)

4:00 pm: **A SPAD-based 3D imager with in-pixel TDC for 145ps-accuracy ToF measurement**, Ion Vornicu, Ricardo A. Carmona-Galán, Ángel B. Rodríguez-Vázquez, Instituto de Microelectrónica de Sevilla (Spain) . . . . . [9403-17]

4:20 pm: **Neuro inspired smart image sensor : analog Hmax implementation**, Michel Paindavoine, Univ. de Bourgogne (France); Jerome Dubois, Univ. de Picardie Jules Verne (France); Purnawarman Musa, Univ. of Gunadarma (Indonesia) . . . . . [9403-18]

4:40 pm: **A 12-bit 500KSPS cyclic ADC for CMOS image sensor**, Zhaohan Li, GengYun Wang, Leli Peng, Yuchun Chang, Jilin Univ. (China) . . . . . [9403-19]

5:00 pm: **14bit pipeline-SAR ADC for image sensor readout circuits**, GengYun Wang, Can Peng, Tianzhao Liu, Ning Ding, Yuchun Chang, Jilin Univ. (China) . . . . . [9403-20]

## Tuesday 10 February

Location: Continental Ballroom 5 . . . . Tue 8:30 am to 9:50 am

### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

## Session 5

Location: Continental Ballroom 1 . . . Tue 10:10 am to 11:30 am

### Noise

Session Chairs: **Rihito Kuroda**, Tohoku Univ. (Japan); **Alice L. Reinheimer**, e2v Aerospace and Defense, Inc. (USA)

10:10 am: **Power noise rejection and device noise analysis at the reference level of ramp ADC**, Peter Ahn, JiYong Um, EunJung Choi, HyunMook Park, JaSeung Gou, SK Hynix, Inc. (Korea, Republic of) . . . . . [9403-21]

10:30 am: **The effect of photodiode shape on dark current for MOS imagers**, Steven Taylor, DTS, Inc. (USA); Bruce Dunne, Heidi Jiao, Grand Valley State Univ. (USA) . . . . . [9403-22]

10:50 am: **High-speed binary CMOS image sensor using a high-responsivity MOSFET-type photo detector**, Byoung-Soo Choi, Sung-Hyun Jo, Myunghan Bae, Pyung Choi, Jang-Kyoo Shin, Kyungpook National Univ. (Korea, Republic of) . . . . . [9403-23]

11:10 am: **Design considerations for low noise CMOS image sensors**, Ángel B. Rodríguez-Vázquez, Univ. de Sevilla (Spain); Fernando Medeiro, Rafael Dominguez-Castro, Anafocus (Spain) . . . . . [9403-24]

Location: Continental Ballroom 4

and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm

### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**An improved Sobel edge detection algorithm based on the idea of median filter**, Shuang Cui, GengYun Wang, Teng Chen, Yuchun Chang, Zhen Huang, Jilin Univ. (China) . . . . . [9403-25]

**Short wave infrared hyperspectral imaging for recovered postconsumer single and mixed polymers characterization**, Silvia Serranti, Giuseppe Bonifazi, Roberta Palmieri, Univ. degli Studi di Roma La Sapienza (Italy) . . . . . [9403-26]

**Designing and construction of a prototype of (GEM) detector for 2D medical imaging application**, Abdulrahman S. Alghamdi, Mohammed S. AlAnazi, Abdullah F. Aldosary, King Abdulaziz City for Science and Technology (Saudi Arabia) . . . . . [9403-27]

**Enhanced correction methods for high density hot pixel defects in digital imagers**, Rahul Thomas, Glenn H. Chapman, Rohit Thomas, Simon Fraser Univ. (Canada); Israel Koren, Zahava Koren, Univ. of Massachusetts Amherst (USA) . . . . . [9403-28]

Location: Continental Ballroom Foyer . . . . 5:30 pm to 7:30 pm

### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

Location: Continental Ballroom 5 . . . . Wed 8:30 am to 9:50 am

### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

# Conference 9404 • Location: Golden Gate 7

Monday–Tuesday 9–10 February 2015 • Proceedings of IS&T/SPIE Vol. 9404

## Digital Photography and Mobile Imaging XI

*Conference Chairs:* **Nitin Sampat**, Rochester Institute of Technology (USA); **Radka Tezaur**, Nikon Research Corp. of America (USA); **Dietmar Wüller**, Image Engineering GmbH & Co. KG (Germany)

*Conference Co-Chairs:* **Sebastiano Battiato**, Univ. degli Studi di Catania (Italy); **Joyce E. Farrell**, Stanford Univ. (USA); **Boyd A. Fowler**, Google (USA); **Francisco H. Imai**, Canon U.S.A., Inc. (USA); **Andrew Lumsdaine**, Indiana Univ. (USA); **Kevin J. Matherson**, Microsoft Corp. (USA)

*Program Committee:* **Erhardt Barth**, Univ. zu Lübeck (Germany); **Kathrin Berkner**, Ricoh Innovations, Inc. (USA); **Ajit S. Bopardikar**, Samsung Electronics, India Software Operations Ltd. (India); **Frédéric Cao**, DxO Labs (France); **Peter B. Catrysse**, Stanford Univ. (USA); **Lauren A. Christopher**, Indiana Univ.-Purdue Univ. Indianapolis (USA); **Henry G. Dietz**, Univ. of Kentucky (USA); **Paolo Favaro**, Univ. der Künste Berlin (Germany); **Robert D. Fiete**, Exelis Geospatial Systems (USA); **Sergio R. Goma**, Qualcomm Inc. (USA); **Mirko Guarnera**, STMicroelectronics (Italy); **Bahadır K. Gunturk**, Louisiana State Univ. (USA); **Zhen He**, Intel Corp. (USA); **Paul M. Hubel**, Apple Inc. (USA); **Jun Jiang**, Apple Inc. (USA); **Michael A. Kriss**, MAK Consultants (USA); **Jiangtao Kuang**, OmniVision Technologies, Inc. (USA); **Manuel Martinez**, Univ. de Valencia (Spain); **Jon S. McElvain**, Dolby Labs., Inc. (USA); **Lingfei Meng**, Ricoh Innovations, Inc. (USA); **Bo Mu**, BAE Systems (USA); **Barbara Pitts**, Apple Inc. (USA); **Kari A. Pulli**, NVIDIA Corp. (USA); **John R. Reinert-Nash**, Lifetouch, Inc. (USA); **Brian G. Rodricks**, Consultant (USA); **Jackson Roland**, Imatest, LLC (USA); **Mårten Sjöström**, Mid Sweden Univ. (Sweden); **Filippo D. Stanco**, Univ. degli Studi di Catania (Italy); **Sabine Süsstrunk**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Touraj Tajbakhsh**, Apple Inc. (USA); **Ashok Veeraraghavan**, Rice Univ. (USA); **Thomas Vogelsang**, Rambus Inc. (USA); **Michael Wang**, Intel Corp. (USA); **Weihua Xiong**, OmniVision Technologies, Inc. (USA); **Zhan Yu**, Univ. of Delaware (USA); **Lei Zhang**, The Hong Kong Polytechnic Univ. (Hong Kong, China)

Sponsored by:



Canon Google

### Monday 9 February

#### Session 1

Location: Golden Gate 7 ..... Mon 9:10 am to 10:10 am

#### Computational Photography and Image Processing I

Session Chair: **Sebastiano Battiato**, Univ. degli Studi di Catania (Italy)

9:10 am: **Multimode plenoptic imaging**, Andrew Lumsdaine, Indiana Univ. (USA); Todor G. Georgiev, Qualcomm Inc. (USA) ..... [9404-1]

9:30 am: **Automatically designing an image processing pipeline for a five-band camera prototype using the local, linear, learned (L3) method**, Qiyuan Tian, Henryk Blasinski, Stanford Univ. (USA); Steven P. Linsel, Olympus America Inc. (USA); Haomiao Jiang, Stanford Univ. (USA); Munenori Fukunishi, Olympus America Inc. (USA); Joyce E. Farrell, Brian A. Wandell, Stanford Univ. (USA) ..... [9404-2]

9:50 am: **Efficient illuminant correction in the local, linear, learned (L3) method**, Francois G. Germain, Iretiayo A. Akinola, Qiyuan Tian, Stanford Univ. (USA); Steven P. Linsel, Olympus America Inc. (USA); Brian A. Wandell, Stanford Univ. (USA) ..... [9404-3]

Coffee Break ..... Mon 10:10 am to 10:50 am

#### Session 2

Location: Golden Gate 7 ..... Mon 10:50 am to 12:20 pm

#### Image Restoration

Session Chair: **Nitin Sampat**, Rochester Institute of Technology (USA)

10:50 am: **Reflection removal in smart devices using a prior assisted independent components analysis**, Phanish H. Srinivasa Rao, Samsung R&D Institute India - Bangalore (India); Pramati Kalwad, National Institute of Technology, Karnataka (India) ..... [9404-4]

11:10 am: **Measurement and analysis of the point spread function with regard to straylight correction**, Julian Achatzi, Gregor Fischer, Fachhochschule Köln (Germany); Volker Zimmer, Leica Camera AG (Germany); Dietrich W. Paulus, Univ. Koblenz-Landau (Germany); Gerhard Bonnet, Spheron-VR AG (Germany) ..... [9404-5]

11:30 am: **Advances in image restoration: from theory to practice (Keynote Presentation)**, Filip Sroubek, Institute of Information Theory and Automation (Czech Republic) ..... [9404-6]

Lunch Break ..... Mon 12:20 pm to 1:50 pm

#### Session 3

Location: Golden Gate 7 ..... Mon 1:50 pm to 3:30 pm

#### Deblurring I

Session Chair: **Radka Tezaur**, Nikon Research Corp. of America (USA)

1:50 pm: **From Maxwells equations to efficient filter flow with applications in blind image deconvolution (Invited Paper)**, Michael Hirsch, Max-Planck-Institut für biologische Kybernetik (Germany) [9404-7]

2:20 pm: **Parameterized modeling and estimation of spatially varying optical blur (Invited Paper)**, Jonathan D. Simpkins, Robert L. Stevenson, Univ. of Notre Dame (USA) ..... [9404-8]

2:50 pm: **Making single image deblurring practical (Invited Paper)**, Jue Wang, Adobe Systems (USA) ..... [9404-9]

Coffee Break ..... Mon 3:30 pm to 4:00 pm

#### Session 4

Location: Golden Gate 7 ..... Mon 4:00 pm to 5:00 pm

#### Deblurring II

Session Chair: **Filip Sroubek**, Institute of Information Theory and Automation (Czech Republic)

4:00 pm: **Blind deconvolution of images with model discrepancies**, Jan Kotera, Filip Sroubek, Institute of Information Theory and Automation (Czech Republic) ..... [9404-10]

4:20 pm: **Motion deblurring based on graph Laplacian regularization**, Amin Kheradmand, Univ. of California, Santa Cruz (USA); Peyman Milanfar, Univ. of California, Santa Cruz (USA) and Google (USA) ..... [9404-11]

4:40 pm: **A system for estimating optics blur PSFs from test chart images**, Radka Tezaur, Nikon Research Corp. of America (USA); Tetsuji Kamata, Nikon Corp. (Japan); Li Hong, Stephen D. Slonaker, Nikon Research Corp. of America (USA) ..... [9404-12]

#### PANEL DISCUSSION

Location: Golden Gate 7 ..... 5:00 pm to 6:00 pm

#### Advances and New Directions in Deblurring and Image Restoration

Panel Moderators, **Filip Šroubek**, Institute of Information Theory and Automation (Czech Republic) and **Radka Tezaur**, Nikon Research Corp. of America (USA)

# Conference 9404 · Location: Golden Gate 7

**Tuesday 10 February**

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

## **Plenary Session and Society Award Presentations**

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

### **Session 5**

**Location: Golden Gate 7 . . . . . Tue 10:10 am to 12:20 pm**

## **Computational Photography and Image Processing II**

Session Chair: **Joyce E. Farrell**, Stanford Univ. (USA)

10:10 am: **Computational photography and state of the art in image processing (Keynote Presentation)**, Peyman Milanfar, Google (USA) . . . . . [9404-13]

11:00 am: **Gradient-based correction of chromatic aberration in the joint acquisition of color and near-infrared images**, Zahra Sadeghipoor Kermani, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Yue M. Lu, Harvard Univ. (USA); Sabine Süssstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [9404-14]

11:20 am: **Visible and near-infrared image fusion based on visually salient area selection**, Takashi Shibata, NEC Corp. (Japan) and Tokyo Institute of Technology (Japan); Masayuki Tanaka, Masatoshi Okutomi, Tokyo Institute of Technology (Japan) . . . . . [9404-15]

11:40 am: **Fast HDR image upscaling using locally adapted linear filters**, Hossein Talebi, Guan-Ming Su, Peng Yin, Dolby Labs., Inc. (USA) . . . . . [9404-16]

12:00 pm: **Cinematic camera emulation using two-dimensional color transforms**, Jon S. McElvain, Walter C. Gish, Dolby Labs., Inc. (USA) . . . . . [9404-17]

Lunch Break . . . . . Tue 12:20 pm to 2:00 pm

### **Session 6**

**Location: Golden Gate 7 . . . . . Tue 2:00 pm to 3:20 pm**

## **Digital Photography and Image Quality I, Joint Session with Conferences 9396 and 9404**

Session Chairs: **Sophie Triantaphillidou**, Univ. of Westminster (United Kingdom); **Kevin J. Matherson**, Microsoft Corp. (USA)

2:00 pm: **Aberration characteristics of conicoidal conformal optical domes**, Wang Zhang, Dongsheng Wang, Shouqian Chen, Zhigang Fan, Harbin Institute of Technology (China) . . . . . [9396-7]

2:20 pm: **MTF evaluation of white pixel sensors**, Albrecht J. Lindner, Kalin Atanassov, Jiafu Luo, Sergio R. Goma, Qualcomm Inc. (USA) [9396-8]

2:40 pm: **Intrinsic camera resolution measurement**, Peter D. Burns, Burns Digital Imaging (USA); Judit Martinez Bauza, Qualcomm Inc. (USA) . . . . . [9396-9]

3:00 pm: **Image quality assessment using the dead leaves target: experience with the latest approach and further investigations**, Uwe Artmann, Image Engineering GmbH & Co. KG (Germany) . . . . . [9404-18]

Coffee Break . . . . . Tue 3:20 pm to 3:40 pm

### **Session 7**

**Location: Golden Gate 7 . . . . . Tue 3:40 pm to 5:00 pm**

## **Digital Photography and Image Quality II, Joint Session with Conferences 9396 and 9404**

Session Chairs: **Robin B. Jenkin**, Apple, Inc. (USA); **Kevin J. Matherson**, Microsoft Corp. (USA)

3:40 pm: **An ISO standard for measuring low light performance**, Dietmar Wüller, Image Engineering GmbH & Co. KG (Germany) . [9404-19]

4:00 pm: **ISO-less?**, Henry G. Dietz, Univ. of Kentucky (USA) . . . [9404-20]

4:20 pm: **Mobile phone camera benchmarking in low light environment**, Veli-Tapani Peltoketo, Sofica Ltd. (Finland) . . . . . [9396-10]

4:40 pm: **Luminance and gamma optimization for mobile display in low ambient conditions**, Seonmee Lee, Taeyong Park, Junwoo Jang, Woongjin Seo, Taeuk Kim, Jongjin Park, Moojong Lim, Jongsang Baek, LG Display (Korea, Republic of) . . . . . [9396-11]

### **PANEL DISCUSSION**

**Location: Golden Gate 7 . . . . . 5:00 pm to 5:30 pm**

## **Challenges of Handheld Device Displays: Joint Panel with Conferences 9396 and 9404**

Panel Moderator: **Dietmar Wüller**, Image Engineering GmbH & Co. KG (Germany)

**Location: Continental Ballroom 4 and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm**

### **Interactive Paper Session**

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Overcoming the blooming effect on autofocus by fringe detection**, Shao-Kang Huang, Dong-Chen Tsai, Homer H. Chen, National Taiwan Univ. (Taiwan) . . . . . [9404-21]

**Stable image acquisition for mobile image processing applications**, Kai-Fabian Henning, Alexander Fritze, Eugen Gillich, Uwe Mönks, Volker Lohweg, Ostwestfalen-Lippe Univ. of Applied Sciences (Germany) . . . . . [9404-22]

**Near constant-time optimal piecewise LDR to HDR inverse tone mapping**, Qian Chen, Guan-Ming Su, Dolby Labs., Inc. (USA); Peng Yin, Dolby Labs Inc (USA) . . . . . [9404-23]

**Face super-resolution using coherency sensitive hashing**, Anustup Choudhury, Andrew Segall, Sharp Labs. of America, Inc. (USA) . [9404-24]

**An evaluation of the effect of JPEG, JPEG2000, and H.264/AVC on CQR codes decoding process**, Max E. Vizcarra Melgar, Mylène C. Q. Farias, Alexandre Zaghetto, Univ. de Brasilia (Brazil) . . . . . [9404-25]

**Stitching algorithm of the images acquired from different points of fixation**, Evgeny Semenishchev, Don State Technical Univ. (Russian Federation) . . . . . [9404-26]

**Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm**

### **Symposium Demonstration Session**

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## **Wednesday 11 February**

**Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am**

## **Plenary Session and Conference Award Presentations**

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]



# Conference 9405 • Location: Golden Gate 6

Tuesday–Wednesday 10–11 February 2015 • Proceedings of IS&T/SPIE Vol. 9405

## Image Processing: Machine Vision Applications VIII

*Conference Chairs:* **Edmund Y. Lam**, The Univ. of Hong Kong (Hong Kong, China); **Kurt S. Niel**, Upper Austria Univ. of Applied Sciences (Austria)

*Program Committee:* **Philip R. Bingham**, Oak Ridge National Lab. (USA); **Ewald Fauster**, Montan Univ. Leoben (Austria); **Daniel Fecker**, Technische Univ. Braunschweig (Germany); **Steven P. Floeder**, 3M Co. (USA); **David Fofi**, Univ. de Bourgogne (France); **Shaun Scott Gleason**, Oak Ridge National Lab. (USA); **Keith Jenkins**, The Univ. of Southern California (USA); **Olivier Lalignat**, Univ. de Bourgogne (France); **Fabrice Meriaudeau**, Univ. de Bourgogne (France); **Hamed Sari-Sarraf**, Texas Tech Univ. (USA); **Ralph Seulin**, Univ. de Bourgogne (France); **Svorad Štolc**, AIT Austrian Institute of Technology GmbH (Austria); **Christophe Stolz**, Univ. de Bourgogne (France); **Vincent C. Paquit**, Oak Ridge National Lab. (USA); **Seung-Chul Yoon**, Agricultural Research Service (USA); **Gerald Zauner**, FH OÖ Forschungs & Entwicklungs GmbH (Austria)

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

#### Session 1

**Location: Golden Gate 6 . . . . . Tue 10:20 am to 12:00 pm**

#### Detection, Identification, and Monitoring I

Session Chair: **Edmund Y. Lam**, The Univ. of Hong Kong (Hong Kong, China)

10:20 am: **Multiple object detection in hyperspectral imagery using spectral fringe-adjusted joint transform correlator**, Paheding Sidike, Vijayan K. Asari, Univ. of Dayton (USA); Mohammad S. Alam, Univ. of South Alabama (USA) . . . . . [9405-1]

10:40 am: **Dynamic hierarchical algorithm for accelerated microfossil identification**, Cindy M. Wong, Dileepan Joseph, Univ. of Alberta (Canada) . . . . . [9405-2]

11:00 am: **Deep convolutional neural network (CNN) for landmark recognition**, Lin Sun, Cong Zhao, Chang Yuan, Lenovo (Hong Kong) Ltd. (Hong Kong, China) . . . . . [9405-3]

11:20 am: **Monitoring arctic landscape variation by ground- and kite-based cameras**, Rusen Oktem, Univ. of California, Berkeley (USA); Baptiste Dafflon, John E. Peterson, Susan S. Hubbard, Lawrence Berkeley National Lab. (USA) . . . . . [9405-4]

11:40 am: **Hyperspectral imaging using a color camera and its application for pathogen detection**, Seung-Chul Yoon, Tae-Sung Shin, Gerald W. Heitschmidt, Kurt C. Lawrence, Bosoon Park, Gary Gamble, Agricultural Research Service (USA) . . . . . [9405-5]

Lunch Break . . . . . Tue 12:00 pm to 2:00 pm

#### Session 2

**Location: Golden Gate 6 . . . . . Tue 2:00 pm to 3:20 pm**

#### Imaging and Machine Vision Algorithms

Session Chair: **Henry Y. T. Ngan**, The Univ. of Hong Kong (Hong Kong, China)

2:00 pm: **Fast face recognition by using an inverted index**, Christian Herrmann, Jürgen Beyerer, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany) . . . . . [9405-6]

2:20 pm: **Advanced color processing for mobile devices**, Eugen Gillich, Helene Dörksen, Volker Lohweg, Ostwestfalen-Lippe Univ. of Applied Sciences (Germany) . . . . . [9405-7]

2:40 pm: **A rotation invariant descriptor using Fourier coefficients for object detection**, Quamrul H. Mallik, Abelardo Gonzalez, Pablo H. Lopez, Maja Sliskovic, SEW-EURODRIVE GmbH & Co. KG (Germany) . . . [9405-8]

3:00 pm: **Robust image calibration and registration in cone-beam computed tomogram**, Walter Lam, The Univ. of Hong Kong (Hong Kong, China); Henry Y. T. Ngan, Hong Kong Baptist Univ. (Hong Kong, China); Peter Wat, Henry Luk, Edmond Pow, Tazuko Goto, The Univ. of Hong Kong (Hong Kong, China) . . . . . [9405-9]

Coffee Break . . . . . Tue 3:20 pm to 4:00 pm

#### Session 3

**Location: Golden Gate 6 . . . . . Tue 4:00 pm to 5:00 pm**

#### Algorithms and Techniques

Session Chair: **Kurt S. Niel**, Upper Austria Univ. of Applied Sciences (Austria)

4:00 pm: **An video saliency detection method based on spatial and motion information**, Kang Xue, Xiying Wang, Gengyu Ma, Haitao Wang, Weiming Li, Samsung Advanced Institute of Technology (China) [9405-10]

4:20 pm: **Depth-map and Albedo estimation with superior information-theoretic performance**, Adam P. Harrison, Dileepan Joseph, Univ. of Alberta (Canada) . . . . . [9405-11]

4:40 pm: **Shot boundary detection and label propagation for spatio-temporal video segmentation**, Sankaranaryanan Piramanayagam, Eli Saber, Nathan D. Cahill, David W. Messinger, Rochester Institute of Technology (USA) . . . . . [9405-12]

**Location: Continental Ballroom 4 and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm**

#### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Context-based handover of persons in crowd and riot scenarios**, Jürgen Metzler, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany) . . . . . [9405-26]

**3D motion artifact compensation in CT image**, Young Jun Ko, Jongduk Baek, Hyunjung Shim, Yonsei Univ. (Korea, Republic of) . . . . . [9405-27]

**Robust detection for object under occlusions**, Yong Li, Chunxiao Fan, Yue Ming, Beijing Univ. of Posts and Telecommunications (China) [9405-29]

**Human action classification using procrustes shape matching method**, Wanhyun Cho, Chonnam National Univ. (Korea, Republic of); Sangkyoon Kim, Mokpo National Univ. (Korea, Republic of); Soonja Kang, Chonnam National Univ. (Korea, Republic of); Soon-Young Park, Mokpo National Univ. (Korea, Republic of); Myungeun Lee, Seoul National Univ. (Korea, Republic of) . . . . . [9405-31]

# Conference 9405 • Location: Golden Gate 6

**Sub-pixel estimation error over real-world data for correlation-based image registration**, Pablo S. Morales Chavez, Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore) . . . . . [9405-32]

**Understanding video transmission decisions in cloud base computer vision services**, Rony Ferzli, Nijad Anabtawi, Arizona State Univ. (USA) . . . . . [9405-33]

**An auto focus framework for computer vision systems**, Rony Ferzli, Nijad Anabtawi, Arizona State Univ. (USA) . . . . . [9405-34]

**Innovative hyperspectral imaging (HSI) based techniques applied to end-of-life concrete drill core characterization for optimal dismantling and materials recovery**, Silvia Serranti, Giuseppe Bonifazi, Nicoletta Picone, Univ. degli Studi di Roma La Sapienza (Italy). . . . . [9405-35]

**Localizing people in crosswalks with a moving handheld camera: proof of concept**, Marc Lalonde, Claude Chapdelaine, Samuel Foucher, CRIM (Canada) . . . . . [9405-36]

**Fused methods for visual saliency estimation**, Amanda S. Danko, Siwei Lyu, Univ. at Albany (USA) . . . . . [9405-37]

**Classification of hyperspectral images based on conditional random fields**, Yang Hu, Eli Saber, Sildomar Monteiro, Nathan D. Cahill, David W. Messinger, Rochester Institute of Technology (USA) . . . . . [9405-38]

**Pro and con of using Genicam based standard interfaces (GigE, U3V, CXP, CLHS) in a camera or image processing design**, Werner Feith, Sensor to Image GmbH (Germany). . . . . [9405-39]

**Geological applications of machine learning on hyperspectral remote sensing data**, Kevin Tse, Y. Li, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China) . . . . . [9405-40]

10:50 am: **Multispectral imaging: an application to density measurement of photographic paper in the manufacturing process control**, Raju Shrestha, Jon Yngve Hardeberg, Gjøvik Univ. College (Norway) . . . . . [9405-16]

11:10 am: **Self-calibration of monocular vision system based on planar points**, Yu Zhao, Weimin Li, Lichao Xu, Univ. of Science and Technology of China (China) . . . . . [9405-17]

Lunch Break . . . . . Wed 11:30 am to 2:00 pm

## Session 5

**Location: Golden Gate 6 . . . . . Wed 2:00 pm to 3:20 pm**

### Detection, Identification, and Monitoring II

Session Chair: **Seung-Chul Yoon**, Agricultural Research Service (USA)

2:00 pm: **A comparative study of outlier detection for large-scale traffic data by one-class SVM and Kernel density estimation**, Henry Y. T. Ngan, Hong Kong Baptist Univ. (Hong Kong, China); Nelson H. Yung, Anthony G. Yeh, The Univ. of Hong Kong (Hong Kong, China) . . [9405-18]

2:20 pm: **Image-based dynamic deformation monitoring of civil engineering structures from long ranges**, Matthias Ehrhart, Werner Lienhart, Technische Univ. Graz (Austria) . . . . . [9405-19]

2:40 pm: **Building and road detection from large aerial imagery**, Shunta Saito, Yoshimitsu Aoki, Keio Univ. (Japan) . . . . . [9405-20]

3:00 pm: **Interactive image segmentation tools in quantitative analysis of microscopy images**, Reid B. Porter, Christy Ruggiero, Los Alamos National Lab. (USA) . . . . . [9405-21]

Coffee Break . . . . . Wed 3:20 pm to 4:00 pm

## Session 6

**Location: Golden Gate 6 . . . . . Wed 4:00 pm to 5:20 pm**

### Imaging Applications

Session Chair: **Svorad Štolc**, AIT Austrian Institute of Technology GmbH (Austria)

4:00 pm: **Camera-based forecasting of insolation for solar systems**, Daniel Manger, Frank Pagel, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany) . . . . . [9405-22]

4:20 pm: **3D barcodes: theoretical aspects and practical implementation**, Zachi I. Baharav, Cogswell Polytechnical College (USA); Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore); David Gladstein, Cogswell Polytechnical College (USA) . . . . . [9405-23]

4:40 pm: **Still-to-video face recognition in unconstrained environments**, Haoyu Wang, Changsong Liu, Xiaoqing Ding, Tsinghua Univ. (China) . . . . . [9405-24]

5:00 pm: **Realistic texture extraction for 3D face models robust to self-occlusion**, Chengchao Qu, Eduardo Monari, Tobias Schuchert, Jürgen Beyerer, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany) . . . . . [9405-25]

**Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm**

### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

**Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am**

### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:10 am

## Session 4

**Location: Golden Gate 6 . . . . . Wed 10:10 am to 11:30 am**

### Inspection and Metrology

Session Chair: **Henry Y. T. Ngan**, The Univ. of Hong Kong (Hong Kong, China)

10:10 am: **An edge-from-focus approach to 3D inspection and metrology**, Fuqin Deng, Jia Chen, Harbin Institute of Technology (China); Jianyang Liu, Southwest Jiaotong Univ. (China); Zhijun Zhang, Jiangwen Deng, Kenneth S. M. Fung, ASM Pacific Technology Ltd. (Hong Kong, China); Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China) . . . . . [9405-13]

10:30 am: **Improved metrology of implant lines on static images of textured silicon wafers using line integral method**, Kuldeep Shah, Eli Saber, Rochester Institute of Technology (USA); Kevin Verrier, Varian Semiconductor Equipment Associates, Inc. (USA) . . . . . [9405-14]

# Conference 9406 • Location: Continental Ballroom 9

Monday–Tuesday 9–10 February 2015 • Proceedings of IS&T/SPIE Vol. 9406

## Intelligent Robots and Computer Vision XXXII: Algorithms and Techniques

Conference Chairs: **Juha Röning**, Univ. of Oulu (Finland); **David Casasent**, Carnegie Mellon Univ. (USA)

Program Committee: **Dah-Jye Lee**, Brigham Young Univ. (USA); **Charles A. McPherson**, Draper Lab. (USA); **Kurt S. Niel**, Upper Austria Univ. of Applied Sciences (Austria); **Yoshihiko Nomura**, Mie Univ. (Japan); **Lucas Paletta**, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); **Daniel Raviv**, Florida Atlantic Univ. (USA); **Bernard L. Theisen**, U.S. Army Tank Automotive Research, Development and Engineering Ctr. (USA); **Dili Zhang**, Monotype Imaging (USA)

### Monday 9 February

#### Session 1

Location: Continental Ballroom 9 . . . Mon 9:10 am to 10:20 am

#### Intelligent Mobile Robot Methods and Advancements I

Session Chairs: **Juha Röning**, Univ. of Oulu (Finland); **David Casasent**, Carnegie Mellon Univ. (USA)

9:10 am: **Synchronization of mobile robot's actuated wheels**, Ville Pitkänen, Antti Tikanmäki, Juha Röning, Univ. of Oulu (Finland) . . [9406-1]

9:30 am: **Moving object detection from a mobile robot using basis image matching**, Du-Ming Tsai, Yuan Ze Univ. (Taiwan); Wei-Yao Chiu, Industrial Technology Research Institute (Taiwan); Tzu-Hsun Tseng, Yuan Ze Univ. (Taiwan). . . . . [9406-2]

9:50 am: **Dealing with bad data in automated decision systems** (*Invited Paper*), Charles A. McPherson, Draper Lab. (USA) . . . . . [9406-3]

Coffee Break . . . . . Mon 10:20 am to 10:50 am

#### Session 2

Location: Continental Ballroom 9 . . Mon 10:50 am to 12:10 pm

#### Intelligent Mobile Robot Methods and Advancements II

Session Chairs: **Juha Röning**, Univ. of Oulu (Finland); **David Casasent**, Carnegie Mellon Univ. (USA)

10:50 am: **Thorough exploration of complex environments with a space-based potential field**, Alina Kenealy, Nicholas Primiano, Alex O. Keyes, Damian M. Lyons, Fordham Univ. (USA) . . . . . [9406-4]

11:10 am: **Localization using omnivision-based manifold particle filters**, Adelia Wong, Mohammed Yousef Hussien, Raymond Ptucha, Rochester Institute of Technology (USA) . . . . . [9406-5]

11:30 am: **An online visual loop closure detection method for indoor robotic navigation**, Can Erhan, Istanbul Teknik Üniv. (Turkey); Evangelos Sariyanidi, Queen Mary, Univ. of London (United Kingdom); Onur Sencan, Hakan Temeltas, Istanbul Teknik Üniv. (Turkey) . . . . . [9406-6]

11:50 am: **Improved obstacle avoidance and navigation for an autonomous ground vehicle**, Binod Giri, Hyunsu Cho, Benjamin C Williams, Hokchhay Tann, Shakya Bicky, Vishal Bharam, David J. Ahlgren, Trinity College (USA) . . . . . [9406-7]

Lunch Break . . . . . Mon 12:10 pm to 2:00 pm

#### Session 3

Location: Continental Ballroom 9 . . . . Mon 2:00 pm to 3:20 pm

#### Image Understanding and Scene Analysis

Session Chair: **Kurt S. Niel**, Upper Austria Univ. of Applied Sciences (Austria)

2:00 pm: **Statistical approach for supervised codeword selection**, Kihong Park, Seungchul Ryu, Seungryong Kim, Kwanghoon Sohn, Yonsei Univ. (Korea, Republic of) . . . . . [9406-8]

2:20 pm: **Multi-polarimetric textural distinctiveness for outdoor robotic saliency detection**, Shahid Haider, Christian Scharfenberger, Farnoud Kazemzadeh, Alexander Wong, D. A. Clausi, Univ. of Waterloo (Canada) . . . . . [9406-9]

2:40 pm: **Semantic video segmentation using both appearance and geometric information**, Jihwan Woo, Samsung Electronics Co., Ltd. (Korea, Republic of) . . . . . [9406-10]

3:00 pm: **Feature matching method study for uncorrected fish-eye lens image**, Baofeng Zhang, Yanhui Jia, Tianjin Univ. of Technology (China); Juha Röning, Univ. of Oulu (Finland); Weijia Feng, Tianjin Normal Univ. (China) . . . . . [9406-11]

Coffee Break . . . . . Mon 3:20 pm to 4:00 pm

#### Session 4

Location: Continental Ballroom 9 . . . . Mon 4:00 pm to 5:20 pm

#### Pattern Recognition and Image Processing for Computer Vision and Robotics

Session Chair: **Lucas Paletta**, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria)

4:00 pm: **Shape simplification through polygonal approximation in the Fourier domain**, Mark Andrews, The Univ. of Auckland (New Zealand); Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore) [9406-12]

4:20 pm: **Graph-optimized Laplacian eigenmaps for face recognition**, Fadi Dornaika, Univ. del Pais Vasco (Spain); Ammar Assoun, Lebanese Univ. (Lebanon); Yassine Ruichek, IRTES SeT UTBM (France) . . [9406-13]

4:40 pm: **A super-fast algorithm for self-grouping of multiple objects in image plane**, Chialun John Hu, SunnyFuture Software (USA) . . [9406-14]

5:00 pm: **Research on the feature set construction method for spherical stereo vision**, Junchao Zhu, Li Wan, Tianjin Univ. of Technology (China); Juha Röning, Univ. of Oulu (Finland); Weijia Feng, Tianjin Normal Univ. (China) . . . . . [9406-15]

# Conference 9406 · Location: Continental Ballroom 9

## Tuesday 10 February

Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am

### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

### Session 5

Location: Continental Ballroom 9 . . . Tue 10:20 am to 11:20 am

### Computer Vision Algorithms and Applications for Intelligent Robots

Session Chair: **Charles A. McPherson**, Draper Lab. (USA)

10:20 am: **Development of autonomous grasping and navigating robot**, Hiroyuki Kudoh, The Univ. of Electro-Communications (Japan); Keisuke Fujimoto, Hitachi, Ltd. (Japan); Yasuichi Nakayama, The Univ. of Electro-Communications (Japan) . . . . . [9406-16]

10:40 am: **Fine grained recognition of masonry walls for built heritage assessment**, Noelia Oses, Zain Foundation (Spain); Fadi Dornaika, Univ. of Alberta (Canada); Abdelmalik Moujahid, Univ. del País Vasco (Spain) . . . . . [9406-17]

11:00 am: **Visual based navigation for power line inspection by using virtual environments**, Alexander Ceron-Correa, Univ. Militar Nueva Granada (Colombia) and Univ. Nacional de Colombia (Colombia); Iván Fernando Mondragón Bernal, Pontificia Univ. Javeriana Bogotá (Colombia); Flavio A. Prieto, Univ. Nacional de Colombia Sede Medellín (Colombia) . . . . . [9406-18]

Lunch Break . . . . . Tue 11:20 am to 2:00 pm

### Session 6

Location: Continental Ballroom 9 . . . . . Tue 2:00 pm to 3:00 pm

### 3D Vision: Modelling, Representation, Perception, Processing and Recognition

Session Chair: **Terrell N. Mundhenk**, HRL Labs., LLC (USA)

2:00 pm: **PanDAR: a wide-area, frame-rate, and full color lidar with foveated region using backfilling interpolation upsampling**, Terrell N. Mundhenk, Kyunghnam Kim, Yuri Owechko, HRL Labs., LLC (USA) . . . . . [9406-20]

2:20 pm: **3D local descriptors used in methods of visual 3D object recognition**, Marek Jakab, Wanda Benesova, Slovenska Technicka Univ. (Slovakia); Marek Racev, Slovak University of Technology (Slovakia) . . . . . [9406-21]

2:40 pm: **The study of calibration and epipolar geometry for the stereo vision system built by fisheye lenses**, Baofeng Zhang, Chunfang Lu, Tianjin Univ. of Technology (China); Juha Röning, Univ. of Oulu (Finland); Weijia Feng, Tianjin Normal Univ. (China) . . . . . [9406-23]

Location: Continental Ballroom 4  
and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm

### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Intermediate view synthesis for eye-gazing**, Eu-Ttuem Baek, Yo-Sung Ho, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [9406-24]

**Increasing signal-to-noise ratio of reconstructed digital holograms by using light spatial noise portrait of camera's photosensor**, Pavel A. Cheremkhin, Nikolay N. Evtikhiev, Vitaly V. Krasnov, Vladislav G. Rodin, Sergey N. Starikov, National Research Nuclear Univ. MEPhI (Russian Federation) . . . . . [9406-25]

**Camera calibration based on parallel lines**, Weimin Li, Yuhai Zhang, Yu Zhao, Univ. of Science and Technology of China (China) . . . . . [9406-26]

Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm

### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am

### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

# Conference 9407 • Location: Golden Gate 7

Tuesday–Thursday 10–12 February 2015 • Proceedings of IS&T/SPIE Vol. 9407

## Video Surveillance and Transportation Imaging Applications 2015

Conference Chairs: **Robert P. Loce**, PARC, A Xerox Co. (USA); **Eli Saber**, Rochester Institute of Technology (USA)

Program Committee: **Ghassan Al-Regib**, Georgia Institute of Technology (USA); **Vijayan K. Asari**, Univ. of Dayton (USA); **Raja Bala**, PARC, A Xerox Co. (USA); **Farhan A. Baqai**, Apple Inc. (USA); **Elisa H. Barney Smith**, Boise State Univ. (USA); **Alessandro Bevilacqua**, Univ. degli Studi di Bologna (Italy); **Philip M. Birch**, Univ. of Sussex (United Kingdom); **Alberto Broggi**, Univ. degli Studi di Parma (Italy); **Yang Cai**, Carnegie Mellon Univ. (USA); **Peter H. N. de With**, Technische Univ. Eindhoven (Netherlands); **Sohail A. Dianat**, Rochester Institute of Technology (USA); **Hassan Foroosh**, Univ. of Central Florida (USA); **Prudhvi Gurram**, U.S. Army Research Lab. (USA); **Mustafa I. Jaber**, NantVision Inc. (USA); **Bo Ling**, Migma Systems, Inc. (USA); **Fa-Long Luo**, Element CXI, Inc. (USA); **Sharathchandra Pankanti**, IBM Thomas J. Watson Research Ctr. (USA); **Peter Paul**, PARC, A Xerox Co. (USA); **Andreas E. Savakis**, Rochester Institute of Technology (USA); **Dan Schonfeld**, Univ. of Illinois at Chicago (USA); **Oliver Sidla**, SLR Engineering GmbH (Austria); **Sreenath Rao Vantaram**, Intel Corp. (USA); **Yaowu Xu**, Google (USA)

### Tuesday 10 February

Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Reh, Georgia Institute of Technology (USA) . . . . . [9391-500]

Location: Continental Ballroom 4 and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm

#### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Person re-identification in UAV videos using relevance feedback**, Arne Schumann, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany) . . . . . [9407-33]

**Aerial surveillance based on hierarchical object classification for ground target detection**, Alberto Vazquez-Cervantes, Juan Manuel García-Huerta, Teresa Hernández-Díaz, J. A. Soto-Cajiga, Hugo Jiménez-Hernández, Ctr. de Ingeniería y Desarrollo Industrial (Mexico) . . . [9407-34]

**Nighttime video foreground detection using multi-intensity IR illuminator**, Wen Chih Teng, Meng-Che Sung, Jen-Hui Chuang, National Chiao Tung Univ. (Taiwan) . . . . . [9407-35]

Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm

#### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

### Wednesday 11 February

Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am

#### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:10 am

### Session 1

Location: Golden Gate 7 . . . . . Wed 10:10 am to 12:10 pm

#### Transportation Imaging I

Session Chairs: **Robert P. Loce**, PARC, A Xerox Co. (USA); **Eli Saber**, Rochester Institute of Technology (USA)

10:10 am: **Road user tracker based on robust regression with GNC and preconditioning**, Andreas Leich, Marek Junghans, Karsten Kozempel, Hagen Saul, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) . . . . . [9407-1]

10:30 am: **Vehicle detection for traffic flow analysis**, Vimal Varsani, Soodamani Ramalingam, Univ. of Hertfordshire (United Kingdom) [9407-2]

10:50 am: **Vehicle speed estimation using a monocular camera**, Wencheng Wu, Vladimir Kozitsky, Martin Hoover, Xerox Corp. (USA); Robert P. Loce, PARC, A Xerox Co. (USA); D. M. Todd Jackson, Xerox Corp. (USA) . . . . . [9407-3]

11:10 am: **Detecting and extracting identifiable information from vehicles in videos**, Hari Kalva, Florida Atlantic Univ. (USA); Siddharth Roheda, Nirma Univ. (India) . . . . . [9407-4]

11:30 am: **Electronic number plate generation for performance evaluation**, Soodamani Ramalingam, William E. Martin, Talib A. S. Alukaidey, Univ. of Hertfordshire (United Kingdom) . . . . . [9407-5]

11:50 am: **Efficient integration of spectral features for vehicle tracking utilizing an adaptive sensor**, Burak Uz Kent, Matthew J. Hoffman, Anthony Vodacek, Rochester Institute of Technology (USA) . . . . . [9407-6]

Lunch Break . . . . . Wed 12:10 pm to 2:00 pm

### Session 2

Location: Golden Gate 7 . . . . . Wed 2:00 pm to 3:20 pm

#### Transportation Imaging II

Session Chair: **Andreas E. Savakis**, Rochester Institute of Technology (USA)

2:00 pm: **Detection and recognition of road markings in panoramic images**, Cheng Li, Ivo M. Creusen, Lykele Hazelhoff, CycloMedia Technology B.V. (Netherlands) and Technische Univ. Eindhoven (Netherlands); Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) and Cyclomedia Technology B.V. (Netherlands) . . . [9407-7]

2:20 pm: **Topview stereo: combining vehicle-mounted wide-angle cameras to a distance sensor array**, Sebastian Houben, Ruhr-Univ. Bochum (Germany) . . . . . [9407-8]

2:40 pm: **A machine learning approach for detecting cell phone usage by a driver**, Beilei Xu, Palo Alto Research Center, Inc. (USA); Robert P. Loce, Peter Paul, PARC, A Xerox Co. (USA) . . . . . [9407-9]

3:00 pm: **Driver alertness detection using Google glasses**, Chung-Lin Huang, Asia Univ. (Taiwan); Kuang-Yu Liu, National Tsin-Hua University (Taiwan) . . . . . [9407-10]

Coffee Break . . . . . Wed 3:20 pm to 4:00 pm

# Conference 9407 · Location: Golden Gate 7

## Session 3

Location: Golden Gate 7 ..... Wed 4:00 pm to 5:20 pm

### Transportation Imaging Applications for Pedestrian Detection and Automotive Safety

Session Chair: **Vijayan K. Asari**, Univ. of Dayton (USA)

4:00 pm: **Close to real-time robust pedestrian detection and tracking**, Yuriy Lipetski, Gernot Loibner, Oliver Sidla, SLR Engineering GmbH (Austria) ..... [9407-11]

4:20 pm: **Development of a portable bicycle/pedestrian monitoring system for safety enhancement**, Colin T. Usher, Wayne D. Daley, Georgia Tech Research Institute (USA) ..... [9407-12]

4:40 pm: **Real-time pedestrian detection, tracking, and counting using stereo camera and range sensor**, Santiago Olivera, Bo Ling, Migma Systems, Inc. (USA); David R. P. Gibson, Federal Highway Administration (USA); Paul Burton, City of Tucson (USA) ..... [9407-13]

5:00 pm: **Active gated imaging for automotive safety applications**, Yoav Grauer, Ezri Sonn, BrightWay Vision Ltd. (Israel) ..... [9407-14]

## Thursday 12 February

### Session 4

Location: Golden Gate 7 ..... Thu 8:20 am to 10:20 am

#### Surveillance Imaging I

Session Chair: **Oliver Sidla**, SLR Engineering GmbH (Austria)

8:20 am: **Arbitrary object localization and tracking via multiple-camera surveillance system embedded in a parking garage**, Andre Ibsch, Sebastian Houben, Matthias Michael, Ruhr-Univ. Bochum (Germany); Robert Kesten, GIGATRONIK Ingolstadt GmbH (Germany); Florian Schuller, AUDI AG (Germany) ..... [9407-15]

8:40 am: **Unsupervised classification and visual representation of situations in surveillance videos using slow feature analysis for situation retrieval applications**, Frank Pagel, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany) ..... [9407-16]

9:00 am: **An intelligent crowdsourcing system for forensic analysis of surveillance video**, Khalid Tahboub, Neeraj J. Gadgil, Javier Ribera, Blanca Delgado, Edward J. Delp III, Purdue Univ. (USA) ..... [9407-17]

9:20 am: **Trusted framework for cloud based computer vision surveillance platforms**, Rony Ferzli, Nijad Anabtawi, Arizona State Univ. (USA) ..... [9407-18]

9:40 am: **Hierarchical video surveillance architecture: a chassis for video big data analytics and exploration**, Sola O. Ajiboye, Philip M. Birch, Christopher R. Chatwin, Rupert C. Young, Univ. of Sussex (United Kingdom) ..... [9407-19]

10:00 am: **A multi-objective optimization algorithm for efficient background subtraction in image processing**, Ramesh Rajagopalan, Univ. of St. Thomas (USA) ..... [9407-36]

Coffee Break .....Thu 10:20 am to 10:50 am

### Session 5

Location: Golden Gate 7 .....Thu 10:50 am to 12:30 pm

#### Surveillance Imaging II

Session Chair: **Ghassan AlRegib**, Georgia Institute of Technology (USA)

10:50 am: **In-depth comparison of random forests and SVMs for gender classification in surveillance**, Christopher D. Geelen, Rob G. J. Wijnhoven, ViNotion B.V. (Netherlands); Gijs Dubbelman, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) ..... [9407-20]

11:10 am: **Detection and handling of occlusion in a people surveillance system**, Ron M. G. op het Veld, Rob G. J. Wijnhoven, ViNotion B.V. (Netherlands); Egor Bondarev, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) ..... [9407-21]

11:30 am: **Temporal action detection and trajectory based feature fusion for human action recognition in video**, Sameh Megrhi, Univ. Paris 13 (France); Marwa Jmal, Ecole Polytechnique de Tunisie (Tunisia); Azeddine Beghdadi, Univ. Paris 13 (France); Wided Souidene, Ecole Polytechnique de Tunisie (Tunisia) and Univ. Paris 13 (France) . . [9407-22]

11:50 am: **Person identification from streaming surveillance video using mid-level features from joint action-pose distribution**, Binu M. Nair, Vijayan K. Asari, Univ. of Dayton (USA) ..... [9407-23]

12:10 pm: **Scene projection by non-linear transforms to a geo-referenced map for situational awareness**, Kevin Krucki, Vijayan K. Asari, Univ. of Dayton (USA) ..... [9407-24]

Lunch Break ..... Thu 12:30 pm to 2:00 pm

### Session 6

Location: Golden Gate 7 .....Thu 2:00 pm to 3:20 pm

#### Surveillance Imaging Applications

Session Chair: **Eli Saber**, Rochester Institute of Technology (USA)

2:00 pm: **A vision-based approach for tramway rail extraction**, Matthijs H. Zwemer, ViNotion B.V. (Netherlands); Dennis W. J. M. van de Wouw, ViNotion B.V. (Netherlands) and Technische Univ. Eindhoven (Netherlands); Egbert G. T. Jaspers, ViNotion B.V. (Netherlands); Svitlana Zinger, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) ..... [9407-25]

2:20 pm: **Accurate modeling of gable-roofed buildings using a combination of aerial and street-level imagery**, Lykele Hazelhoff, Ivo M. Creusen, CycloMedia Technology B.V. (Netherlands); Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) ..... [9407-26]

2:40 pm: **On improving IED object detection by exploiting scene geometry using stereo processing**, Dennis W. J. M. van de Wouw, Technische Univ. Eindhoven (Netherlands) and ViNotion B.V. (Netherlands); Gijs Dubbelman, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) ..... [9407-27]

3:00 pm: **Visual analysis of trash bin processing on garbage trucks in low resolution video**, Oliver Sidla, Gernot Loibner, SLR Engineering GmbH (Austria) ..... [9407-28]

Coffee Break ..... Thu 3:20 pm to 4:00 pm

### Session 7

Location: Golden Gate 7 .....Thu 4:00 pm to 5:20 pm

#### Interaction Models, Surveillance Systems, and Colorization Applications

Session Chair: **Robert P. Loe**, PARC, A Xerox Co. (USA)

4:00 pm: **Toward to creation of interaction models: simple objects-interaction approach**, Teresa Hernández-Díaz, Juan Manuel García-Huerta, Alberto Vazquez-Cervantes, Hugo Jiménez-Hernández, Ctr. de Ingeniería y Desarrollo Industrial (Mexico); Ana M. Herrera-Navarro, Univ. Autónoma de Querétaro (Mexico) ..... [9407-29]

4:20 pm: **Compressive sensing based video object compression schemes for surveillance systems**, Sathiya N. Sekar, Anamitra Makur, Nanyang Technological Univ. (Singapore) ..... [9407-30]

4:40 pm: **Improved colorization for night vision system based on image splitting**, Ehsan A. Ali, Samuel Kozaitis, Florida Institute of Technology (USA) ..... [9407-31]

5:00 pm: **Evaluation of maritime object detection methods for full-motion video applications using the PASCAL VOC challenge framework**, Shibin Parameswaran, Space and Naval Warfare Systems Ctr. Pacific (USA); Martin Jaszewski, Space and Naval Warfare Systems Command (USA); Eric Hallenborg, Bryan Bagnall, Space and Naval Warfare Systems Ctr. Pacific (USA) ..... [9407-32]

# Conference 9408 • Location: Continental Ballroom 1

Wednesday–Thursday 11–12 February 2015 • Proceedings of IS&T/SPIE Vol. 9408

## Imaging and Multimedia Analytics in a Web and Mobile World 2015

*Conference Chairs:* **Qian Lin**, Hewlett-Packard Co. (USA); **Jan P. Allebach**, Purdue Univ. (USA); **Zhigang Fan**, SKR Labs (USA)

*Program Committee:* **Patricia Albanese**, Rochester Institute of Technology (USA); **Vijayan K. Asari**, Univ. of Dayton (USA); **Susanne C. Boll**, Carl von Ossietzky Univ. Oldenburg (Germany); **Reiner Fageth**, CEWE Stiftung & Co. KGaA (Germany); **Yuli Gao**, Google (USA); **Michael J. Gormish**, Ricoh Innovations, Inc. (USA); **Meichun Hsu**, Hewlett-Packard Co. (USA); **Andrew A. Hunter**, Hewlett-Packard Labs. (United Kingdom); **Xiaofan Lin**, A9.com, Inc. (USA); **Jerry Liu**, Hewlett-Packard Labs. (USA); **Mu Qiao**, Shutterfly (USA); **Alastair M. Reed**, Digimarc Corp. (USA); **Yonghong Tian**, Peking Univ. (China); **Shengjin Wang**, Tsinghua Univ. (China); **Wiley H. Wang**, Mixbook (USA); **Rong Yan**, Facebook Inc. (USA); **Yonghui Zhao**, Apple Inc. (USA)

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

**Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm**

#### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

### Wednesday 11 February

**Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am**

#### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

#### Session 1

**Location: Continental Ballroom 1 . . . . . Wed 2:00 pm to 3:20 pm**

#### Image, Video, and Multimedia Analytics I

Session Chair: **Qian Lin**, Hewlett-Packard Co. (USA)

2:00 pm: **Recent progress in wide-area surveillance: protecting our pipeline infrastructure (Keynote Presentation)**, Vijayan K. Asari, Univ. of Dayton (USA) . . . . . [9408-1]

3:00 pm: **Alignment of low resolution face images based on a 3D facial model**, Lu Zhang, Jan Allebach, Purdue Univ. (USA); Xianwang Wang, Qian Lin, Hewlett-Packard Co. (USA) . . . . . [9408-2]

Coffee Break . . . . . Wed 3:20 pm to 3:50 pm

#### Session 2

**Location: Continental Ballroom 1 . . . . . Wed 3:50 pm to 5:10 pm**

#### Image, Video, and Multimedia Analytics II

Session Chair: **Jan P. Allebach**, Purdue Univ. (USA)

3:50 pm: **Piecewise linear dimension reduction for nonnegative data**, Bin Shen, Purdue University (USA); Qifan Wang, Jan Allebach, Purdue Univ. (USA) . . . . . [9408-3]

4:10 pm: **Boundary fitting based segmentation of fluorescence microscopy images**, Soonam Lee, Purdue Univ. (USA); Paul Salama, Kenneth W Dunn, Indiana Univ. (USA); Edward J Delp, Purdue Univ. (USA) . . . . . [9408-4]

4:30 pm: **Robust textural features for real time face recognition**, Chen Cui, Andrew D. Braun, Vijayan K. Asari, Univ. of Dayton (USA) . . . [9408-5]

4:50 pm: **Autonomous color theme extraction from images using saliency**, Ali Jahanian, S. V. N. Vishwanathan, Jan P. Allebach, Purdue Univ. (USA) . . . . . [9408-6]

### Thursday 12 February

#### Session 3

**Location: Continental Ballroom 1 . . . . . Thu 8:50 am to 10:20 am**

#### Image, Video, and Multimedia Analytics III

Session Chair: **Zhigang Fan**, SKR Labs. (USA)

8:50 am: **m-BIRCH: an online clustering approach for multimedia and computer vision applications**, Siddharth K. Madan, Kristin J. Dana, Rutgers, The State Univ. of New Jersey (USA) . . . . . [9408-7]

9:10 am: **Enhanced features for supervised lecture video segmentation and indexing**, Di Ma, Gady Agam, Illinois Institute of Technology (USA) . . . . . [9408-8]

9:30 am: **Characterizing the uncertainty of classification methods and its impact on the performance of crowdsourcing**, Javier Ribera, Khalid Tahboub, Edward J. Delp, Purdue Univ. (USA) . . . . . [9408-9]

9:50 am: **Object tracking on mobile devices using binary descriptors (Invited Paper)**, Andreas E. Savakis, Breton Minnehan, Mohammad Faiz Quraishi, Rochester Institute of Technology (USA) . . . . . [9408-10]

Coffee Break . . . . . Thu 10:20 am to 10:40 am

# Conference 9408 · Location: Continental Ballroom 1

## Session 4

Location: Continental Ballroom 1 . . . Thu 10:40 am to 12:30 pm

### Large-Scale Multimedia Systems

Session Chair: **Qian Lin**, Hewlett-Packard Co. (USA)

10:40 am: **Comparing humans to automation in rating photographic aesthetics** (*Invited Paper*), Ramakrishna Kakarala, Nanyang Technological Univ (Singapore); Sandino Morales, Nanyang Technological Univ. (Singapore); Abhishek Agrawal, Nanyang Technological Univ (Singapore) . . . . . [9408-11]

11:10 am: **Service-oriented workflow to efficiently and automatically fulfill products in a highly individualized web and mobile environment**, Mu Qiao, Shutterfly (USA) . . . . . [9408-12]

11:30 am: **An interactive web-based system using cloud for large-scale visual analytics**, Ahmed S. Kaseb, Everett Berry, Erik Rozolis, Kyle McNulty, Seth Bontrager, Youngsol Koh, Yung-Hsiang Lu, Edward J. Delp III, Purdue Univ. (USA) . . . . . [9408-13]

11:50 am: **Proposed color workflow solution from mobile and website to printing**, Mu Qiao, Shutterfly (USA); Terry Wyse, Shutterfly Inc. (USA) . . . . . [9408-14]

12:10 pm: **On-line content creation for photo products: understanding what the user wants**, Reiner Fageth, CeWe Color AG & Co. OHG (Germany) . . . . . [9408-15]

Lunch Break . . . . . Thu 12:30 pm to 1:50 pm

## Session 5

Location: Continental Ballroom 1 . . . . Thu 1:50 pm to 3:20 pm

### Mobile Multimedia Services and Applications I

Session Chair: **Jan P. Allebach**, Purdue Univ. (USA)

1:50 pm: **Digital imaging for automotive systems: challenges and opportunities** (*Invited Paper*), Buyue Zhang, Texas Instruments Inc (USA) . . . . . [9408-16]

2:20 pm: **Worldview and route planning using live public cameras**, Ahmed S. Kaseb, Wenyi Chen, Ganesh Gingade, Yung-Hsiang Lu, Purdue Univ. (USA) . . . . . [9408-17]

2:40 pm: **Musical examination to bridge audio data and sheet music**, Xunyu Pan, Timothy J. Cross, Liangliang Xiao, Xiali Hei, Frostburg State Univ. (USA) . . . . . [9408-18]

3:00 pm: **Innovating instant image recognition on mobile devices: delectable the social wine app**, Wiley H Wang, Cassio Paes-Leme, Derick Kang, Kevin Farrell, Jevon Wild, Delectable (USA) . . . . . [9408-19]

Coffee Break . . . . . Thu 3:20 pm to 4:00 pm

## Session 6

Location: Continental Ballroom 1 . . . . Thu 4:00 pm to 4:40 pm

### Mobile Multimedia Services and Applications II

Session Chair: **Zhigang Fan**, SKR Labs. (USA)

4:00 pm: **Document image detection for mobile capturing**, Zhigang Fan, SKR Labs (USA) . . . . . [9408-20]

4:20 pm: **A scheme for automatic text rectification in real scene images**, Baokang Wang, Changsong Liu, Xiaoqing Ding, Tsinghua Univ. (China) . . . . . [9408-22]



# Conference 9409 • Location: Continental Ballroom 8

Monday–Wednesday 9–11 February 2015 • Proceedings of IS&T/SPIE Vol. 9409

## Media Watermarking, Security, and Forensics 2015

*Conference Chairs:* **Adnan M. Alattar**, Digimarc Corp. (USA); **Nasir D. Memon**, Polytechnic Institute of New York Univ. (USA); **Chad D. Heitzenrater**, Air Force Research Lab. (USA)

*Program Committee:* **Mauro Barni**, Univ. degli Studi di Siena (Italy); **Sebastiano Battiato**, Univ. degli Studi di Catania (Italy); **Jeffrey A. Bloom**, Sirius XM Satellite Radio (USA); **Scott A. Craver**, Binghamton Univ. (USA); **Marc Chaumont**, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France); **Edward J. Delp III**, Purdue Univ. (USA); **Jana Dittmann**, Otto-von-Guericke-Univ. Magdeburg (Germany); **Gwenaël Doërr**, Technicolor S.A. (France); **Tomas Filler**, Digimarc Corp. (USA); **Jessica Fridrich**, Binghamton Univ. (USA); **Anthony T. S. Ho**, Univ. of Surrey (United Kingdom); **Jiwu Huang**, Sun Yat-Sen Univ. (China); **Ton Kalker**, DTS, Inc. (USA); **Andrew D. Ker**, Univ. of Oxford (United Kingdom); **Matthias Kirchner**, Westfälische Wilhelms-Univ. Münster (Germany); **Alex C. Kot**, Nanyang Technological Univ. (Singapore); **Chang-Tsun Li**, The Univ. of Warwick (United Kingdom); **Pierre Moulin**, Univ. of Illinois at Urbana-Champaign (USA); **Regunathan Radhakrishnan**, Pivotal Systems (USA); **Husrev Taha Sencar**, TOBB Univ. of Economics and Technology (Turkey); **Gaurav Sharma**, Univ. of Rochester (USA); **Yun Qing Shi**, New Jersey Institute of Technology (USA); **Ashwin Swaminathan**, Qualcomm Inc. (USA); **Claus Vielhauer**, Fachhochschule Brandenburg (Germany); **Svyatoslav V. Voloshynovskiy**, Univ. de Genève (Switzerland); **Chang Dong Yoo**, KAIST (Korea, Republic of)

### Monday 9 February

#### Session 1

**Location: Continental Ballroom 8 . . . Mon 8:55 am to 10:10 am**

#### Forensics and Biometric

Session Chair: **Jessica Fridrich**, Binghamton Univ. (USA)

8:55 am: **Exposing photo manipulation from user-guided 3D lighting analysis**, Tiago J. de Carvalho, Cemaden (Brazil); Hany Farid, Dartmouth College (USA); Eric R. Kee, Columbia Univ. (USA) . . . . . [9409-1]

9:20 am: **Thinking beyond the block: block matching for copy-move forgery detection revisited**, Matthias Kirchner, Pascal Schoettle, Westfälische Wilhelms-Univ. Münster (Germany); Christian Riess, Stanford School of Medicine (USA) . . . . . [9409-2]

9:45 am: **The Krusty the Clown attack on model-based speaker recognition systems**, Scott A. Craver, Alireza Farrokhi Baroughi, Binghamton Univ. (USA) . . . . . [9409-3]

Coffee Break . . . . . Mon 10:10 am to 10:30 am

#### Session 2

**Location: Continental Ballroom 8 . . Mon 10:30 am to 12:10 pm**

#### Watermarking in Retail Industry

Session Chair: **Svyatoslav V. Voloshynovskiy**, Univ. de Genève (Switzerland)

10:30 am: **Automation and workflow considerations for embedding Digimarc barcodes at scale**, Sean Calhoon, Don L. Haaga Jr., Tony F. Rodriguez, Digimarc Corp. (USA) . . . . . [9409-4]

10:55 am: **Watermarking spot colors in packaging**, Alastair M. Reed, Tomas Filler, Kristyn R. Falkenstern, Yang Bai, Digimarc Corp. (USA) . . . . . [9409-5]

11:20 am: **Scanning-time evaluation of Digimarc barcode**, Becky Gerlach, Daniel T. Pinard, Matthew Weaver, Adnan M. Alattar, Digimarc Corp. (USA) . . . . . [9409-6]

11:45 am: **Performance evaluation of Digimarc Discover on Google Glass**, Eliot Rogers, Tony F. Rodriguez, John Lord, Adnan M. Alattar, Digimarc Corp. (USA) . . . . . [9409-7]

Lunch Break . . . . . Mon 12:10 pm to 1:45 pm

**Location: Continental Ballroom 8 . . . Mon 1:45 pm to 3:00 pm**

#### Video/Demo and Keynote Session I

Session Chair: **Nasir D. Memon**, Polytechnic Institute of New York Univ. (USA)

1:45 to 2:00 pm: **Video/Demo I**

#### Digimarc: Digital Wallet

2:00 pm: **Piracy conversion: the role of content protection and forensics (Keynote Presentation)**, Richard Atkinson, Adobe Systems (USA) . . . . . [9409-30]

#### Session 3

**Location: Continental Ballroom 8 . . . Mon 3:00 pm to 5:35 pm**

#### Biometric

Session Chair: **Gwenaël Doërr**, Technicolor S.A. (France)

3:00 pm: **Benford's law based detection of latent fingerprint forgeries on the example of artificial sweat printed fingerprints captured by confocal laser scanning microscopes**, Mario Hildebrandt, Otto-von-Guericke-Univ. Magdeburg (Germany); Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) and The Univ. of Buckingham (United Kingdom) . . . . . [9409-8]

Coffee Break . . . . . Mon 3:25 pm to 3:55 pm

3:55 pm: **Capturing latent fingerprints from metallic painted surfaces using UV-VIS spectroscopy**, Andrey Makrushin, Tobias Scheidat, Claus Vielhauer, Fachhochschule Brandenburg (Germany) . . . . . [9409-9]

4:20 pm: **Comparative study of minutiae selection algorithms for ISO fingerprint templates**, Benoît Vibert, Jean-Marie Le Bars, ENSICAEN (France); Christophe M. Charrier, Univ. de Caen Basse-Normandie (France) and ENSICAEN (France); Christophe C. Rosenberger, ENSICAEN (France) . . . . . [9409-10]

4:45 pm: **Detection of latent fingerprints using high resolution 3D confocal microscopy in non-planar acquisition scenarios**, Stefan Kirst, Otto-von-Guericke-Univ. Magdeburg (Germany) and Fachhochschule Brandenburg (Germany); Claus Vielhauer, Fachhochschule Brandenburg (Germany) . . . . . [9409-11]

5:10 pm: **Benchmarking contactless acquisition sensor reproducibility for latent fingerprint trace evidence**, Mario Hildebrandt, Otto-von-Guericke-Univ. Magdeburg (Germany); Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) and The Univ. of Buckingham (United Kingdom) . . . . . [9409-12]

# Conference 9409 · Location: Continental Ballroom 8

## Tuesday 10 February

Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am

### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

Coffee Break . . . . . Tue 9:50 am to 10:10 am

Location: Continental Ballroom 8 . . . Tue 10:10 am to 10:40 am

### Keynote Session II

Session Chair: **Sebastiano Battiato**, Univ. degli Studi di Catania (Italy)

10:10 am: **Steganography: the past ten years (Keynote Presentation)**, Jessica Fridrich, Binghamton Univ. (USA) . . . . . [9409-31]

## Session 4

Location: Continental Ballroom 8 . . . Tue 10:40 am to 12:20 pm

### Steganography and Steganalysis

Session Chair: **Sebastiano Battiato**, Univ. degli Studi di Catania (Italy)

10:40 am: **Design of a steganographic virtual operating system**, Elan Ashendorf, Scott A. Craver, Binghamton Univ. (USA) . . . . . [9409-13]

11:05 am: **Content-adaptive pentary steganography using the multivariate generalized Gaussian cover model**, Vahid Sedighi, Binghamton Univ. (USA); Remi Cogranne, Univ. de Technologie Troyes (France); Jessica Fridrich, Binghamton Univ. (USA) . . . . . [9409-14]

11:30 am: **Towards dependable steganalysis**, Tomas Pevny, Czech Technical Univ. in Prague (Czech Republic); Andrew D. Ker, Univ. of Oxford (United Kingdom) . . . . . [9409-15]

11:55 am: **Deep learning for steganalysis via convolutional neural networks**, Yinlong Qian, Univ. of Science and Technology of China (China); Jing Dong, Wei Wang, Tieniu Tan, Institute of Automation (China) . . . . . [9409-16]

Lunch Break . . . . . Tue 12:20 pm to 1:45 pm

Location: Continental Ballroom 8 . . . . . Tue 1:45 pm to 3:00 pm

### Video/Demo and Keynote Session III

Session Chair: **Gaurav Sharma**, Univ. of Rochester (USA)

1:45 to 2:00 pm: **Video/Demo II**

### Technicolor: Video Watermarking

2:00 pm: **Ultra-high definition, watermark detection, mobile video, and much more: a status report on ATSC 3.0 (Keynote Presentation)**, Jerry Whitaker D.V.M., Madeleine Noland, Advanced Television Systems Committee (USA) . . . . . [9409-32]

Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

## Session 5

Location: Continental Ballroom 8 . . . . . Tue 3:30 pm to 4:45 pm

### Counter Forensics

Session Chair: **Husrev Taha Sencar**, TOBB Univ. of Economics and Technology (Turkey)

3:30 pm: **Counter-forensics in machine learning based forgery detection**, Francesco Marra, Giovanni Poggi, Univ. degli Studi di Napoli Federico II (Italy); Fabio Roli, Univ. degli Studi di Cagliari (Italy); Carlo Sansone, Luisa Verdoliva, Univ. degli Studi di Napoli Federico II (Italy) . . . . . [9409-27]

3:55 pm: **Anti-forensics of chromatic aberration**, Matthew C. Stamm, Drexel Univ. (USA) . . . . . [9409-28]

4:20 pm: **An overview of methods for countering PRNU based source attribution and beyond**, Ahmet E. Dirik, Uludag Univ. (Turkey); Husrev Taha Sencar, TOBB Univ. of Economics and Technology (Turkey); Nasir D. Memon, Polytechnic Institute of New York Univ. (USA) . . . . . [9409-29]

Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm

### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

## Wednesday 11 February

Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am

### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard? (Plenary)**, Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:30 am

## Session 6

Location: Continental Ballroom 8 . . . Wed 10:30 am to 12:10 pm

### Watermarking and Identification

Session Chair: **Andrew D. Ker**, Univ. of Oxford (United Kingdom)

10:30 am: **Disparity estimation and disparity-coherent watermarking**, Hasan Sheikh Faridul, Technicolor (France); Gwenaël Doërr, Séverine Baudry, Technicolor S.A. (France) . . . . . [9409-18]

10:55 am: **Estimating synchronization signal phase**, Robert C. Lyons, John Lord, Digimarc Corp. (USA) . . . . . [9409-19]

11:20 am: **Mobile visual object identification: from SIFT-BoF-RANSAC to Sketchprint**, Sviatoslav V. Voloshynovskiy, Maurits Diephuis, Taras Holotyak, Univ. de Genève (Switzerland) . . . . . [9409-20]

11:45 am: **Analysis of optical variable devices using a photometric light-field approach**, Svorad Štolc, AIT Austrian Institute of Technology GmbH (Austria) and Institute of Measurement Science (Slovakia); Reinhold Huber-Mörk, Daniel Soukup, Branislav Holländer, Kristián Valentín, AIT Austrian Institute of Technology GmbH (Austria) . . . . . [9409-21]

Lunch Break . . . . . Wed 12:10 pm to 1:45 pm

# Conference 9409 · Location: Continental Ballroom 8

Location: Continental Ballroom 8 . . . . Wed 1:45 pm to 3:00 pm

## Video/Demo and Keynote Session IV

Session Chair: **Edward J. Delp III**, Purdue Univ. (USA)

1:45 to 2:00 pm: **Video/Demo III**

### LinkReader and LiveSavannah

2:00 pm: **Do wearables really change anything?** (*Keynote Presentation*), Brian J. Hernacki, Intel Corp. (USA). . . . . [9409-33]

## Session 7

Location: Continental Ballroom 8 . . . . Wed 3:00 pm to 5:35 pm

### Steganalysis

Session Chair: **Scott A. Craver**, Binghamton Univ. (USA)

3:00 pm: **Phase-aware projection model for steganalysis of JPEG images**, Vojtech Holub, Binghamton Univ. (USA) and Digimarc Corp. (USA); Jessica Fridrich, Binghamton Univ. (USA) . . . . . [9409-22]

3:55 pm: **JPEG quantization table mismatched steganalysis via robust discriminative feature transformation**, Likai Zeng, Xiangwei Kong, Ming Li, Yanqing Guo, Dalian Univ. of Technology (China) . . . . . [9409-23]

4:20 pm: **CFA-aware features for steganalysis of color images**, Miroslav Goljan, Jessica Fridrich, Binghamton Univ. (USA) . . . . [9409-24]

4:45 pm: **Segmentation based steganalysis of spatial images using local linear transform**, Ran Wang, Xijian Ping, Tao Zhang, Zhengzhou Information Science and Technology Institute (China) . . . . . [9409-25]

5:10 pm: **Steganalysis of overlapping images**, James M. Whitaker, Andrew D. Ker, Univ. of Oxford (United Kingdom) . . . . . [9409-26]

Location: Continental Ballroom 8 . . . . .5:35 pm to 5:45 pm

### Concluding Remarks

# Conference 9410 • Location: Golden Gate 4

Tuesday–Thursday 10–12 February 2015 • Proceedings of IS&T/SPIE Vol. 9410

## Visual Information Processing and Communication VI

*Conference Chairs:* **Amir Said**, LG Electronics MobileComm U.S.A., Inc. (USA); **Onur G. Guleryuz**, LG Electronics MobileComm U.S.A., Inc. (USA); **Robert L. Stevenson**, Univ. of Notre Dame (USA)

*Program Committee:* **John G. Apostolopoulos**, Hewlett-Packard Labs. (USA); **Vasudev Bhaskaran**, Qualcomm Inc. (USA); **Mireille Boutin**, Purdue Univ. (USA); **Chang Wen Chen**, Univ. at Buffalo (USA); **Gerard de Haan**, Philips Research Nederland B.V. (Netherlands); **Edward J. Delp III**, Purdue Univ. (USA); **Eric Dubois**, Univ. of Ottawa (Canada); **Frederic Dufaux**, Télécom ParisTech (France); **Keigo Hirakawa**, Univ. of Dayton (USA); **Marta Karczewicz**, Qualcomm Inc. (USA); **Lisimachos P. Kondi**, Univ. of Ioannina (Greece); **Janusz Konrad**, Boston Univ. (USA); **Chun-Chieh J. Kuo**, The Univ. of Southern California (USA); **Peyman Milanfar**, Univ. of California, Santa Cruz (USA); **Antonio Ortega**, The Univ. of Southern California (USA); **Thrasyloulos N. Pappas**, Northwestern Univ. (USA); **William A. Pearlman**, Rensselaer Polytechnic Institute (USA); **Fernando Pereira**, Instituto de Telecomunicações (Portugal); **Béatrice Pesquet-Popescu**, Télécom ParisTech (France); **Majid Rabbani**, Eastman Kodak Co. (USA); **Eli Saber**, Rochester Institute of Technology (USA); **Dan Schonfeld**, Univ. of Illinois at Chicago (USA); **Andrew Segall**, Sharp Labs. of America, Inc. (USA); **Gaurav Sharma**, Univ. of Rochester (USA); **Andrew G. Tescher**, AGT Associates (USA); **Anthony Vetro**, Mitsubishi Electric Research Labs. (USA); **John W. Woods**, Rensselaer Polytechnic Institute (USA); **Wenwu Zhu**, Tsinghua Univ. (China)

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging** (*Plenary*), James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

**Location: Continental Ballroom 4 and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm**

#### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Adaptive motion compensation without blocking artifacts**, Timothy B. Terriberry, Mozilla (USA) . . . . . [9410-10]

**Spatial resampling of IDR frames for low bitrate video coding with HEVC**, Brett Hosking, Dimitris Agrafiotis, David R. Bull, Nick Easton, Univ. of Bristol (United Kingdom) . . . . . [9410-22]

**Speed-up keypoint mapping technique by multi-resolution and global information**, Wei Qiao, ZhiGang Wen, Yong Li, Beijing Univ. of Posts and Telecommunications (China) . . . . . [9410-23]

**Building reliable keypoint matches by a cascade of classifiers with resurrection mechanism**, Jing Jing, Yong Li, Wei Qiao, Beijing Univ. of Posts and Telecommunications (China) . . . . . [9410-24]

**Automatic coloring to freehand line drawings in online**, Saori Kurata, Fubito Toyama, Hiroshi Mori, Kenji Shoji, Utsunomiya Univ. (Japan) . . . . . [9410-25]

**Frameless representation and manipulation of image data**, Henry G. Dietz, Univ. of Kentucky (USA) . . . . . [9410-26]

**Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm**

#### Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

### Wednesday 11 February

**Location: Continental Ballroom 5 . . . . . Wed 8:30 am to 9:50 am**

#### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:10 am

#### Session 1

**Location: Golden Gate 4 . . . . . Wed 10:10 am to 12:10 pm**

#### Image Restoration and Deblurring

Session Chair: **Robert L. Stevenson**, Univ. of Notre Dame (USA)

10:10 am: **A new robust method for two-dimensional inverse filtering**, Megan Fuller, Jae S. Lim, Massachusetts Institute of Technology (USA) . . . . . [9410-1]

10:30 am: **Semi-blind deblurring images captured with an electronic rolling shutter mechanism**, Ruiwen Zhen, Robert L. Stevenson, Univ. of Notre Dame (USA) . . . . . [9410-2]

10:50 am: **Predicting chroma from luma with frequency domain intra prediction**, Nathan E. Egge, Mozilla (USA) . . . . . [9410-3]

11:10 am: **Restoration of block-transform compressed images via homotopic regularized sparse reconstruction**, Jeffrey Glaister, Shahid Haider, Alexander Wong, David A. Clausi, Univ. of Waterloo (Canada) . . . . . [9410-4]

11:30 am: **Rain detection and removal algorithm using motion-compensated non-local mean filter**, Byung Cheol Song, Seung Ji Seo, Inha Univ. (Korea, Republic of) . . . . . [9410-5]

11:50 am: **Exploiting perceptual redundancy in images**, Zhenzhong Chen, Hongyi Liu, Wuhan Univ. (China) . . . . . [9410-6]

Lunch Break . . . . . Wed 12:10 pm to 2:00 pm

## Session 2

Location: Golden Gate 4 ..... Wed 2:00 pm to 3:20 pm

### Video Compression

Session Chairs: **Amir Said**, LG Electronics MobileComm U.S.A., Inc. (USA); **Onur G. Guleryuz**, LG Electronics MobileComm U.S.A., Inc. (USA)

2:00 pm: **Video pre-processing with JND-based Gaussian filtering of super-pixels**, Lei Ding, Ronggang Wang, Ge Li, Peking Univ. (China) ..... [9410-7]

2:20 pm: **Perceptual vector quantization for video coding**, Jean-Marc Valin, Mozilla (USA) ..... [9410-8]

2:40 pm: **Adaptive residual DPCM for lossless intra coding**, Xun Cai, Jae S. Lim, Massachusetts Institute of Technology (USA) ..... [9410-9]

3:00 pm: **Arithmetic coding with constrained carry operations**, Abo-Talib Mahfoodh, Michigan State Univ. (USA); Amir Said, LG Electronics MobileComm U.S.A., Inc. (USA) ..... [9410-11]

Coffee Break ..... Wed 3:20 pm to 4:00 pm

## Session 3

Location: Golden Gate 4 ..... Wed 4:00 pm to 5:20 pm

### Video Communications

Session Chairs: **Amir Said**, LG Electronics MobileComm U.S.A., Inc. (USA); **Onur G. Guleryuz**, LG Electronics MobileComm U.S.A., Inc. (USA)

4:00 pm: **Quality optimization of H.264/AVC video transmission over noisy environments using a sparse regression framework**, Katerina Pandremmenou, Nikolaos Tziortziotis, Univ. of Ioannina (Greece); Seethal Paluri, Weiyu Q. Zhang, San Diego State Univ. (USA); Konstantinos Blekas, Lisimachos P. Kondi, Univ. of Ioannina (Greece); Sunil Kumar, San Diego State Univ. (USA) ..... [9410-12]

4:20 pm: **Game theoretic wireless resource allocation for H.264 MGS video transmission over cognitive radio networks**, Alexandros Fragkoulis, Lisimachos P. Kondi, Konstantinos E. Parsopoulos, Univ. of Ioannina (Greece) ..... [9410-13]

4:40 pm: **Secure content delivery using DASH and open eeb standards**, Hari Kalva, Florida Atlantic Univ. (USA); Vishnu Vardhan Chinta, Manipal Univ. (India) ..... [9410-14]

5:00 pm: **A method for ultra fast searching within traffic filtering tables in networking hardware**, Sergey V. Makov, Vladimir I. Marchuk, Alexander I. Serstobitov, Vladimir A. Frantc, Don State Technical Univ. (Russian Federation) ..... [9410-15]

## Thursday 12 February

### Session 4

Location: Golden Gate 4 ..... Thu 8:30 am to 10:30 am

### Image Recognition and Segmentation

Session Chair: **Robert L. Stevenson**, Univ. of Notre Dame (USA)

8:30 am: **A novel framework for automatic trimap generation using the Gestalt laws of grouping**, Ahmad F. Al-Kabbany, Eric Dubois, Univ. of Ottawa (Canada) ..... [9410-16]

8:50 am: **Efficient graph-cut tattoo segmentation**, Joonsoo Kim, Albert Parra, He Li, Edward J. Delp III, Purdue Univ. (USA) ..... [9410-17]

9:10 am: **Contourlet transform based human object tracking**, Manish Khare, Om Prakash, Rajneesh K. Srivastava, Ashish Khare, Univ. of Allahabad (India) ..... [9410-18]

9:30 am: **Saliency-based artificial object detection for satellite images**, Shidong Ke, Xiaoying Ding, Zhenzhong Chen, Wuhan Univ. (China); Yuming Fang, Jiangxi Univ. of Finance and Economics (China) . . [9410-19]

9:50 am: **Quantitative analysis on lossy compression in remote sensing image classification**, Daiqin Yang, Yatong Xia, Zhenzhong Chen, Wuhan Univ. (China) ..... [9410-20]

10:10 am: **Image completion using image skimming**, Ahmad F Al-Kabbany, Eric Dubois, Univ. of Ottawa (Canada) . . . . . [9410-21]

# Conference 9411 • Location: Continental Ballroom 9

Tuesday–Wednesday 10–11 February 2015 • Proceedings of IS&T/SPIE Vol. 9411

## Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications 2015

*Conference Chairs:* **Reiner Creutzburg**, Fachhochschule Brandenburg (Germany); **David Akopian**, The Univ. of Texas at San Antonio (USA)

*Program Committee:* **John Adcock**, FX Palo Alto Lab. (USA); **Sos S. Agaian**, The Univ. of Texas at San Antonio (USA); **Faouzi Alaya Cheikh**, Gjøvik Univ. College (Norway); **Noboru Babaguchi**, Osaka Univ. (Japan); **Nina T. Bhatti**, Hewlett-Packard Labs. (USA); **Chang Wen Chen**, Univ. at Buffalo (USA); **C. L. Philip Chen**, Univ. of Macau (Macao, China); **Tat-Seng Chua**, National Univ. of Singapore (Singapore); **David E. Cook**, Consultant (Namibia); **Matthew L. Cooper**, FX Palo Alto Lab. (USA); **Kenneth J. Crisler**, Motorola, Inc. (USA); **Francesco G. B. De Natale**, Univ. degli Studi di Trento (Italy); **Alberto Del Bimbo**, Univ. degli Studi di Firenze (Italy); **Stefan Edlich**, Technische Fachhochschule Berlin (Germany); **Atanas P. Gotchev**, Tampere Univ. of Technology (Finland); **Alan Hanjalic**, Technische Univ. Delft (Netherlands); **Alexander G. Hauptmann**, Carnegie Mellon Univ. (USA); **Winston H. Hsu**, National Taiwan Univ. (Taiwan); **Gang Hua**, Stevens Institute of Technology (USA); **Catalin Lacatus**, Telcordia Technologies, Inc. (USA); **Xin Li**, West Virginia Univ. (USA); **Qian Lin**, Hewlett-Packard Labs. (USA); **Gabriel G. Marcu**, Apple Inc. (USA); **Vasileios Mezaris**, Informatics and Telematics Institute (Greece); **Chong-Wah Ngo**, City Univ. of Hong Kong (Hong Kong, China); **Sethuraman Panchanathan**, Arizona State Univ. (USA); **Kari A. Pulli**, NVIDIA Corp. (USA); **René Rosenbaum**, Univ. of California, Davis (USA); **Yong Rui**, Microsoft Corp. (China); **Olli Silvén**, Univ. of Oulu (Finland); **John R. Smith**, IBM Thomas J. Watson Research Ctr. (USA); **Hari Sundaram**, Arizona State Univ. (USA); **Jarmo Henrik Takala**, Tampere Univ. of Technology (Finland); **Marius Tico**, Nokia Research Ctr. (Finland); **Meng Wang**, National Univ. of Singapore (Singapore); **Rong Yan**, Facebook Inc. (USA); **Jun Yang**, Facebook Inc. (USA)

### Tuesday 10 February

**Location: Continental Ballroom 5 . . . . . Tue 8:30 am to 9:50 am**

#### Plenary Session and Society Award Presentations

8:30 am: **Analyzing Social Interactions through Behavioral Imaging (Plenary)**, James M. Rehg, Georgia Institute of Technology (USA) . . . . . [9391-500]

**Location: Continental Ballroom 4 and Golden Gate Foyer . . . . . Tue 5:30 pm to 7:00 pm**

#### Interactive Paper Session

*Interactive papers will be placed on display after 10:00 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 7:00 pm. Refreshments will be served.*

**Increasing the security of mobile device usage by Enterprise mobile management systems**, Jenny Knackmuss, Reiner Creutzburg, Fachhochschule Brandenburg (Germany) . . . . . [9411-16]

**Security aspects of mobile medical devices: the case of insulin pumps**, Jenny Knackmuss, Fachhochschule Brandenburg (Germany); Wilfried Pommerien, Städtisches Klinikum Brandenburg (Germany); Reiner Creutzburg, Fachhochschule Brandenburg (Germany) . . . . . [9411-17]

**Semi-automatic generation of multilingual lecture notes: Wikipedia books for algorithms and data structure courses in various languages**, Jenny Knackmuss, Reiner Creutzburg, Fachhochschule Brandenburg (Germany) . . . . . [9411-18]

**Platform-dependent optimization considerations for mHealth applications**, Sahak I. Kaghyan, Institute for Informatics and Automation Problems (Armenia); David Akopian, The Univ. of Texas at San Antonio (USA); Hakob G. Sarukhanyan, Institute for Informatics and Automation Problems (Armenia) . . . . . [9411-19]

**Stroboscopic image in smart phone camera using real time video analysis**, Somnath Mukherjee, Kritikal Solutions Pvt. Ltd. (India); Soumyajit Ganguly, International Institute of Information Technology (India) [9411-20]

**Video quality assessment via gradient magnitude similarity deviation of spatial and spatiotemporal slices**, Peng Yan, Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . [9411-21]

**Fast heap transform-based QR-decomposition of real and complex matrices: algorithms and codes**, Artyom M. Grigoryan, The Univ. of Texas at San Antonio (USA) . . . . . [9411-22]

**Design and development of a prototypical software for semi-automatic generation of test methodologies and security checklists for IT vulnerability assessment in small- and medium-sized enterprises**, Thomas Möller, ASSECOR GmbH (Germany); Knut Kröger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany) . . . [9411-23]

**Optimal color image restoration: Wiener filter and quaternion Fourier transform**, Artyom M. Grigoryan, Sos S. Agaian, The Univ. of Texas at San Antonio (USA) . . . . . [9411-24]

**Fourier transforms with rotations on circles or ellipses in signal and image processing**, Artyom M. Grigoryan, The Univ. of Texas at San Antonio (USA) . . . . . [9411-25]

**Indoor positioning system using WLAN channel estimates as fingerprints for mobile devices**, Erick Schmidt, David Akopian, The Univ. of Texas at San Antonio (USA) . . . . . [9411-26]

**A health messaging system with privacy protection**, Lakshmi Aaleswara, Anthony Chronopoulos, The Univ. of Texas at San Antonio (USA) . . . . . [9411-27]

**Presentation of a web service for video identification based on Identifier techniques**, Silas Luttenberger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany); Björn P. Jónsson, Reykjavik Univ. (Iceland) . . . . . [9411-28]

**An efficient contents-adaptive backlight control method for mobile devices**, Qiao Song Chen, Ya Xing Yan, Xiao Mou Zhang, Hua Cai, Xin Deng, Jin Wang, Chongqing Univ. of Posts and Telecommunications (China) . . . . . [9411-29]

**Local adaptive tone mapping for video enhancement**, Vladimir Lachine, Qualcomm Inc. (Canada); Min Dai, Qualcomm Inc. (USA) . . . . . [9411-30]

#### Location: Continental Ballroom Foyer . . . . . 5:30 pm to 7:30 pm Symposium Demonstration Session

A symposium-wide demonstration session will be open to attendees 5:30 to 7:30 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

# Conference 9411 · Location: Continental Ballroom 9

## Wednesday 11 February

Location: Continental Ballroom 5 . . . . Wed 8:30 am to 9:50 am

### Plenary Session and Conference Award Presentations

8:30 am: **What Makes Big Visual Data Hard?** (*Plenary*), Alexei (Alyosha) Efros, Univ. of California, Berkeley (USA) . . . . . [9391-501]

Coffee Break . . . . . Wed 9:50 am to 10:10 am

### Session 1

Location: Continental Ballroom 9 . . Wed 10:10 am to 10:50 am

#### Mobile Computing

Session Chairs: **Reiner Creutzburg**, Fachhochschule Brandenburg (Germany); **David Akopian**, The Univ. of Texas at San Antonio (USA)

10:10 am: **Practical usefulness of structure from motion point clouds obtained from different consumer cameras**, Patrick Ingwer, Stefan Schön, Stefan Püst, Fabian Gassen, Melanie Duhn, Marten Schällicke, Katja Müller, Eberhard Hasche, Arno Fischer, Reiner Creutzburg, Fachhochschule Brandenburg (Germany) . . . . . [9411-1]

10:30 am: **Sensor data formats supporting energy consumption assessments for smartphone-based M-health applications**, Rodrigo Escobar, David Akopian, Rajendra Boppana, The Univ. of Texas at San Antonio (USA) . . . . . [9411-2]

### Session 2

Location: Continental Ballroom 9 . . Wed 10:50 am to 12:30 pm

#### Emerging Mobile Applications and Enabling Technologies

Session Chair: **Reiner Creutzburg**, Fachhochschule Brandenburg (Germany)

10:50 am: **User-aware video streaming**, Louis Kerofsky, Yuriy A. Reznik, Abhijith Jagannath, InterDigital, Inc. (USA) . . . . . [9411-3]

11:10 am: **Mobile-based text recognition from water quality devices**, Shanti Dhakal, Maryam Rahneemofar, Texas A&M Univ. Corpus Christi (USA) . . . . . [9411-4]

11:30 am: **Depth enhanced and content aware video stabilization**, Albrecht J. Lindner, Kalin Atanassov, Sergio R. Goma, Qualcomm Inc. (USA) . . . . . [9411-5]

11:50 am: **Mobile micro-colorimeter and micro-spectrometer modules as enablers for the replacement of subjective quality checks of optically clear colored liquids by objective quality assurance with smartpads in-field**, Dietrich Hofmann, Technology and Innovation Park Jena (Germany); Paul-Gerald Dittrich, Technology and Innovation Park Jena (Germany); Fred Grunert, MAZeT GmbH (Germany); Jörg Ehehalt, Mathias Reichl, RGB Lasersysteme GmbH (Germany) . . . . . [9411-6]

12:10 pm: **Concept for practical exercises for studying autonomous flying robots in a university environment: part II**, Nils Gageik, Erik Dilger, Sergio Montenegro, Julius-Maximilians-Univ. Würzburg (Germany); Stefan Schön, Reiner Creutzburg, Arno Fischer, Fachhochschule Brandenburg (Germany) . . . . . [9411-7]

Lunch Break . . . . . Wed 12:30 pm to 2:00 pm

### Session 3

Location: Continental Ballroom 9 . . . . Wed 2:00 pm to 3:20 pm

#### Algorithms

Session Chair: **Artyom M. Grigoryan**, The Univ. of Texas at San Antonio (USA)

2:00 pm: **Smartphone-based secure authenticated session sharing in internet of personal things** (*Invited Paper*), Ram Krishnan, Jiwan Ninglekhu, The Univ. of Texas at San Antonio (USA) . . . . . [9411-8]

2:20 pm: **Door and window image-based measurement using a mobile device**, Gady Agam, Guangyao Ma, Manishankar Janakaraj, Illinois Institute of Technology (USA) . . . . . [9411-9]

2:40 pm: **Communication target object recognition for D2D connection with feature size limit**, Jiheon Ok, Yonsei Univ. (Korea, Republic of); Soochang Kim, Young-Hoon Kim, Electronics and Telecommunications Research Institute (Korea, Republic of); Chulhee Lee, Yonsei Univ. (Korea, Republic of) . . . . . [9411-10]

3:00 pm: **Photogrammetric 3D reconstruction using mobile devices**, Dieter Fritsch, Miguel Syll, Univ. Stuttgart (Germany) . . . . . [9411-11]

Coffee Break . . . . . Wed 3:20 pm to 4:00 pm

### Session 4

Location: Continental Ballroom 9 . . . . Wed 4:00 pm to 5:20 pm

#### Mobile Platforms and Algorithms

Session Chair: **David Akopian**, The Univ. of Texas at San Antonio (USA)

4:00 pm: **Toward energy-aware balancing of mobile graphics**, Efstathios Stavrakis, The Cyprus Institute (Cyprus); Marios Polychronis, Univ. of Cyprus (Cyprus); Nectarios Pelekanos, A.R.M.E.S. Ltd. (Cyprus); Alessandro Artusi, The Cyprus Institute (Cyprus) and Univ. de Girona (Spain); Panayiotis Hadjichristodoulou, A.R.M.E.S. Ltd. (Cyprus); Yiorgos Chrysanthou, Univ. of Cyprus (Cyprus) . . . . . [9411-12]

4:20 pm: **Optimized large-capacity content addressable memory (CAM) for mobile devices**, Khader Mohammad, Birzeit Univ. (Palestinian Territory, Occupied) . . . . . [9411-13]

4:40 pm: **Fast retinex for color image enhancement: methods and codes**, Artyom M. Grigoryan, Analysa M. Gonzales, The Univ. of Texas at San Antonio (USA) . . . . . [9411-14]

5:00 pm: **Cross-standard user description in mobile, medical oriented virtual collaborative environments**, Rama Rao Ganji, Mihai Mitrea, Bojan Joveski, Afef Chammem, Télécom SudParis (France) . . . . . [9411-15]

# Index of Authors, Chairs, and Committee Members

## A

- Aaleswara, Lakshmi [9411-27] SPTues  
Acernese, Fausto [9401-18] SPTues  
Achatzi, Julian [9404-5] S2  
Adcock, John 9411 Program Committee  
Adzic, Velibor [9394-9] S1  
**Agaian, Sos S.** 9399 Conference Chair, [9399-16] S5, [9399-17] S5, [9399-32] SPTues, [9399-34] SPTues, [9399-35] SPTues, 9411 Program Committee, [9411-24] SPTues  
Agam, Gady [9401-12] S3, 9402 Program Committee, [9408-8] S3, [9411-9] S3, SC927  
Agrafiotis, Dimitris [9410-22] SPTues  
Agranovsky, Alexy [9397-18] S9, [9397-19] S9  
Aguilera, Julieta C. [9392-4] S1  
Ahlgren, David J. [9406-7] S2  
Ahn, Peter [9403-21] S5  
Ahumada, Albert J. 9394 Program Committee  
**Ajiboye, Sola O.** [9407-19] S4  
**Akar, Gozde Bozdagi** 9399 Program Committee  
Akhtar, Humza [9401-22] SPTues  
Akil, Mohamed 9400 Program Committee, [9400-2] S1  
Akinola, Ireaiyo A. [9404-3] S1  
Akopian, David 9411 Conference Chair, 9411 S1 Session Chair, 9411 S4 Session Chair, [9411-19] SPTues, [9411-2] S1, [9411-26] SPTues  
Akyuz, Ahmet O. [9394-53] SPTues  
Al Hadhrami, Tawfik A. [9400-22] SPTues  
Alam, Md Mushfiqul [9394-18] S3  
**Alam, Mohammad S.** [9405-1] S1  
AlAnazi, Mohammed S. [9403-27] SPTues  
Alattar, Adnan M. 9409 Conference Chair, [9409-6] S2, [9409-7] S2  
Alaya Cheikh, Faouzi [9396-6] S1, 9411 Program Committee  
Albanese, Patricia 9408 Program Committee  
Alcaraz-Calero, Jose [9400-23] SPTues  
Aldosary, Abdullah F. [9403-27] SPTues  
Aleksic, Milivoje [9395-28] S5, [9395-29] S5  
Alghamdi, Abdulrahman S. [9403-27] SPTues  
Ali, Ehsan A. [9400-31] SPTues, [9407-31] S7  
**Ali, Murtaza** [9399-8] S2  
Al-Kabbany, Ahmad F. [9410-16] S4, [9410-21] S4  
Allebach, Jan P. 9394 Program Committee, [9394-30] S6, [9394-45] SPTues, 9395 Program Committee, [9395-11] S2, [9395-19] S3, [9395-4] S1, [9395-6] S2, [9396-12] SKey, [9396-14] S4, [9396-15] S4, [9396-16] S5, [9396-18] S5, [9396-19] S5, 9398 Program Committee, 9398 S4 Session Chair, 9408 Conference Chair, 9408 S2 Session Chair, 9408 S5 Session Chair, [9408-2] S1, [9408-3] S2, [9408-6] S2  
Allili, Madjid 9397 Program Committee  
Allison, Robert S. [9391-23] S6  
Alpaslan, Zahir Y. [9391-12] S4, [9391-14] S4, [9391-29] S8  
**AlRegib, Ghassan** [9394-48] SPTues, 9407 Program Committee, 9407 S5 Session Chair  
Alukaidey, Talib A. A. S. [9407-5] S1  
Aly, Hussein A. [9400-30] SPTues  
Ammar, Marwa [9394-29] S6  
Amornraksa, Thumrongrat [9401-14] S3  
An, Jungkwuen [9391-1] S1  
Anabtawi, Nijad [9405-33] SPTues, [9405-34] SPTues, [9407-18] S4  
Andersen, Jakob Dahl [9396-28] S7  
Andrén, Börje [9394-46] SPTues  
Andrews, Mark [9406-12] S4  
Antani, Sameer K. 9402 Program Committee  
Aoki, Naokazu [9394-43] SPTues  
Aoki, Yoshimitsu [9405-20] S5  
Apostolopoulos, John G. 9410 Program Committee  
**Arai, Jun** [9391-34] S9, [9391-4] S2  
Arikan, Can Ates [9398-28] S5  
Artmann, Uwe [9404-18] S2, [9404-18] S6, SC1058  
Artusi, Alessandro [9411-12] S4  
**Artusio-Glimpse, Alexandra B.** [9401-11] S3  
Asami, Tetsuya [9403-1] S1  
**Asari, Vijayan K.** [9405-1] S1, 9407 Program Committee, 9407 S3 Session Chair, [9407-23] S5, [9407-24] S5, 9408 Program Committee, [9408-1] S1, [9408-5] S2  
Ashendorf, Elan [9409-13] S4  
Assoum, Ammar [9406-13] S4  
**Astola, Jaakko T.** [9394-16] S3  
Atanassov, Kalin [9396-8] S2, [9396-8] S6, [9411-5] S2  
Atkinson, Richard [9409-30] SKey  
Atsuta, Daiki [9391-22] S6  
Aubretton, Olivier [9393-11] S4  
Audenaert, Jan [9398-12] S2  
Avery, Michael [9398-27] S5  
Ayyesh, Muna [9399-36] SPTues
- B**
- Baar, Teun [9398-29] S5, [9398-31] S5, [9398-32] S5  
Baasantseren, Ganbat [9391-41] SPTues  
Baba, Kaori [9398-4] S1  
Babaei, Vahid [9395-16] S3  
Babaguchi, Noboru 9411 Program Committee  
Babino, Giovanni [9401-18] SPTues  
Bada, Adedayo A. [9400-23] SPTues  
Bae, Myunghan [9403-23] S5  
Bae, Sung-Ho [9401-21] SPTues  
Baek, Eu-Ttuem [9406-24] SPTues  
Baek, Jongduk [9405-27] SPTues  
Baek, Jongsang [9396-11] S3, [9396-11] S7, [9396-39] S10  
Baek, Sangwook [9391-25] S7  
Baek, Ye Seul [9395-44] S8  
Bagnall, Bryan [9407-32] S7  
Baharav, Zachi I. [9405-23] S6  
Bai, Yang [9409-5] S2  
Bak, Slawomir [9399-24] S4  
Bakke, Thor [9393-9] S3  
Bala, Raja 9407 Program Committee  
Balas, Benjamin [9394-14] S2, [9394-14] S3  
Bang, Duhyeon [9394-44] SPTues  
Banissi, Ebad [9397-16] S8  
Baqai, Farhan A. 9407 Program Committee  
Barbier, Justine [9398-26] S4  
Barjean, Kinia [9403-16] S3, [9403-29] S2  
Barla, Pascal [9398-7] S1  
**Barney Smith, Elisa H.** 9402 Program Committee, 9407 Program Committee  
Barni, Mauro 9409 Program Committee  
Barone, Fabrizio [9401-18] SPTues  
Barrera, Junior 9399 Program Committee  
Barrett, William A. 9402 Program Committee, 9402 S5 Session Chair, [9402-6] S2, [9402-8] S2  
Barseghyan, Rafayel [9399-34] SPTues  
Barth, Erhardt 9394 Program Committee, 9404 Program Committee  
Bartlett, Paul [9398-27] S5  
Bartmann, Roland [9393-21] SPTues  
Bartram, Lyn [9394-38] S8  
Baskurt, Atilla M. 9393 Program Committee  
Battaile, Kevin [9401-7] S2  
Battiatto, Sebastiano [9393-19] S5, [9393-3] S1, [9399-11] S3, 9404 Conference CoChair, 9404 S1 Session Chair, 9409 Program Committee, 9409 S4 Session Chair, 9409 SKey Session Chair, SC1048  
Battisti, Federica [9396-32] S8, [9399-33] SPTues, [9399-41] SPTues  
Baudry, Séverine [9409-18] S6  
Bauer, Peter [9395-6] S2, [9396-14] S4  
Bech, Soren [9396-28] S7  
Becker, Barry G. 9397 Program Committee  
Beghdadi, Azeddine [9396-6] S1, [9407-22] S5  
Belcour, Laurent [9398-7] S1  
Bender, Walter R. 9394 Program Committee  
Beneseva, Wanda [9406-21] S6  
Benitez, Hernan Dario [9396-31] S8  
Benois-Pineau, Jenny 9399 Program Committee  
Benoit-Cattin, Hugues 9393 Program Committee  
Beppu, Naoto [9391-2] S1
- Berkner, Kathrin 9402 Program Committee, 9404 Program Committee  
Bernad, Berta [9398-13] S2  
Bernard, Jürgen [9397-13] S6, [9397-21] S10  
Bernardes, Thiago [9392-6] S2  
Berns, Roy S. [9398-2] S1  
Berry, Everett P. [9408-13] S4  
Bertalmio, Marcelo [9394-26] S5, [9394-50] SPTues  
Bertamio, Marcelo [9396-41] S10  
Besbes, Mondher [9398-30] S5  
Bethel, E. Wes 9397 Conference CoChair, 9397 S5 Session Chair  
Bevilacqua, Alessandro 9407 Program Committee  
**Beyerer, Jürgen** [9405-25] S6, [9405-6] S2  
Bharam, Vishal [9406-7] S2  
Bhaskaran, Vasudev 9410 Program Committee  
Bhattacharya, Bhaskar [9392-15] S4  
Bhatti, Nina T. 9411 Program Committee  
Biasotti, Silvia 9393 Program Committee  
Bideault, Gautier [9402-13] S4, [9402-14] S4  
Bier, Stephen M. [9394-42] SPTues  
Bignon, Thibault [9398-16] S2  
Bilissi, Efthimia [9396-22] S6, [9396-33] S8  
Bingham, Philip R. 9405 Program Committee  
Birch, Philip 9407 Program Committee, [9407-19] S4  
Biswas, Baishik [9400-32] SPTues  
Blahová, Jana [9396-25] S7, [9398-21] S2, [9398-21] S3, [9398-31] S5  
Blasinski, Henryk [9404-2] S1  
Blekas, Konstantinos [9410-12] S3  
Bloom, Jeffrey A. 9409 Program Committee  
**Blouke, Morley M.** 9403 Program Committee  
Bockenbach, Olivier [9399-8] S2  
Bodegom, Erik 9403 Program Committee  
Boev, Atanas R. [9399-41] SPTues  
Bohan, Dave [9395-8] S2  
Boher, Pierre M. [9398-16] S2  
Boitard, Ronan [9394-52] SPTues  
Boll, Susanne C. 9408 Program Committee  
Bondarev, Egor Yavor [9399-23] S4, [9399-25] S4, [9399-43] SPTues, [9407-21] S5  
Bonifazi, Giuseppe [9403-26] SPTues, [9405-35] SPTues  
Bonnard, Rémi [9403-3] S1  
Bonnet, Gerhard [9404-5] S2  
Bonnier, Nicolas 9396 Program Committee  
Bontrager, Seth [9408-13] S4  
Boonsuk, Wutthigrai [9391-47] SPTues  
Bopardikar, Ajit S. 9404 Program Committee  
Boppana, Rajendra [9411-2] S1  
Boracchi, Giacomo 9399 Program Committee  
Borrel, Paul [9394-35] S7
- Bors, Adrian G. 9393 Program Committee  
Bosch, Carl M. [9401-10] S2  
Bosch, Carles [9398-7] S1  
Botella, Guillermo 9400 Program Committee, [9400-1] S1, [9400-18] SPTues  
Böttcher, Hendrik [9393-13] S4  
Bouakaz, Saida 9393 Program Committee  
Bouchain, Pierre [9403-15] S3  
**Bouman, Charles A.** [9395-6] S2, 9401 Conference Chair, 9401 S1 Session Chair, 9401 S2 Session Chair, 9401 S3 Session Chair  
Boushey, Carol J. [9401-6] S1  
Boutin, Mireille 9410 Program Committee  
Bouville, Thomas [9402-9] S3  
Bouzidi, Ines [9396-5] S1  
**Bovik, Alan C.** [9394-15] S3  
Boyles, Michael J. [9392-8] S2  
Bradburn, Brent [9401-15] S3  
Braithwaite, Billy [9399-2] S1  
**Brankov, Jovan G.** [9401-1] S1  
Brath, Richard [9397-16] S8  
Braun, Andrew D. [9408-5] S2  
Bremond, Francois [9399-24] S4  
Brettel, Hans [9398-29] S5  
Breuel, Thomas M. [9402-15] S4  
Bricker, Stephen E. [9401-8] S2  
Brill, Michael H. 9394 Program Committee  
Broeksema, Bertjan [9397-15] S7  
Broggi, Alberto 9407 Program Committee  
Brunessaux, Stephan [9402-13] S4  
Brunnström, Kjell E. [9394-4] S1, [9394-46] SPTues  
Brunton, Alan [9398-28] S5  
Bucio-Ramirez, Ari [9400-17] SPTues  
Bull, David R. [9410-22] SPTues  
Burns, Peter D. 9396 Program Committee, 9396 S6 Session Chair, [9396-9] S2, [9396-9] S6, SC807  
Burton, Paul [9407-13] S3  
Busch, Hannah [9402-4] S1  
Bustos, Benjamin 9393 Program Committee
- C**
- Cahill, Nathan D. [9405-12] S3, [9405-38] SPTues  
Cai, Hua [9411-29] SPTues  
Cai, Xun [9410-9] S2  
Cai, Yang 9407 Program Committee  
Calhoon, Sean [9409-4] S2  
Callet, Patrick [9398-3] S1, [9403-10] S2  
Camp, David [9397-18] S9  
Campos Acosta, Joaquin [9398-13] S2  
Cao, Frédéric 9404 Program Committee  
Cao, Hongliu [9402-9] S3  
Cao, Huaigu [9402-12] S3  
Cao, Xuan [9391-13] S4  
Cao, Yi [9397-7] SKey  
Carli, Marco [9396-32] S8, [9399-33] SPTues, [9399-41] SPTues



# Index of Authors, Chairs, and Committee Members

- Carlssohn, Matthias F. 9400  
Conference Chair, 9400 S3  
Session Chair
- Carmona-Galán, Ricardo A.  
[9400-19] SPTues, [9403-17]  
S4
- Carothers, Matthew T. [9400-  
12] S3
- Cartwright, Luke [9398-5] S1
- Casasent, David** 9406  
Conference Chair, 9406  
S1 Session Chair, 9406 S2  
Session Chair
- Catrysse, Peter B.** 9404  
Program Committee
- Cave, Kyle R. [9391-11] S3
- Cazier, Anthony [9398-26] S4,  
[9398-30] S5
- Celebi, M. Emre** 9400 Program  
Committee
- Cernea, Daniel [9397-8] S4
- Ceron-Correa, Alexander [9406-  
18] S5
- Chakrabarti, Indrajit [9400-32]  
SPTues
- Chambah, Majed 9396 Program  
Committee
- Chammem, Afef [9411-15] S4
- Chanda, Bhabatosh [9402-24]  
S6
- Chandler, Damon M. 9394  
Program Committee, 9394  
S1 Session Chair, 9394 S3  
Session Chair, [9394-18] S3
- Chandna, Swati [9402-4] S1
- Chang, Benjamin C. [9392-9] S2
- Chang, Chih-Hsiang [9400-7]  
S2
- Chang, Remco [9397-6] S3
- Chang, Yuchun [9403-19] S4,  
[9403-20] S4, [9403-25]  
SPTues, [9403-4] S1
- Chao, Calvin 9403 Program  
Committee
- Chao, Zhang [9403-12] S3
- Chapdelaine, Claude [9405-36]  
SPTues
- Chapman, Glenn H.** 9403  
Program Committee, [9403-  
28] SPTues
- Charbon, Edoardo [9403-12] S3
- Charrier, Christophe M.  
[9393-12] S4, [9396-36] S9,  
[9409-10] S3
- Chatelain, Clément [9402-13]  
S4, [9402-14] S4
- Chatwin, Christopher [9407-19]  
S4
- Chaudhury, Saurabh [9396-3]  
S1
- Chaumont, Marc 9409 Program  
Committee
- Chavel, Pierre H.** [9398-30] S5
- Chen, C. L. Philip 9411 Program  
Committee
- Chen, Chang Wen** 9410  
Program Committee, 9411  
Program Committee
- Chen, Guoning 9397 Program  
Committee, 9397 S4 Session  
Chair, [9397-17] S9
- Chen, Heng [9399-14] S3
- Chen, Homer H. [9404-21]  
SPTues
- Chen, Jia [9405-13] S4
- Chen, Kai [9402-2] S1
- Chen, Kai-Ming** [9399-6] S1
- Chen, Qian [9404-23] SPTues
- Chen, Qiao Song [9411-29]  
SPTues
- Chen, Qingshuang [9401-14] S3
- Chen, Shouqian [9396-7] S2,  
[9396-7] S6
- Chen, Teng [9403-25] SPTues
- Chen, Wenyi [9408-17] S5
- Chen, Xu [9399-5] S1
- Chen, Yi-Ting [9395-19] S3
- Chen, Yuxu [9394-20] S4
- Chen, Yung-Yao [9399-6] S1
- Chen, Zhenzhong [9410-19] S4,  
[9410-20] S4, [9410-6] S1
- Cheng, Dewen** [9391-27] S7
- Cheremkhin, Pavel A.** [9406-  
25] SPTues
- Chernoff, Gerrit [9392-1] S1
- Chestak, Sergey [9391-18] S5
- Chevobbe, Stéphane [9400-9]  
S2, [9403-15] S3
- Chiang, Yi-Jen 9397 Program  
Committee
- Childs, Hank 9397 Program  
Committee, [9397-18] S9,  
[9397-6] S3
- Chinta, Vishnu Vardhan [9410-  
14] S3
- Chiu, Wei-Yao [9406-2] S1
- Cho, Hyunsu [9406-7] S2
- Cho, Seong-Woo [9391-18] S5
- Cho, Wanhyun [9405-31]  
SPTues
- Choe, Jeehyun [9401-14] S3
- Choe, Junsuk [9401-19] SPTues
- Choi, Bong-Seok [9395-7] S2
- Choi, Byoung-Soo [9403-23] S5
- Choi, Chil-Sung [9391-1] S1
- Choi, Eunjung [9403-21] S5
- Choi, Jae-Seok [9401-21]  
SPTues
- Choi, Kyoung Ho [9392-21]  
SPTues
- Choi, Kyungah [9395-30] S5
- Choi, Pyung [9403-23] S5
- Choo, Jaegul 9397 Program  
Committee
- Choudhury, Anustup [9404-24]  
SPTues
- Christopher, Lauren A.** 9404  
Program Committee
- Chronopoulos, Anthony [9411-  
27] SPTues
- Chrysanthou, Yiorgos [9411-12]  
S4
- Chu, Jiaru** [9391-46] SPTues
- Chua, Pei Ying** [9394-55]  
SPTues
- Chua, Tat-Seng 9411 Program  
Committee
- Chuang, Jen-Hui [9407-35]  
SPTues
- Chung, U-In [9391-1] S1
- Ciftci, Serdar [9394-53] SPTues
- Civitate, Anthony [9392-1] S1
- Clausi, David A. [9406-9] S3,  
[9410-4] S1
- Clausing, Eric [9393-5] S2
- Clawson, Robert [9402-8] S2
- Cogranne, Remi [9409-14] S4
- Cohen, Rafi [9402-16] S4
- Collomb-Patton, Véronique  
[9398-16] S2
- Colombet, Florent [9392-5] S1
- Contreras, Kevin** [9403-29] S2
- Cook, David E. 9411 Program  
Committee
- Cooper, Brian E. [9396-17] S5
- Cooper, Matthew L. 9411  
Program Committee
- Coppel, Ludovic G. [9395-13]  
S3
- Cornil, Maël [9397-15] S7
- Costa, Henrik [9392-6] S2
- Cotret, Pascal [9400-9] S2
- Cottam, Joseph A. 9397  
Program Committee
- Couâsnon, Bertrand 9402  
Program Committee
- Couch, Matthew [9397-11] S5
- Cox, Brittany D. [9398-2] S1
- Craver, Scott A. 9409 Program  
Committee, 9409 S7 Session  
Chair, [9409-13] S4, [9409-3]  
S1
- Creusen, Ivo M. [9407-26] S6,  
[9407-7] S2
- Creutzburg, Reiner** 9399  
Program Committee, 9411  
Conference Chair, 9411  
S1 Session Chair, 9411 S2  
Session Chair, [9411-1] S1,  
[9411-16] SPTues, [9411-17]  
SPTues, [9411-18] SPTues,  
[9411-23] SPTues, [9411-28]  
SPTues, [9411-7] S2
- Crisler, Kenneth J. 9411  
Program Committee
- Cross, Timothy J. [9408-18] S5
- Crouser, R. Jordan [9397-6] S3
- Cruz-Neira, Carolina [9392-10]  
S2, [9392-3] S1
- Cui, Chen [9408-5] S2
- Cui, Luke C. 9396 Program  
Committee
- Cui, Shuang [9403-25] SPTues
- Cyganek, Boguslaw [9400-29]  
SPTues
- Cyganek, Boguslaw [9400-27]  
SPTues
- Cyriac, Praveen [9394-50]  
SPTues
- D**
- da Silva, Eduardo 9393  
Program Committee
- Dafflon, Baptiste [9405-4] S1
- Dai, Min [9411-30] SPTues
- Daley, Wayne D. [9407-12] S3
- Dalton, John C. 9394 Program  
Committee
- Daly, Scott J. 9394 Program  
Committee, [9394-2] S1,  
9395 Program Committee
- Dana, Kristin J. [9408-7] S3
- Dang, Philip P. 9400 Program  
Committee
- Danko, Amanda S.** [9405-37]  
SPTues
- Dao, Vu Truong Son [9403-  
12] S3
- Daoudi, Mohamed 9393  
Program Committee
- Darmont, Arnaud** 9403  
Program Committee, SC967
- Darouich, Mehdi [9400-9] S2
- Darsi, Alekhya [9400-10] S2
- Das, Amit Kumar [9402-24] S6
- Dashdavaa, Erkhembaatar  
[9391-36] S10
- Date, Munekazu [9391-7] S2
- Daval, Vincent [9393-11] S4
- Davies, Andrew G. [9399-13]  
S3, [9399-14] S3, [9399-26]  
S4, [9399-28] S4
- Davies, Roy 9400 Program  
Committee
- Davis, Brian L. [9402-6] S2
- de Carvalho, Tiago Jose [9409-  
1] S1
- De Giorgi, Igino [9401-18]  
SPTues
- de Haan, Gerard 9410 Program  
Committee
- de la Barré, René [9391-32] S9,  
[9393-21] SPTues
- De Moor, Katrien [9394-46]  
SPTues
- De Natale, Francesco G. B.  
9411 Program Committee
- de Ridder, Huib 9394  
Conference Chair, 9394  
S1 Session Chair, 9394 S6  
Session Chair, 9394 SKey  
Session Chair, [9394-22] S4,  
[9394-54] SPTues
- de Sande, Francisco [9400-18]  
SPTues
- de With, Peter H. N.** [9399-  
25] S4, [9399-43] SPTues,  
9407 Program Committee,  
[9407-20] S5, [9407-21] S5,  
[9407-25] S6, [9407-26] S6,  
[9407-27] S6, [9407-7] S2
- De, Paramita [9402-24] S6
- Deboos, Alexis [9398-30] S5
- Deegan, Brian M. [9403-14] S3
- Degirmenci, Soysal [9401-10]  
S2
- Déjean, Hervé 9402 Program  
Committee
- Dekker, Niels [9398-21] S2,  
[9398-21] S3
- Del Bimbo, Alberto 9411  
Program Committee
- del Río, Rocio [9400-19]  
SPTues
- Delgado, Blanca [9407-17] S4
- Delp, Edward J.** [9401-14] S3,  
[9401-6] S1, [9407-17] S4,  
[9408-13] S4, [9408-4] S2,  
[9408-9] S3, 9409 Program  
Committee, 9409 SKey  
Session Chair, 9410 Program  
Committee, [9410-17] S4
- den Brok, Dennis [9398-14] S2,  
[9398-9] S1
- Deng, Fuqin [9405-13] S4
- Deng, Jiangwen [9405-13] S4
- Deng, Xin [9411-29] SPTues
- Denman, Hugh SC1049,  
SC1157
- Denny, Patrick E. [9403-14] S3
- Denoual, Thomas [9392-5] S1
- Derhak, Maxim W. [9395-20] S4
- Désage, Simon-Frédéric [9398-  
20] S2, [9398-20] S3
- Dever, Barry [9403-14] S3
- Dhakal, Shanti [9411-4] S2
- Dianat, Sohail A. 9407 Program  
Committee
- Dias, Morgado [9403-5] S1
- DiBella, James A. 9403  
Program Committee
- Diep, Daniel [9393-1] S1
- Diephuis, Maurits [9409-20] S6
- Dietz, Henry Gordon** 9404  
Program Committee, [9404-  
20] S3, [9404-20] S7, [9410-  
26] SPTues
- Dik, Joris [9398-32] S5
- Dilger, Erik [9411-7] S2
- Ding, Lei [9410-7] S2
- Ding, Lei [9403-8] S2
- Ding, Ning [9403-20] S4
- Ding, Xiaoping 9402 Program  
Committee, [9405-24] S6,  
[9408-22] S6
- Ding, Xiaoying [9410-19] S4
- Dirik, Ahmet [9409-29] S5
- Dittmann, Jana 9409 Program  
Committee, [9409-12] S3,  
[9409-8] S3
- Dittrich, Paul-Gerald [9411-6]  
S2
- Dodgson, Neil A. 9391 Program  
Committee
- Doërr, Gwenaël 9409 Program  
Committee, 9409 S3 Session  
Chair, [9409-18] S6
- Dokkeberg, Christopher André  
[9396-24] S7
- Dolinsky, Margaret 9392  
Conference Chair, 9392  
S2 Session Chair, 9392 S4  
Session Chair
- Domingues, Diana G. [9392-6]  
S2
- Dominguez-Castro, Rafael  
[9403-24] S5
- Dong, Jing [9409-16] S4
- Dong, Xuanliang [9400-4] S1
- Donnelly, Nicholas [9391-11] S3
- Doré, Graham [9396-33] S8
- Dörksen, Helene [9405-7] S2
- Dornaika, Fadi [9406-13] S4,  
[9406-17] S5
- Drott, Anton [9394-46] SPTues
- Dubbelman, Gijis [9407-20] S5,  
[9407-27] S6
- Dubnov, Shlomo [9392-16] S4
- Dubnov, Tammuz [9392-16] S4
- Dubois, Eric [9395-2] S1, 9410  
Program Committee, [9410-  
16] S4, [9410-21] S4
- Dubois, Jerome [9403-18] S4
- Duckstein, Bernd [9393-21]  
SPTues
- Dufaux, Frederic** 9410  
Program Committee
- Duhn, Melanie [9411-1] S1
- Dunn, Kenneth W. [9408-4] S2
- Dunne, Bruce [9403-22] S5
- Dupont, Florent 9393 Program  
Committee
- Dupret, Antoine 9403  
Conference Chair, 9403 S4  
Session Chair, [9403-16] S3
- Dutta, Pranab K. [9400-32]  
SPTues
- Dyer, Jamie [9397-27] SPTues
- E**
- Eaglin, Todd [9397-3] S1
- Eastgate, Richard M. [9391-8]  
S3
- Easton, Nick [9410-22] SPTues
- Easton, Roger L.** [9401-15] S3
- Ebert, Achim [9397-8] S4
- Ebner, Thomas [9393-21]  
SPTues
- Ebrahimi, Touradj** [9394-53]  
SPTues
- Eda, Kentaro [9403-1] S1
- Edlich, Stefan 9411 Program  
Committee
- Efros, Alexei (Alyosha) [9391-  
501] SPlen2
- Egawa, Yoshitaka [9403-1] S1
- EGge, Nathan E. [9410-3] S1
- Egiazarian, Karen [9394-16]  
S3, 9399 Conference Chair,  
9399 S1 Session Chair, 9399  
S5 Session Chair, [9399-18]  
S5, [9399-21] S6, [9399-29]  
SPTues, [9399-7] S2
- Ehehalt, Jörg [9411-6] S2
- Ehrhart, Matthias [9405-19] S5
- Eid, Ahmed H. [9396-17] S5
- Einakian, Sussan 9397 Program  
Committee
- El-Ghoroury, Hussein S.  
[9391-12] S4, [9391-14] S4,  
[9391-29] S8
- Elkhuizen, Willemijn S. [9398-  
32] S5
- El-Sana, Jihad A. [9402-16] S4
- Embley, David W. [9402-21] S6
- Emori, Takaaki [9391-43]  
SPTues

# Index of Authors, Chairs, and Committee Members

Engelke, Ulrich 9394 Program Committee, [9394-49] SPTues  
Erdenabat, Munkh-Uchral [9391-36] S10  
Erhan, Can [9406-6] S2  
**Eschbach, Reiner** 9395  
Conference Chair, 9395 S1  
Session Chair  
Escobar, Rodrigo [9411-2] S1  
Essoukri Ben Amara, Najoua [9402-3] S1  
Etemadpour, Ronak [9394-34] S7, [9397-20] S10  
**Etoh, Takeharu Goji** [9403-12] S3  
Ettori, Dominique [9403-16] S3, [9403-29] S2  
Evey, Curtis [9398-22] S2, [9398-22] S3  
Evtikhiev, Nikolay N. [9406-25] SPTues

## F

**Fageth, Reiner** 9408 Program Committee, [9408-15] S4  
Fairchild, Mark D. [9394-25] S5, 9396 Program Committee, [9398-15] S2  
**Falkenstern, Kristyn R.** [9409-5] S2  
Fan, Charles [9398-22] S2, [9398-22] S3  
Fan, Chunxiao [9405-29] SPTues  
Fan, Wei [9402-19] S5  
**Fan, Zhigang** 9408 Conference Chair, 9408 S3 Session Chair, 9408 S6 Session Chair, [9408-20] S6  
Fan, Zhigang [9396-7] S2, [9396-7] S6  
Fang, Jennifer [9397-26] SPTues  
Fang, Yuming [9410-19] S4  
Farias, Mylène C. Q. [9393-10] S3, [9394-31] S6, [9404-25] SPTues  
Farid, Hany [9409-1] S1  
Farinella, Giovanni Maria [9393-3] S1, SC1048  
Farnand, Susan P. 9396 Program Committee, 9396 S4 Session Chair, 9398 Program Committee  
Farrell, Joyce E. Symposium Committee, 9404  
Conference CoChair, 9404 S5 Session Chair, [9404-2] S1  
Farrell, Kevin [9408-19] S5  
**Farrokh Baroughi, Alireza** [9409-3] S1  
Farup, Ivar [9395-40] S8, [9395-43] S8, [9396-24] S7, [9398-18] S2  
Fassold, Hannes [9400-6] S1  
Fath, Elaine [9392-11] S3  
Fauster, Ewald 9405 Program Committee  
Fauvet, Eric [9393-7] S3  
Favalora, Gregg E. 9391 Conference Chair, 9391 S3 Session Chair, 9391 S8 Session Chair, 9391 SKey Session Chair  
Favaro, Paolo 9404 Program Committee  
Favrelière, Hugues [9398-20] S2, [9398-20] S3

Fecker, Daniel 9405 Program Committee  
**Fedorovskaya, Elena A.** 9394 Program Committee  
Feith, Werner [9405-39] SPTues  
Feng, Jixiong [9402-11] S3  
Feng, Weijia [9406-11] S3, [9406-15] S4, [9406-23] S6  
Feng, Xiao-Fan [9399-5] S1  
Fernández-Berni, Jorge [9400-19] SPTues  
Fernandez-Maloigne, Christine [9396-36] S9  
Ferrero, Alejandro [9398-13] S2  
**Ferwerda, James A.** 9394 Program Committee, 9398 Program Committee  
Ferzli, Rony [9405-33] SPTues, [9405-34] SPTues, [9407-18] S4  
**Fiete, Robert D.** 9396 Program Committee, 9404 Program Committee  
Filip, Jiri [9398-25] S4  
Filler, Tomas 9409 Program Committee, [9409-5] S2  
Fineman, Ben [9392-19] SPTues  
Finlayson, Graham D. [9396-30] S8  
Fischer, Arno [9411-1] S1, [9411-7] S2  
Fischer, Gregor [9404-5] S2  
Fischer, Robert [9393-25] SPTues  
Fishbain, Barak 9400 Program Committee  
Fisunov, Alexander V. [9399-21] S6  
Fleming, Roland W. [9394-24] S4, [9398-1] SKey  
Floeder, Steven P. 9405 Program Committee  
Fodor, Petru S. [9401-4] S1  
Fofi, David 9405 Program Committee  
Foi, Alessandro 9399 Program Committee  
Forbes, Angus Graeme [9394-34] S7, [9397-20] S10  
Forchhammer, Søren O. [9395-3] S1, [9396-28] S7  
Fores Herranz, Adria [9398-15] S2  
Foroosh, Hassan 9407 Program Committee  
Foss, Alexander [9391-8] S3  
Fothergill, Roberta [9396-15] S4  
Foucher, Samuel [9405-36] SPTues  
Fournier, Jérôme [9391-21] S6, [9396-34] S8  
**Fowler, Boyd A.** 9403 Program Committee, 9404 Conference CoChair  
Fragkoulis, Alexandros [9410-13] S3  
Frank, Tal [9395-19] S3  
**Frantc, Vladimir A.** [9399-29] SPTues, [9410-15] S3  
Frei, Regina [9398-27] S5  
Frelin, Fabrice [9398-20] S2, [9398-20] S3  
Fremuth, Anthony [9394-9] S1  
Frend, Chauncey E. [9392-8] S2  
Fridrich, Jessica 9409 Program Committee, 9409 S1 Session Chair, [9409-14] S4, [9409-22] S7, [9409-24] S7, [9409-31] SKey  
Fritsch, Dieter [9411-11] S3  
Fritz, Alexander [9404-22] SPTues

Frosio, Iuri [9399-7] S2  
**Fry, Edward W. S.** [9396-20] S6  
**Fu, Songping** [9402-22] S6  
Fuchs, Philippe [9403-10] S2  
Fujii, Toshiaki [9391-42] SPTues, [9391-43] SPTues, [9393-15] S5  
Fujimoto, Keisuke [9406-16] S5  
Fujita, Shu [9393-27] SPTues, [9399-19] S6  
Fukunishi, Munenori [9404-2] S1  
Fukushima, Norishige [9393-27] SPTues, [9399-19] S6  
Fuller, Megan [9410-1] S1  
Fung, Kenneth S. M. [9405-13] S4

## G

Gader, Paul D. 9399 Program Committee  
Gadgil, Neeraj J. [9407-17] S4  
**Gadia, Davide** 9391 Program Committee  
Gageik, Nils [9411-7] S2  
Gaili, Erez [9396-4] S1  
Gamble, Gary R. [9405-5] S1  
Games, Peter S. [9397-1] S1  
Gan, Lin [9401-12] S3  
Ganguly, Soumyajit [9411-20] SPTues  
Ganji, Rama Rao [9411-15] S4  
Gao, Liangcai [9402-7] S2  
Gao, Yuli 9408 Program Committee  
Garcia, Carlos [9400-1] S1, [9400-18] SPTues  
García, Narciso [9394-4] S1  
García-Huerta, Juan Manuel [9407-29] S7, [9407-34] SPTues  
Garth, Christoph 9397 Program Committee, [9397-19] S9  
Gassen, Fabian [9411-1] S1  
Gaykema, Frans 9396 Program Committee, 9396 S5 Session Chair  
Ged, Guillaume [9398-12] S2  
Geelen, Christopher D. [9407-20] S5  
Geethanath, Sairam [9399-37] SPTues  
Geisler, Wilson S. [9394-21] S4  
Geisow, Adrian [9395-12] S3  
Geng, Zheng [9391-13] S4, [9391-15] S4  
George, Sony T. [9396-25] S7  
Georgiev, Todor G. [9404-1] S1, SC980  
Geraedts, Jo M.P. [9398-32] S5  
Gerlach, Becky [9409-6] S2  
Germain, Francois G. [9404-3] S1  
Gerth, John 9397 Program Committee  
Gesquière, Gilles 9393 Program Committee, [9393-4] S2  
Ghadiyaram, Deepti [9394-15] S3  
Ghamizi, Salah [9402-9] S3  
Ghoniem, Mohammad [9397-15] S7  
Gibson, David R. P. [9407-13] S3  
Gicquel, Jean-Charles [9396-34] S8  
**Gille, Jennifer L.** 9394 Program Committee, [9395-28] S5, [9395-29] S5

Gillich, Eugen [9404-22] SPTues, [9405-7] S2  
Gingade, Ganesh [9408-17] S5  
Giordano, Gerardo [9401-18] SPTues  
Giri, Binod [9406-7] S2  
Gish, Walter C. [9404-17] S5  
Gislason-Lee, Amber J. [9399-13] S3, [9399-14] S3, [9399-26] S4, [9399-28] S4  
Giuffrida, Mario Valerio [9393-3] S1  
Gladstein, David [9405-23] S6  
Glaister, Jeffrey [9410-4] S1  
Gleason, Shaun Scott 9405 Program Committee  
Godil, Afzal 9393 Program Committee  
Godwin, Hayward J. [9391-11] S3  
Gohshi, Seiichi [9399-38] SPTues  
Golestaneh, Seyedalireza [9394-2] S1  
Gojjan, Miroslav [9409-24] S7  
**Goma, Sergio R.** Symposium Committee, 9394 Program Committee, [9394-57] SKey, [9396-8] S2, [9396-8] S6, 9400 Program Committee, 9404 Program Committee, [9411-5] S2  
Gomez-Krämer, Petra [9402-3] S1  
Gonzales, Anlysa M. [9411-14] S4  
Gonzalez, Abelardo [9405-8] S2  
González, Diego [9400-1] S1  
Gonzalez-Huitron, Victor [9400-5] S1  
Gormish, Michael J. 9408 Program Committee  
Gotchev, Atanas P. 9399 Conference Chair, 9399 S2 Session Chair, 9399 S6 Session Chair, [9399-22] S6, [9399-41] SPTues, 9411 Program Committee  
Goto, Tazuko [9405-9] S2  
Gotoda, Hironobu [9391-17] S5  
Gou, JaSeung [9403-21] S5  
Grazzio, Connor [9397-6] S3  
Grauer, Yoav [9407-14] S3  
Graziosi, Danilo [9391-29] S8  
**Greco, Christos** 9400 Program Committee, [9400-21] SPTues, [9400-22] SPTues, [9400-23] SPTues, [9400-24] SPTues, [9400-25] SPTues  
Green, Phil 9395 Program Committee, 9395 S4 Session Chair, [9395-20] S4, [9395-22] S4, [9395-23] S4, [9395-38] S7, [9395-42] S8  
Griffin, Garth [9397-6] S3  
**Grigoryan, Artyom M.** [9399-16] S5, [9399-17] S5, [9399-32] SPTues, [9399-35] SPTues, 9411 S3 Session Chair, [9411-14] S4, [9411-22] SPTues, [9411-24] SPTues, [9411-25] SPTues  
Gröhn, Matti T. 9397 Program Committee  
Gromala, Diane [9392-12] S3  
Grunert, Fred [9411-6] S2  
Gu, Yi [9397-5] S3  
Guan, Haiké [9400-8] S2  
Guarnera, Mirko [9393-3] S1, 9404 Program Committee  
Guellac, Fabrice [9403-3] S1

Guleryuz, Onur G. 9410 Conference Chair, 9410 S2 Session Chair, 9410 S3 Session Chair  
Gunturk, Bahadır K. 9404 Program Committee  
Guo, Yandong [9395-6] S2  
Guo, Yandong [9395-11] S2  
Guo, Yanqing [9409-23] S7  
**Gupta, Gaurav** [9396-20] S6  
Gurram, Prudhvi 9407 Program Committee

## H

Ha, Hye-young [9395-35] S6  
**Ha, Yeong-Ho** [9395-32] S6, [9395-7] S2  
Haaga, Don L. [9409-4] S2  
Haar, Jérémy [9391-20] S6  
Haataja, Keijo [9399-2] S1  
Hach, Thomas [9393-13] S4  
Hadjichristodoulou, Panayiotis [9411-12] S4  
Hagan, Martin T. [9394-18] S3  
Haider, Shahid [9406-9] S3, [9410-4] S1  
Haindl, Michal [9398-6] S1  
Häkkinen, Jukka P. [9391-22] S6, [9396-26] S7  
Hallenborg, Eric [9407-32] S7  
Hamacher, Alaric C. [9391-3] S2  
Hambarde, Mangesh [9402-17] S4  
Han, Donghyeop [9395-10] S2  
Han, Taeseong [9396-39] S10  
Handley, John C. 9399 Program Committee  
Hanjalic, Alan 9411 Program Committee  
Hansen, Charles [9397-9] S5  
Hao, Ming C. 9397 Conference Chair, 9397 S2 Session Chair, 9397 S7 Session Chair, 9397 S8 Session Chair, 9397 SKey Session Chair  
**Hardeberg, Jon Yngve** 9395 S3 Session Chair, [9395-13] S3, [9396-25] S7, 9398 Program Committee, [9405-16] S4  
Hardie, Russell C. [9401-8] S2  
**Harding, Kevin G.** Meeting VIP Harrington, Lawrence Kent [9391-24] S7  
Harrington, Robert J. [9401-2] S1  
Harrison, Adam P. [9405-11] S3  
Hartle, Brittny A. [9391-23] S6  
Hartmann, Klaus [9393-20] SPTues  
Hasche, Eberhard [9411-1] S1  
Hasegawa, Tatsuya [9392-24] SPTues  
Hashimoto, Yasuhiro [9401-17] SPTues  
Hasnaoui, Marwen [9394-29] S6  
Hasumi, Ryoji [9403-1] S1  
Hauer, Kai-Olaf [9398-24] S4  
Haugholt, Karl Henrik [9393-9] S3  
Hauptmann, Alexander G. 9411 Program Committee  
**Havig, Paul R.** [9391-24] S7  
Havlicek, Vojtech [9398-6] S1  
Hayes, Alex E. [9396-30] S8  
Hazelhoff, Lykele [9407-26] S6, [9407-7] S2  
He, Zhen 9404 Program Committee

# Index of Authors, Chairs, and Committee Members

Healey, Christopher G. 9397 Program Committee  
Hébert, Mathieu [9398-17] S2, [9398-26] S4, [9398-30] S5  
Heft, Eric L. [9391-24] S7  
Hei, Xiali [9408-18] S5  
Heitschmidt, Gerald W. [9405-5] S1  
Heitzenrater, Chad D. 9409 Conference Chair  
Helfman, Jonathan I. [9394-32] S7  
Hemami, Sheila S. Symposium Chair, 9394 Program Committee, SC812  
Henckens, Lambert [9398-26] S4  
Hennebert, Jean [9402-2] S1  
Henning, Kai-Fabian [9404-22] SPTues  
Herbison, Nicola [9391-8] S3  
Heredia Conde, Miguel [9393-20] SPTues  
Hermann, David S. [9394-46] SPTues  
Hernacki, Brian J. [9409-33] SKey  
Hernández-Díaz, Teresa [9407-29] S7, [9407-34] SPTues  
Hernandez-Fragoso, Araceli [9400-5] S1  
Hernanz, María Luisa [9398-13] S2  
Héroux, Pierre [9402-3] S1  
Herrera-Navarro, Ana M. [9407-29] S7  
Herrmann, Christian [9405-6] S2  
**Hersch, Roger D.** 9395 Program Committee, [9395-16] S3  
Hertel, Dirk W. 9396 Program Committee  
Heshmat, Samia [9401-17] SPTues  
Hester, Robert [9397-24] SPTues  
Heynderickx, Ingrid E. J. [9394-10] S1, [9394-20] S4, [9394-7] S1  
Hildebrandt, Mario [9409-12] S3, [9409-8] S3  
Hirakawa, Keigo 9410 Program Committee  
Hirose, Misa [9398-8] S1  
Hirsch, Michael [9404-7] S3  
Hirth, Matthias [9394-28] S6  
Ho, Anthony T. S. 9409 Program Committee  
Ho, Yo-Sung [9393-28] SPTues, [9395-24] S4, [9406-24] SPTues  
Hoepe, Andreas 9394 S2 Session Chair, 9398 Program Committee, 9398 S3 Session Chair, [9398-24] S4  
Hoffman, Matthew J. [9407-6] S1  
Hofmann, Dietrich [9411-6] S2  
Hofmeyer, Frank [9391-45] SPTues  
Holländer, Branislav [9409-21] S6  
**Holliman, Nicolas S.** 9391 Conference Chair, 9391 S10 Session Chair, 9391 S2 Session Chair, 9391 S5 Session Chair, 9391 S7 Session Chair, [9391-11] S3  
Holotyak, Taras [9409-20] S6  
Holub, Vojtech [9409-22] S7  
Honda, Kenji [9403-1] S1  
Hong, Li [9404-12] S4  
Hong, Sheng-Yi [9399-6] S1

**Hoon, Song** [9391-1] S1  
Hoover, Martin [9407-3] S1  
Hoover, Melynda T. [9392-1] S1  
Hornung, Harvey Hervé [9396-37] S9, SC1049, SC1157  
Hosking, Brett [9410-22] SPTues  
Hostein, Antony [9393-7] S3  
Hottong, Nikolaus [9391-45] SPTues  
Houben, Sebastian [9407-15] S4, [9407-8] S2  
Houpin, Romain [9402-9] S3  
Hoyle, Janae [9392-1] S1  
Hsu, Meichun 9408 Program Committee  
Hsu, Winston H. 9411 Program Committee  
Hu, Chialun John [9406-14] S4  
**Hu, Hongzhan** [9391-46] SPTues  
Hu, Jianying 9402 Program Committee  
Hu, Yang [9405-38] SPTues  
Hua, Gang 9411 Program Committee  
Huang, Chung-Lin [9407-10] S2  
Huang, Jiwu 9409 Program Committee  
Huang, Lei [9401-9] S2  
Huang, Lingxiao [9395-26] S4  
Huang, Shao-Kang [9404-21] SPTues  
Huang, Xiaojun [9395-26] S4  
Huang, Yi [9391-27] S7  
Huang, Zhen [9403-25] SPTues  
Hubbard, Susan S. [9405-4] S1  
Hubel, Paul M. 9404 Program Committee  
Huber-Mörk, Reinhold [9409-21] S6  
Huenerhoff, Dirk [9398-24] S4  
Huertas, Rafael [9398-21] S2, [9398-21] S3  
Hugonin, Jean-Paul [9398-30] S5  
Hullin, Matthias B. 9398 Program Committee, [9398-14] S2, [9398-9] S1  
Hung, Po-Chieh 9395 S8 Session Chair  
Hunter, Andrew A. 9408 Program Committee  
Hupont Torres, Isabelle [9394-28] S6

Iacomussi, Paola [9398-23] S4  
Iatsun, Iana [9391-48] SPTues  
Ibsch, Andre [9407-15] S4  
Ichiara, Takumi [9395-33] S6  
Ichiara, Yasuyo G. [9395-33] S6  
Ide-Ektessabi, Ari [9398-10] S1  
Idomura, Yasuhiro [9397-28] SPTues  
Ieremeiev, Oleg I. [9394-16] S3  
Ikonen, Tiia [9399-2] S1  
**Iligner, Justus F.** [9391-9] S3  
Imai, Francisco H. 9398 Conference Chair, 9398 S2 Session Chair, 9398 S4 Session Chair, 9404 Conference CoChair  
Ingold, Rolf [9402-2] S1  
Ingwer, Patrick [9411-1] S1  
Ironi, Iheanyi C. [9400-24] SPTues  
Iscen, Ozgun Eylul [9392-12] S3

Ishibashi, Yutaka [9393-27] SPTues, [9399-19] S6  
Itier, Vincent [9393-4] S2  
Ivashov, Sergey I. [9401-16] SPTues  
Iwauchi, Kenichi [9399-20] S6

## J

**Jaber, Mustafa I.** 9407 Program Committee  
Jackson, D. M. Todd [9407-3] S1  
**Jacquot, Blake C.** [9400-3] S1  
Jagannath, Abhijith [9411-3] S2  
Jahanian, Ali [9394-30] S6, [9408-6] S2  
Jakab, Marek [9406-21] S6  
Jampy, Florian [9393-7] S3  
Janakaraj, Manishankar [9411-9] S3  
Janetzko, Halldor 9397 Program Committee  
Jang, Hyesung [9395-31] S5  
Jang, Junwoo [9396-11] S3, [9396-11] S7  
Jang, Woo-Seok [9393-28] SPTues  
Janowski, Lucjan [9396-1] S1  
Jarvis, John [9396-20] S6  
Jaspers, Egbert G. T. [9407-25] S6  
Jaszewski, Martin [9407-32] S7  
Javan Hemmat, Hani [9399-25] S4  
Jejkal, Thomas [9402-4] S1  
**Jenkin, Robin B.** 9396 Program Committee, 9396 S3 Session Chair, 9404 S7 Session Chair  
Jenkins, B. Keith 9405 Program Committee  
**Jenkinson, John A.** [9399-32] SPTues  
Jeon, Gwanggil [9400-15] SPTues  
Jeong, Jechang [9400-15] SPTues  
Jeong, Kyeong-Ah [9394-41] SPTues  
Jerripothula, Shanmukha [9392-7] S2  
Jessome, Renee J. [9396-15] S4, [9396-16] S5  
Jia, Lixiu [9396-35] S9  
Jia, Yanhui [9406-11] S3  
Jia, Zhongpu [9399-40] SPTues  
Jiang, Bo [9400-20] SPTues  
Jiang, Haomiao [9404-2] S1  
Jiang, Jun 9404 Program Committee  
Jiang, Ming 9397 Program Committee  
Jiao, Heidi [9403-22] S5  
Jiménez-Hernández, Hugo [9407-29] S7, [9407-34] SPTues  
Jin, Bin [9394-27] S6  
Jin, Elaine W. 9396 Program Committee, 9396 S10 Session Chair  
Jin, Guoxin [9394-19] S3  
Jing, Jing [9410-24] SPTues  
Jmal, Marwa [9407-22] S5  
Jo, Sung-Hyun [9403-23] S5  
Johnson-Williams, Nathan G. [9400-3] S1  
Jónsson, Björn P. [9411-28] SPTues  
**Joseph, Dileepan** [9405-11] S3, [9405-2] S1

Joshi, Alark 9397 Conference CoChair, 9397 S10 Session Chair, 9397 S3 Session Chair, [9397-1] S1  
Jouppi, Mark [9401-13] S3  
Jovanov, Ljubomir [9399-27] S4  
Joveski, Bojan [9411-15] S4  
Joy, Kenneth I. [9397-14] SKey, [9397-18] S9, [9397-19] S9  
Ju, Yanling [9396-16] S5  
Julien, Blégean [9402-9] S3  
Jumabayeva, Altyngul [9395-19] S3  
Jung, Sooyeon [9396-39] S10  
Jung, Yong Ju [9391-28] S8  
Junghans, Marek [9407-1] S1  
Jurk, Silvio [9391-32] S9, [9393-21] SPTues

## K

Kabir, Ehsanollah [9402-10] S3  
Kachouri, Rostom [9400-2] S1  
Kagawa, Keiichiro [9403-11] S2  
Kaghyan, Sahak I. [9411-19] SPTues  
Kahle, Brewster O. [9402-18] SKey  
Kakarala, Ramakrishna [9401-22] SPTues, [9405-23] S6, [9405-32] SPTues, [9406-12] S4, [9408-11] S4  
**Takeya, Hideki** 9391 Program Committee, [9391-30] S8, [9391-40] SPTues  
Kakinuma, Akihiro [9394-51] SPTues  
Kalivarapu, Vijay K. [9392-1] S1  
Kalkar, Ton 9409 Program Committee  
Kalva, Hari 9394 Program Committee, [9394-9] S1, [9407-4] S1, [9410-14] S3  
Kalwad, Pramati [9404-4] S2  
Kamakura, Yoshinari [9403-12] S3  
Kamata, Tetsuji [9404-12] S4  
Kamijo, Naohiro [9394-51] SPTues  
Kandadai, Venu [9400-10] S2  
Kane, David [9394-50] SPTues, [9396-41] S10  
Kang, Derick [9408-19] S5  
Kang, Dong-Woo [9396-39] S10  
Kang, Hyejin [9392-20] SPTues  
Kang, Jooyoung [9395-25] S4  
Kang, Moon Gi [9399-10] S2, [9399-9] S2  
Kang, Soonja [9405-31] SPTues  
Kao, David L. 9397 Conference Chair, 9397 S1 Session Chair, 9397 S9 Session Chair, [9397-5] S3  
Karam, Lina J. [9394-13] S2, [9394-13] S3, [9394-8] S1  
Karapetyan, Gevorg [9399-34] SPTues  
Karczewicz, Marta 9410 Program Committee  
Kartashova, Tatiana [9394-54] SPTues  
Kasliwal, Mansi [9397-7] SKey  
Kattakkalil Subhashdas, Shibudas [9395-7] S2  
Kavallieratou, Ergina 9402 Program Committee  
**Kawahito, Shoji** [9403-11] S2  
Kawai, Takashi 9391 Conference Chair, [9391-22] S6, [9391-39] S10

Kawamura, Harumi [9395-36] S6  
Kawamura, Takuma [9397-28] SPTues  
**Kazemzadeh, Farnoud** [9406-9] S3  
Kazimi, Ali [9391-23] S6  
Ke, Shidong [9410-19] S4  
Kedem, Klara [9402-16] S4  
Kee, Eric R. [9409-1] S1  
Keefe, Lisa J. [9401-7] S2  
**Kehtarnavaz, Nasser** 9400 Conference Chair, 9400 S1 Session Chair, [9400-22] SPTues, [9400-7] S2  
Keim, Daniel A. [9397-21] S10  
Kelleher, Curran [9397-22] SPTues  
Kellnhofer, Petr [9394-5] S1  
Kemeny, Andras [9392-5] S1  
Keenaley, Alina [9406-4] S2  
Kengyelics, Stephen M. [9399-13] S3, [9399-26] S4, [9399-28] S4  
Kepplinger, Sara [9391-45] SPTues  
Ker, Andrew D. 9409 Program Committee, 9409 S6 Session Chair, [9409-15] S4, [9409-26] S7  
Kermorvant, Christopher 9402 Program Committee  
Kerofsky, Louis [9411-3] S2  
Kerren, Andreas 9397 Program Committee, [9397-8] S4  
Kesten, Robert [9407-15] S4  
**Keuthan, Lynn M.** [9401-2] S1  
Keyes, Alex O. [9406-4] S2  
Khalifa, Aly Ahmed A. [9400-30] SPTues  
Khan, Kashif A. [9400-25] SPTues  
Khare, Ashish [9410-18] S4  
Khare, Manish [9410-18] S4  
Khaustova, Darya [9391-21] S6  
Kheradmand, Amin [9404-11] S4  
**Kim, Anna N.** [9393-9] S3  
Kim, Bumsuk 9403 Program Committee  
**Kim, Choon-Woo** Symposium Chair, 9395 Program Committee, [9395-31] S5  
Kim, Dae-Sik [9391-18] S5  
Kim, Hak Gu [9391-28] S8  
Kim, Hojung [9391-1] S1  
Kim, Hyosun [9395-35] S6  
Kim, Jaekyeom [9396-39] S10  
Kim, Jonghyun [9399-10] S2  
Kim, Joonsoo [9410-17] S4  
Kim, Jung-Ho [9395-25] S4  
Kim, Jung-Ho [9391-38] S10  
Kim, Junhyung [9393-17] S5  
Kim, Kyuhong [9395-25] S4  
Kim, Kyungnam [9406-20] S6  
Kim, Mark [9397-9] S5  
Kim, Minwoong [9396-14] S4  
Kim, Munchul [9401-21] SPTues  
**Kim, Nam** [9391-36] S10  
Kim, Sang Ho [9395-10] S2, 9396 Program Committee, 9396 S8 Session Chair  
Kim, Sanghyun [9391-22] S6, [9391-39] S10  
KIM, SANGKYOUNG [9405-31] SPTues  
Kim, Seungryong [9393-17] S5, [9406-8] S3  
Kim, Soochang [9411-10] S3  
Kim, Sun Il [9391-1] S1  
Kim, Sungjin [9399-39] S10  
Kim, Sunok [9393-18] S5

# Index of Authors, Chairs, and Committee Members

- Kim, Taeuk [9396-11] S3, [9396-11] S7
- Kim, Youn Jin [9395-9] S2
- Kim, Young-Hoon [9411-10] S3
- Kim, Youngjung [9393-18] S5
- Kim, Yun-Tae [9395-25] S4
- Kimpe, Tom R. L. [9391-20] S6
- Kirchner, Eric J. J. [9398-21] S2, [9398-21] S3
- Kirchner, Matthias 9409 Program Committee, [9409-2] S1
- Kirst, Stefan [9409-11] S3
- Kleihorst, Richard [9400-19] SPTues
- Klein, Dan [9402-1] SKey
- Klein, Reinhard [9398-14] S2, [9398-9] S1
- Klein, Stanley A. 9394 Program Committee
- Klein, Susanne [9398-27] S5
- Knackmuss, Jenny [9411-16] SPTues, [9411-17] SPTues, [9411-18] SPTues
- Ko, Youngjun [9405-27] SPTues
- Kobayashi, Hiroyuki [9394-43] SPTues
- Kochar, Shaivi [9402-17] S4
- Koenderink, Jan J. [9394-11] S2, [9394-11] S3
- Koh, Youngsol [9408-13] S4
- Kohlhammer, Jörn [9397-21] S10
- Kojima, Akira [9391-7] S2, [9395-36] S6
- Kolano, Paul [9397-25] SPTues
- Konar, Amaresha S. [9399-37] SPTues
- Kondi, Lisimachos P. [9394-47] SPTues, 9410 Program Committee, [9410-12] S3, [9410-13] S3
- Kong, Xiangwei [9409-23] S7
- Konrad, Janusz 9410 Program Committee
- Koren, Israel [9403-28] SPTues
- Koren, Zahava [9403-28] SPTues
- Korhonen, Jari [9395-3] S1, [9396-28] S7
- Korshunov, Pavel [9394-53] SPTues
- Kosslyn, Steve Meeting VIP
- Kot, Alex Chichung 9409 Program Committee
- Kotera, Jan [9404-10] S4
- Kothari, Rakshit S. [9395-8] S2
- Koyamada, Koji [9397-28] SPTues
- Kozaitis, Samuel** [9400-31] SPTues, [9407-31] S7
- Kozempel, Karsten [9407-1] S1
- Kozitsky, Vladimir [9407-3] S1
- Krasnov, Vitaly V. [9406-25] SPTues
- Krause, Celia [9402-4] S1
- Kreylos, Oliver 9397 Program Committee
- Krishnamoorthy, Mukkai [9402-21] S6
- Krishnan, Harinarayan 9397 Program Committee
- Krishnan, Ram [9411-8] S3
- Kriss, Michael A.** 9395 Program Committee, 9404 Program Committee
- Kröger, Knut [9411-23] SPTues
- Krucki, Kevin [9407-24] S5
- Krüger, Björn [9397-13] S6
- Kuang, Dengfeng** [9398-30] S5
- Kuang, Jiangtao 9404 Program Committee
- Kudoh, Hiroyuki [9406-16] S5
- Kuhlmeiy, Mathias [9391-32] S9
- Kumar, C. K. Dharmendra [9399-37] SPTues
- Kumar, Sunil [9410-12] S3
- Kumcu, Asli** [9399-14] S3, [9399-28] S4
- Kuo, Chun-Chieh J.** 9410 Program Committee
- Kurata, Saori [9410-25] SPTues
- Kurilin, Ilya V. [9395-10] S2
- Kurita, Kodai [9401-17] SPTues
- Kuroda, Rihito 9403 Program Committee, 9403 S5 Session Chair, [9403-13] S3
- Kusuhara, Fumiaki [9403-13] S3
- Kvitile, Anne Kristin [9395-42] S8
- Kwak, Youngshin [9395-34] S6, [9395-35] S6, [9395-44] S8, [9395-9] S2
- Kwok, K. [9394-55] SPTues
- Kwon, Ki-Chul [9391-36] S10
- Kwon, Soon Chul [9391-38] S10
- L**
- Lacatus, Catalin 9411 Program Committee
- Lachat, Amélie [9396-34] S8
- Lachine, Vladimir [9411-30] SPTues
- Lacolle, Matthieu [9393-9] S3
- Laeng, Bruno [9395-40] S8
- Lafon-Pham, Dominique [9396-23] S6
- Lagadapati, Yamuna [9400-4] S1
- Laligant, Olivier [9393-7] S3, 9405 Program Committee
- Lalonde, Marc [9405-36] SPTues
- Lam, Edmund Y.** [9400-13] S3, 9405 Conference Chair, 9405 S1 Session Chair, [9405-13] S4, [9405-40] SPTues
- Lam, Walter [9405-9] S2
- Lamiroy, Bart 9402 Conference Chair, 9402 S6 Session Chair, 9402 SKey Session Chair, [9402-9] S3
- Lang, Ulrich [9397-10] S5
- Lansel, Steven P. [9404-2] S1, [9404-3] S1
- Larabi, Mohamed-Chaker [9391-48] SPTues, 9396 Conference Chair, 9396 S1 Session Chair, 9396 SKey Session Chair, [9396-22] S6, [9396-29] S7, [9396-33] S8
- Larson, David [9395-11] S2, [9401-15] S3
- Lau, Cheryl [9394-27] S6, [9395-39] S8
- Laudereau, Jean-Baptiste** [9403-29] S2
- Lawrence, Kurt C. [9405-5] S1
- Lazar, Alina [9401-4] S1
- Le Bars, Jean-Marie [9409-10] S3
- Le Callet, Patrick 9394 Program Committee, [9394-10] S1, [9394-29] S6, [9394-49] SPTues
- Le Goic, Gaetan [9398-20] S2, [9398-20] S3
- Le Lay, Gwenaél [9396-29] S7
- Le Meur, Olivier [9391-21] S6
- Le Moan, Steven [9396-25] S7, [9396-38] S9
- Leblebici, Yusuf [9400-11] S3
- Leboulleux, Lucie [9398-26] S4
- Lebourgeois, Franck [9402-11] S3
- Lebowski, Fritz 9395 Program Committee, 9395 S2 Session Chair, [9395-1] S1, [9395-37] S7
- Lebreton, Pierre [9394-28] S6
- Lee, Byoungho** [9391-33] S9
- Lee, Chang-Kun [9391-33] S9
- Lee, Chulhee** [9391-25] S7, [9411-10] S3
- Lee, Dah-Jye 9406 Program Committee
- Lee, Hong-Seok [9391-1] S1
- Lee, Ji-Heon [9395-32] S6
- Lee, Jinsang [9396-39] S10
- Lee, Myungeun [9405-31] SPTues
- Lee, Sangyoon [9399-9] S2
- Lee, Seonmee [9396-11] S3, [9396-11] S7
- Lee, SeungHyun [9391-3] S2, [9391-38] S10
- Lee, Soonam [9408-4] S2
- Lee, Sooyeon [9395-35] S6
- Lee, Wonjin [9400-15] SPTues
- Leich, Andreas [9407-1] S1
- Leisti, Tuomas M. [9396-26] S7
- Leloup, Frédéric B. [9398-12] S2
- Lenseigne, Boris A. J. [9398-32] S5
- Leo, Marco [9399-33] SPTues
- Leonhardt, Manuel [9391-45] SPTues
- Leroux, Thierry [9398-16] S2
- Leszczuk, Mikolaj I. [9396-1] S1
- Lewkowitz, Haim [9397-22] SPTues
- Lewis, Robert R. 9397 Program Committee
- Lézoray, Olivier [9393-12] S4
- Li, Chang-Tsun 9409 Program Committee
- Li, Cheng [9407-7] S2
- Li, David [9394-36] S8
- Li, Ge [9393-8] S3, [9410-7] S2
- Li, He [9401-14] S3, [9410-17] S4
- Li, Jiang [9399-3] S1, [9399-31] SPTues
- Li, Jing [9403-4] S1
- Li, Ming [9409-23] S7
- Li, Shaomeng [9397-6] S3
- Li, Sida [9402-7] S2
- Li, Tuotuo [9391-15] S4
- Li, Weimin [9405-17] S4, [9406-26] SPTues
- Li, Weiming [9391-31] S8, [9405-10] S3
- Li, Xin 9411 Program Committee
- Li, Y. [9405-40] SPTues
- Li, Yong [9405-29] SPTues, [9410-23] SPTues, [9410-24] SPTues
- Li, Zhaoan [9403-19] S4
- Lianza, Tom [9395-20] S4
- Liao, Miao [9399-5] S1
- Licka, Theresia [9397-13] S6
- Lienhart, Werner [9405-19] S5
- Likforman-Sulem, Laurence 9402 Program Committee
- Likova, Lora T. 9394 Program Committee, [9394-56] S8
- Lim, Jae S.** [9410-1] S1, [9410-9] S2
- Lim, Moojong [9396-11] S3, [9396-11] S7, [9396-39] S10
- Lin, Qian 9408 Conference Chair, 9408 S1 Session Chair, 9408 S4 Session Chair, [9408-2] S1, 9411 Program Committee
- Lin, Xiaofan 9402 Program Committee, 9402 S2 Session Chair, 9408 Program Committee
- Lindner, Albrecht J. [9396-8] S2, [9396-8] S6, [9411-5] S2
- Lindstrom, Peter 9397 Program Committee
- Ling, Bo 9407 Program Committee, [9407-13] S3
- Linsen, Lars 9397 Program Committee
- Lipetski, Yuriy [9407-11] S3
- Lipton, Lenny** [9391-5] S2
- Liu, Changsong [9405-24] S6, [9408-22] S6
- Liu, Hantao [9394-49] SPTues
- Liu, Hongyi [9410-6] S1
- Liu, Jerry 9408 Program Committee
- Liu, Jianyang [9405-13] S4
- Liu, Lu [9402-22] S6
- Liu, Sijie [9399-39] SPTues
- Liu, Tianzhao [9403-20] S4
- Liu, Tong [9400-8] S2
- Liu, Yang [9403-4] S1
- Liu, Yongchun [9391-15] S4
- Liu, Yucheng [9394-45] SPTues
- Liu, Yue [9391-27] S7
- Liu, Zhanping 9397 Program Committee
- Liu, Zhigang [9391-46] SPTues
- Liversedge, Simon P. [9391-11] S3
- Livingston, Mark A. 9397 Conference Chair
- Liwicki, Marcus 9402 Program Committee, [9402-2] S1
- Lloyd, Matthias [9402-9] S3
- Loce, Robert P.** 9407 Conference Chair, 9407 S1 Session Chair, 9407 S7 Session Chair, [9407-3] S1, [9407-9] S2
- Lockerman, Yitzhak [9398-5] S1
- Loffeld, Otmar [9393-20] SPTues
- Lohweg, Volker** [9404-22] SPTues, [9405-7] S2
- Loibner, Gernot [9407-11] S3, [9407-28] S6
- Long, David [9394-25] S5
- Long, Zhiling [9394-48] SPTues
- Lopez, Pablo H. [9405-8] S2
- Lopez-Gonzalez, Monica [9394-40] SKey
- Lopresti, Daniel P.** 9402 Program Committee, 9402 S4 Session Chair, 9402 S7 Session Chair
- Lord, John [9409-19] S6, [9409-7] S2
- Lovstrom, Benny [9394-47] SPTues
- Lu, Aidong 9397 Program Committee
- Lu, Cheng [9395-11] S2
- Lu, Chunfang [9406-23] S6
- Lu, Wen [9400-14] S3
- Lu, Xiaoping [9402-22] S6
- Lu, Yang [9391-26] S7
- Lu, Yue M.** [9404-14] S3, Lu, Yung-Hsiang [9401-14] S3, [9408-13] S4, [9408-17] S5
- Lucas, Robert F. [9401-20] SPTues
- Lucassen, Marcel P. [9398-21] S2, [9398-21] S3
- Lugtigheid, Arthur [9391-23] S6
- Luk, Henry [9405-9] S2
- Lukin, Vladimir V. [9394-16] S3, 9399 Program Committee, [9399-18] S5
- Lumsdaine, Andrew 9404 Conference CoChair, [9404-1] S1, SC980
- Lund, William H. [9397-4] S2
- Luo, Chunbo [9400-25] SPTues
- Luo, Falong 9407 Program Committee
- Luo, Jiafu [9396-8] S2, [9396-8] S6
- Luong, Hiêp Q. [9399-27] S4
- Luttenberger, Silas [9411-28] SPTues
- Lyons, Damian M. [9406-4] S2
- Lyons, Robert C. [9409-19] S6
- Lyu, Siwei [9405-37] SPTues
- M**
- Ma, Cheng [9403-4] S1
- Ma, Di [9408-8] S3
- Ma, Gengyu [9405-10] S3
- Ma, Guangyao [9411-9] S3
- Ma, Jun [9397-5] S3
- Ma, Lingni [9399-43] SPTues
- MacAllister, Anastacia [9392-1] S1
- MacKeith, Daisy [9391-8] S3
- Madan, Siddharth K. [9408-7] S3
- Magee, Derek R. [9399-26] S4
- Maggard, Eric [9396-15] S4, [9396-16] S5
- Mahfoodh, Abo-Talib [9410-11] S2
- Mainali, Pradip [9401-3] S1
- Mäki, Toni [9394-28] S6
- Makov, Sergey V. [9410-15] S3
- Makrushin, Andrey [9409-9] S3
- Makur, Anamitra [9407-30] S7
- Mallet, Maxime [9398-30] S5
- Mallik, Quamrul H. [9405-8] S2
- Malo, Jesus [9394-17] S3
- Mandal, Sekhar [9402-24] S6
- Manger, Daniel [9405-22] S6, [9405-30] SPTues
- Mantel, Claire [9395-3] S1, [9396-28] S7
- Mantiuk, Rafal K. [9394-52] SPTues
- Marangoni, Matthew [9397-12] S6
- Marchuk, Vladimir I. [9399-21] S6, [9399-29] SPTues, [9410-15] S3
- Marcu, Gabriel G. 9395 Conference Chair, 9395 S7 Session Chair, 9411 Program Committee
- Margolis, Todd [9392-14] S3
- Marra, Francesco [9409-27] S5
- Marshall, Stephen 9399 Program Committee
- Martin, Rodrigo [9398-9] S1
- Martin, William E. [9407-5] S1
- Martinez Bauza, Judit [9396-9] S2, [9396-9] S6
- Martinez, Manuel 9404 Program Committee
- Martinez-García, Juan [9398-17] S2
- Martins de Melo, Filipe [9399-24] S4
- Mason, Steve** [9391-10] S3
- Massanes, Francesc [9401-1] S1
- Matherson, Kevin J. Symposium Committee, 9396 S2 Session Chair, 9396 S3 Session Chair, 9403 Program Committee, 9404 Conference CoChair, 9404

# Index of Authors, Chairs, and Committee Members

- S6 Session Chair, 9404 S7 Session Chair, SC1058  
Matsubara, Rie [9391-14] S4  
Matsumoto, Ayumi [9395-36] S6  
Matsuo, Takuya [9393-27] SPTues, [9399-19] S6  
May, Richard 9397 Program Committee  
Mayhew, Christopher A. [9394-42] SPTues  
**Mazza, Filippo** [9394-10] S1  
McCann, John J. 9394 Program Committee, 9394 S5 Session Chair, 9394 SKey Session Chair, 9395 S5 Session Chair, 9395 SKey Session Chair, SC1097  
McDowall, Ian E. 9392 Conference Chair, 9392 S1 Session Chair, 9392 S3 Session Chair  
McElvain, Jon S. 9404 Program Committee, [9404-17] S5  
McIntire, John P. [9391-24] S7  
McNulty, Kyle [9408-13] S4  
**McPherson, Charles A.** 9406 Program Committee, 9406 S5 Session Chair, [9406-3] S1  
Medeiro, Fernando [9403-24] S5  
Medina, Victor J. [9396-23] S6  
Megri, Sameh [9407-22] S5  
Mehri, Maroua [9402-3] S1  
**Mehrbeoglu, Mehrube** 9400 Program Committee  
Meijer, Lucien [9399-12] S3  
**Memon, Nasir D.** 9409 Conference Chair, 9409 SKey Session Chair, [9409-29] S5  
Menendez, Jose Manuel [9400-28] SPTues  
Meng, Lingfei 9404 Program Committee  
Menneer, Tamaryn [9391-11] S3  
Meriaudeau, Fabrice 9405 Program Committee  
**Merritt, John O.** Meeting VIP, SC060  
Merugu, Rajashekar Reddy [9400-10] S2  
Meseth, Jan [9398-22] S2, [9398-22] S3  
**Messinger, David W.** [9405-12] S3, [9405-38] SPTues  
Mestre, Daniel R. [9392-18] S4  
Metzler, Jürgen [9405-26] SPTues, [9405-30] SPTues  
Meyer, Gary W. [9398-22] S2, [9398-22] S3  
Meyer, Joerg 9397 Program Committee  
Meyer-Baese, Anke [9400-1] S1  
Meyer-Baese, Uwe [9400-1] S1  
Mezaris, Vasileios 9411 Program Committee  
Michael, Matthias [9407-15] S4  
Miguet, Serge 9393 Program Committee  
Milanfar, Peyman [9404-11] S4, [9404-13] S5, 9410 Program Committee  
Ming, Yue [9405-29] SPTues  
Minneh, Breton L. [9408-10] S3  
Miosso, Cristiano Jacques [9392-6] S2  
Mioulet, Luc [9402-13] S4, [9402-14] S4  
Miranda, Mateus R. [9392-6] S2  
Mishina, Tomoyuki [9391-34] S9, [9391-4] S2  
Mitrea, Mihai [9394-29] S6, [9411-15] S4  
Mitsuya, Reiko [9391-39] S10  
Mittelstaedt, Sebastian [9397-21] S10  
Miura, Masato [9391-34] S9, [9391-4] S2  
Miyamura, Hiroko Nakamura [9397-28] SPTues  
Miyazaki, Jin [9391-35] S9  
Mochizuki, Ai [9403-1] S1  
Mohamed, Ahmed S. [9408-13] S4, [9408-17] S5  
Mohammad, Khader [9399-36] SPTues, [9411-13] S4  
Möller, Thomas [9411-23] SPTues  
Moltisanti, Marco [9399-11] S3  
Momose, Hisayo S. [9403-1] S1  
Monari, Eduardo [9405-25] S6  
Mondragón Bernal, Iván Fernando [9406-18] S5  
Mönks, Uwe [9404-22] SPTues  
Montagna, Roberto [9396-30] S8  
Monteiro, Sildomar [9405-38] SPTues  
Montenegro, Sergio [9411-7] S2  
Montesinos, Philippe [9393-1] S1  
Moorhead, Robert J. [9397-27] SPTues  
Morales Chavez, Pablo S. [9405-32] SPTues  
Morales, Sandino [9408-11] S4  
Morgenstern, Yaniv [9394-21] S4  
Mori, Hiroshi [9410-25] SPTues  
Morikawa, Hiroyuki [9391-39] S10  
Moroney, Nathan 9395 Program Committee  
Morozov, Dmitriy 9397 Program Committee  
Mou, Xuanqin [9411-21] SPTues  
Moujahid, Abdelmalik [9406-17] S5  
Moulin, Pierre 9409 Program Committee  
Mu, Bo 9404 Program Committee  
Muir, J. Lewis [9401-7] S2  
**Muir, Ryan D.** [9401-7] S2  
Mukai, Takuya [9391-40] SPTues  
Mukherjee, Rohan [9400-32] SPTues  
Mukherjee, Somnath [9411-20] SPTues  
Mulichak, Anne M. [9401-7] S2  
Müller, Katja [9411-1] S1  
Muller, Thomas [9403-10] S2  
Muller, Thomas [9398-3] S1  
Mulligan, Jeffrey B. 9394 Program Committee  
Mullot, Rémy [9402-3] S1  
Mundhenk, Terrell Nathan 9406 S6 Session Chair, [9406-20] S6  
Muñoz, Adolfo [9398-7] S1  
Murdoch, Michael J. [9394-20] S4  
Murray, Richard F. [9394-21] S4  
Musa, Purnawarman [9403-18] S4  
Musante, Fulvio [9395-45] SPTues  
Myszkowski, Karol 9394 Program Committee, [9394-5] S1  
Na, Nooree [9394-41] SPTues  
Nadal, Maria E. [9398-11] S2  
Nadeski, Mark [9399-8] S2  
Nagy, George [9402-21] S6  
Nair, Binu M. [9407-23] S5  
Nakaguchi, Toshiya 9396 Program Committee  
Nakayama, Yasuichi [9406-16] S5  
Nakayama, Yusuke [9392-17] S4  
Naoi, Satoshi [9402-19] S5  
Natarajan, Premkumar [9402-12] S3  
Nayef, Nibal [9402-20] S5  
Ndiaye, Maty [9396-29] S7  
Nelson, Marvin [9395-8] S2  
Nemiroff, Robert J. [9397-5] S3  
Neri, Alessandro 9399 Program Committee, [9399-33] SPTues  
Netzbandt, Ronny [9393-21] SPTues  
Neuman, Shawn P. [9397-4] S2  
Newman, Timothy S. [9397-11] S5  
Ngan, Henry Y. T. 9405 S2 Session Chair, 9405 S4 Session Chair, [9405-18] S5, [9405-9] S2  
Ngo, Chong-Wah 9411 Program Committee  
Ngo, Hau T. [9400-12] S3  
Nguyen, Minh Q. [9396-18] S5  
Nicolas, Marina M. [9395-1] S1  
**Niel, Kurt S.** 9405 Conference Chair, 9405 S3 Session Chair, 9406 Program Committee, 9406 S3 Session Chair  
Nightingale, James M. [9400-21] SPTues, [9400-22] SPTues  
Niinami, Norikatsu [9400-8] S2  
Ninglekhu, Jiwan L. [9411-8] S3  
Ninkov, Zoran [9403-9] S2  
Niño-Castaneda, Jorge Oswaldo [9399-42] SPTues  
Nishiyama, Shusuke [9401-17] SPTues  
Niska, Harri [9399-2] S1  
Niu, Wenjuan [9396-35] S9  
Niu, Xinhua [9403-8] S2  
Njo, Lan [9398-21] S2, [9398-21] S3  
Noland, Madeleine [9409-32] SKey  
Nomura, Yoshihiko 9406 Program Committee  
Nouri, Anass [9393-12] S4  
Nudurumati, Srikrishna [9395-46] SPTues  
Nugent, Peter [9397-7] SKey  
Nussbaum, Peter [9395-42] S8  
Nuutinen, Mikko [9396-26] S7  
Nyman, Göte S. 9396 Program Committee, 9396 S7 Session Chair  

---

## O

---

Obein, Gaël 9398 Program Committee, 9398 S2 Session Chair, [9398-12] S2  
Obermaier, Harald 9397 Program Committee, [9397-19] S9  
Ogawa-Ochiai, Keiko [9398-8] S1  
**Ogiela, Marek R.** 9399 Program Committee  
Ogier, Jean-Marc [9402-20] S5  
Oh, Changjae [9393-18] S5  
Oh, Semin [9395-34] S6  
Ohguro, Tatsuya [9403-1] S1  
Ojima, Nobutoshi [9398-8] S1  
Ok, Jiheon [9411-10] S3  
Okaichi, Naoto [9391-34] S9, [9391-4] S2  
Oktem, Rusen [9393-16] S5, [9405-4] S1  
Okutomi, Masatoshi [9404-15] S5  
Olen, Melissa K. [9395-12] S3  
Oliveira, Alessandro [9392-6] S2  
Oliveira, Luiz [9392-6] S2  
Olivera, Santiago [9407-13] S3  
Ootani, Hiroshi [9403-1] S1  
op het Veld, Ron M. G. [9407-21] S5  
Orientale, Antonio [9401-18] SPTues  
Ortega, Antonio 9410 Program Committee  
Ortis, Alessandro [9393-19] S5  
Ortiz Segovia, Maria Valezzka 9394 S2 Session Chair, [9394-27] S6, 9398 Conference Chair, 9398 S1 Session Chair, 9398 S3 Session Chair, 9398 SKey Session Chair, [9398-29] S5, [9398-31] S5  
Ortiz-Jaramillo, Benhur [9399-42] SPTues  
Osés, Noelia [9406-17] S5  
**Ospina, Juan Esteban** [9396-31] S8  
**O'Sullivan, Joseph A.** [9401-10] S2  
Otjacques, Benoît [9397-15] S7  
Ouled Zaid, Azza [9396-5] S1  
Owechko, Yuri [9406-20] S6  

---

## P

---

Paes-Leme, Cassio [9408-19] S5  
Page, Marine [9398-26] S4  
Pagel, Frank [9405-22] S6, [9407-16] S4  
Paindavoine, Michel [9403-15] S3, [9403-18] S4  
Pal, Umпада 9402 Program Committee  
Paletta, Lucas 9406 Program Committee, 9406 S4 Session Chair  
Paljic, Alexis [9396-23] S6, [9398-3] S1  
Palmieri, Roberta [9403-26] SPTues  
Paluri, Seethal [9410-12] S3  
Pan, Xunyu [9408-18] S5  
**Panchanathan, Sethuraman** 9411 Program Committee  
Pandremmenou, Katerina [9394-47] SPTues, [9410-12] S3  
**Pankanti, Sharathchandra** 9407 Program Committee  
**Pappas, Thrasyvoulos N.** 9394 Conference Chair, 9394 SKey Session Chair, [9394-12] S2, [9394-12] S3, [9394-19] S3, 9410 Program Committee, SC812  
Paquet, Eric 9393 Program Committee  
Paquet, Thierry [9402-13] S4, [9402-14] S4  
Paquit, Vincent C. 9405 Program Committee  
Parameswaran, Shubin [9407-32] S7  
Pardeshi, Sunil P. [9391-3] S2  
Park, Bosoon [9405-5] S1  
Park, Chongwook [9395-44] S8  
Park, Hyung Jun [9395-5] S2  
Park, HyunMook [9403-21] S5  
Park, Jongjin [9396-11] S3, [9396-11] S7  
Park, Kihong [9406-8] S3  
Park, Sang Wook [9399-10] S2  
Park, Soon-gi [9391-33] S9  
Park, Soon-Young [9405-31] SPTues  
Park, Sungchan [9395-25] S4  
Park, Taeyong [9396-11] S3, [9396-11] S7  
Park, Yongmin [9396-39] S10  
Parra, Albert [9410-17] S4  
Parraman, Carinna E. 9395 Program Committee, [9395-12] S3, 9398 Program Committee  
Parsopoulos, Konstantinos E. [9410-13] S3  
Patil, Ajay [9402-17] S4  
Patil, Pranita [9394-18] S3  
Paudyal, Pradip [9396-32] S8  
Paul, Peter 9407 Program Committee, [9407-9] S2  
Paulus, Dietrich W. [9404-5] S2  
Pearlman, William A. 9410 Program Committee  
Pedeboy, Jean-Pierre [9393-4] S2  
Pedersen, Jesper Melgaard [9396-28] S7  
Pedersen, Marius [9395-17] S3, [9396-24] S7, [9396-25] S7, [9396-27] S7  
Pelah, Adar 9394 Program Committee  
Pelekanos, Nectarios [9411-12] S4  
Peli, Eliezer 9394 Program Committee  
Pellegrino, Donald A. 9397 Program Committee  
Peltoketo, Veli-Tapani [9396-10] S3, [9396-10] S7  
Peng, Can [9403-20] S4  
Peng, Leli [9403-19] S4  
Peng, Liangrui [9402-11] S3  
**Peng, Xiaopeng** [9401-11] S3  
Peng, Xujun [9402-12] S3  
Peng, Yi [9393-8] S3  
Percan, Yvonne [9397-10] S5  
Perdu, Nicolas [9395-39] S8  
Pereira, Fernando 9410 Program Committee  
Perreira Da Silva, Matthieu [9394-10] S1  
Perrine, Clency [9396-29] S7  
**Perry, Stuart W.** 9396 Program Committee, 9396 S9 Session Chair  
Pesquet-Popescu, Béatrice 9410 Program Committee  
Peterson, John E. [9405-4] S1  
Pevny, Tomas [9409-15] S4  
Phillips, Wilfried [9391-20] S6, [9399-14] S3, [9399-27] S4, [9399-42] SPTues, [9400-19] SPTues  
Phillips, Jonathan B. SC1049, SC1157  
Picone, Nicoletta [9405-35] SPTues  
Piepers, Bastian [9391-20] S6  
Pillet, Maurice [9398-20] S2, [9398-20] S3  
Pinaud, Daniel T. [9409-6] S2

# Index of Authors, Chairs, and Committee Members

Ping, Xijian [9409-25] S7  
Pintus, Ruggero [9394-36] S8  
Piramanayagam,

Sankaranaryanan [9405-12] S3  
PITARD, Gilles [9398-20] S2, [9398-20] S3  
Pitera, David [9398-5] S1  
Pitkänen, Ville [9406-1] S1  
Pitta, Brandi [9395-11] S2  
Pitts, Barbara 9404 Program Committee  
Platiša, Ljiljana [9391-20] S6, 9399 Program Committee, 9399 S3 Session Chair, 9399 S4 Session Chair, [9399-14] S3, [9399-42] SPTues  
Plaza Miguel, Antonio J. 9400 Program Committee  
Plichta, Mathias [9400-26] SPTues

Poggi, Giovanni [9409-27] S5  
Pogranichniy, Nicholas R. [9401-7] S2  
Pohl, Petr [9393-2] S1  
Politte, David G. [9401-10] S2  
Pöllänen, Irene [9399-2] S1  
Polychronis, Marios [9411-12] S4  
Polys, Nicholas F. [9397-4] S2  
Pommerien, Wilfried [9411-17] SPTues  
Ponomarenko, Nikolay N. [9394-16] S3  
**Ponomaryov, Volodymyr** 9400 Program Committee, [9400-17] SPTues, [9400-5] S1  
Pons, Alicia Aglio [9398-13] S2  
Pont, Sylvia C. 9394 S4 Session Chair, [9394-11] S2, [9394-11] S3, [9394-22] S4, [9394-54] SPTues

Popovic, Vladan [9400-11] S3  
Porral, Philippe [9398-3] S1, [9403-10] S2  
Porter, Reid B. [9399-1] S1, [9405-21] S5  
Pouli, Tania [9394-52] SPTues  
Pourreza-Shahri, Reza [9400-7] S2  
Pourtaherian, Arash [9399-25] S4  
Pow, Edmond [9405-9] S2  
Prabhune, Ajinkya [9402-4] S1  
Prakash, Om [9410-18] S4  
Pramoun, Thitiporn [9401-14] S3

Preiss, Jens [9396-38] S9  
Prêteux, Françoise 9399 Program Committee  
Prieto, Flavio A. [9406-18] S5  
Prieto-Matias, Manuel [9400-1] S1, [9400-18] SPTues  
Primiano, Nicholas [9406-4] S2  
**Prokushkin, Sergey F.** [9396-4] S1  
Pruett, William Andrew [9397-24] SPTues  
Przybyla, Craig [9401-8] S2  
Psarrou, Alexandra [9396-22] S6, [9396-33] S8

Ptucha, Raymond [9401-15] S3, [9406-5] S2  
**Puech, William** 9393 Conference Chair, 9393 S2 Session Chair, 9393 S4 Session Chair, [9393-4] S2  
Pulli, Karl A. [9399-7] S2, 9404 Program Committee, 9411 Program Committee  
Purdy, Jonathan H. [9391-8] S3  
Püst, Stefan [9411-1] S1

## Q

Qian, Yinlong [9409-16] S4  
Qiao, Mu 9408 Program Committee  
Qiao, Mu [9408-12] S4, [9408-14] S4  
Qiao, Wei [9410-23] SPTues, [9410-24] SPTues  
Qu, Chengchao [9405-25] S6  
Qu, Jingwei [9402-22] S6  
Quinquis, Catherine [9396-29] S7  
Quraishi, Mohammad Faiz [9408-10] S3

## R

Rabaev, Irina [9402-16] S4  
**Rabani, Majid** Symposium Committee, 9410 Program Committee, SC1015, SC468  
Racev, Marek [9406-21] S6  
Radhakrishnan, Regunathan 9409 Program Committee  
**Radics, Peter J.** [9397-4] S2  
Radis, Michela [9398-23] S4  
Radun, Jenni E. [9396-26] S7  
Radzikowska, Milena [9394-37] S8  
Rafi Nazari, Mina [9395-2] S1  
Rahnemoonfar, Maryam [9411-4] S2  
Rajagopalan, Ramesh [9407-36] S4  
Rakvic, Ryan N. [9400-12] S3  
Ramachandru, Sitaram N. V. [9402-17] S4  
Ramalingam, Soodamani [9407-2] S1, [9407-5] S1  
Ramaz, François [9403-29] S2  
Ramirez-Tachiquin, Marco [9400-17] SPTues  
Ramos-Diaz, Eduardo [9400-17] SPTues  
Ramos-Diaz, Eduardo [9400-5] S1  
Ramponi, Gianni 9399 Program Committee  
Ranieri, Nicola [9391-16] S5  
Rao, Rashmi [9399-37] SPTues  
Rasmussen, D. René 9396 Program Committee  
Raviv, Daniel 9406 Program Committee  
Razevig, Vladimir [9401-16] SPTues  
Redi, Judith A. 9394 Program Committee, [9394-31] S6, [9394-7] S1  
Reed, Alastair M. 9408 Program Committee, [9409-5] S2  
Rehg, James M. [9391-500] SPLen1  
Rehman, Abdul [9394-3] S1  
Reibman, Amy R. [9394-6] S1  
Reichl, Mathias [9411-6] S2  
Reiners, Dirk [9392-3] S1  
**Reinert-Nash, John R.** 9404 Program Committee  
Reinheimer, Alice L. 9403 Program Committee, 9403 S5 Session Chair  
Remes, Vaclav [9398-6] S1  
Ren, Bing [9397-26] SPTues  
Ren, Sijie [9400-13] S3  
Restrepo, Alfredo [9394-33] S7, [9399-15] S5, [9399-30] SPTues  
Reznik, Yuriy A. [9411-3] S2  
Rhodes, Laura A. [9399-28] S4

Rhyne, Theresa-Marie 9397 Program Committee  
Ribarsky, William [9397-3] S1  
Ribera, Javier [9407-17] S4, [9408-9] S3  
Richardson, Robert [9398-27] S5  
Riess, Christian [9409-2] S1  
Ringger, Eric K. 9402 Conference Chair, 9402 S3 Session Chair, 9402 SKey Session Chair  
Rising, Hawley K. 9394 Program Committee  
Ritschel, Tobias [9394-5] S1  
Rizzi, Alessandro 9395 Conference Chair, 9395 S6 Session Chair, SC1097  
Ro, Yong Man [9391-28] S8  
Roberts, Ian 9397 Conference CoChair  
Robles-Gonzalez, Marco [9400-17] SPTues  
Rodin, Vladislav G. [9406-25] SPTues  
Rodricks, Brian G. 9404 Program Committee  
Rodriguez Pardo, Carlos E. [9395-39] S8  
Rodriguez, Tony F. [9409-4] S2, [9409-7] S2  
Rodriguez-Vázquez, Ángel B. [9400-19] SPTues, [9403-17] S4, [9403-24] S5  
Rogers, Eliot [9409-7] S2  
Rogowitz, Bernice E. 9394 Conference Chair, 9394 S2 Session Chair, 9394 S7 Session Chair, 9394 S8 Session Chair, 9394 SKey Session Chair, [9394-35] S7, 9395 SKey Session Chair, 9398 S3 Session Chair, SC969  
Roheda, Siddharth [9407-4] S1  
Roland, Jackson K. M. [9396-21] S6, 9404 Program Committee  
Roli, Fabio [9409-27] S5  
Romano, Rocco [9401-18] SPTues  
Romps, David M. [9393-16] S5  
**Röning, Juha** 9406 Conference Chair, 9406 S1 Session Chair, 9406 S2 Session Chair, [9406-1] S1, [9406-11] S3, [9406-15] S4, [9406-23] S6  
Rosenbaum, Rene 9397 Program Committee  
Rosenbaum, René 9411 Program Committee  
Rosenberger, Christophe C. [9409-10] S3  
Rosner, Jakob [9400-6] S1  
**Rossi, Giuseppe** [9398-23] S4  
Rossi, Maurizio [9395-45] SPTues  
Roujas, Lucie [9398-26] S4  
**Rousson, Johanna** [9391-20] S6  
Rozolis, Erik [9408-13] S4  
**Ruane, Garreth J.** [9401-11] S3  
Rubel, Aleksey S. [9399-18] S5  
Ruecker, Stan [9394-37] S8  
Ruggiero, Christy [9405-21] S5  
**Rui, Yong** 9411 Program Committee  
Ruichek, Yassine [9406-13] S4  
**Ruikar, Jayesh D.** [9396-3] S1  
Rupkhalvis, John A. [9391-5] S2  
Rushmeier, Holly E. [9394-36] S8, [9398-5] S1  
Russell, Laura [9403-14] S3

**Ruzanka, Silvia P.** [9392-9] S2  
Ruzic, Tijana [9399-27] S4  
Rychagov, Michael N. [9393-2] S1, [9395-10] S2  
Ryu, Seungchul [9393-17] S5, [9406-8] S3

## S

Saadane, Abdelhakim [9396-36] S9  
Saadane, Hakim [9396-29] S7  
**Saber, Eli** [9395-8] S2, [9401-15] S3, [9405-12] S3, [9405-14] S4, [9405-38] SPTues, 9407 Conference Chair, 9407 S1 Session Chair, 9407 S6 Session Chair, 9410 Program Committee  
Sadeghipoor Kermani, Zahra [9404-14] S5  
**Safae-Rad, Reza** [9395-28] S5, [9395-29] S5, 9396 Program Committee  
Safonov, Ilija V. [9395-10] S2  
Sahoo, Dushyant [9402-17] S4  
**Said, Amir** 9410 Conference Chair, 9410 S2 Session Chair, 9410 S3 Session Chair, [9410-11] S2  
Saito, Hideo [9392-17] S4  
Saito, Shunta [9405-20] S5  
Saito, Toyohiro [9391-42] SPTues  
Sakamoto, Hirotaka [9391-37] S10  
Sakamoto, Naohisa [9397-28] SPTues  
Sakamoto, Takashi [9395-41] S8  
Salama, Paul [9408-4] S2  
**Salgado, Luis** 9400 Program Committee  
Samadzadegan, Sepideh [9398-31] S5  
Sambongi, Masao [9398-4] S1  
Sampat, Nitin 9404 Conference Chair, 9404 S2 Session Chair  
Samper, Serge [9398-20] S2, [9398-20] S3  
Sandré-Chardonnel, Etienne [9403-10] S2  
Sansone, Carlo [9409-27] S5  
Santos, Pedro [9403-5] S1  
Saponara, Sergio 9400 Program Committee  
**Sari-Sarraf, Hamed** 9405 Program Committee  
Sariyanidi, Evangelos [9406-6] S2  
Sarukhanyan, Hakob G. [9399-34] SPTues, [9411-19] SPTues  
Sasahara, Shinji [9396-13] S4  
Sasaki, Hiroki [9403-1] S1  
Sauer, Ken D. 9401 Conference Chair, 9401 S1 Session Chair, 9401 S2 Session Chair, 9401 S3 Session Chair  
Saul, Hagen [9407-1] S1  
**Savakis, Andreas E.** 9407 Program Committee, 9407 S2 Session Chair, [9408-10] S3  
Schällicke, Marten [9411-1] S1  
Scharfenberger, Christian [9406-9] S3  
Scheidat, Tobias [9409-9] S3  
Scheler, Inga 9397 Program Committee  
**Schelkens, Peter** [9399-14] S3

Schild, Jonas [9391-44] SPTues  
Schlueter, Jonathan [9392-1] S1  
Schmidt, Erick [9411-26] SPTues  
Schnackenberg, Ryan [9398-22] S2, [9398-22] S3  
Schoemaker, Marga [9394-54] SPTues  
Schoettle, Pascal [9409-2] S1  
Schön, Stefan [9411-1] S1, [9411-7] S2  
Schonfeld, Dan 9407 Program Committee, 9410 Program Committee  
Schreck, Tobias 9393 Program Committee, 9397 Program Committee  
Schuchert, Tobias [9405-25] S6  
Schuller, Florian [9407-15] S4  
Schulz, Hans-Joerg [9397-6] S3  
Schulze, Jürgen P. [9392-2] S1, 9397 Program Committee, [9397-26] SPTues  
Schumann, Arne [9407-33] SPTues  
Schumann-Olsen, Henrik [9393-9] S3  
Scully, Kevin J. [9401-20] SPTues  
Sdiri, Bilel [9396-6] S1  
Sedighi, Vahid [9409-14] S4  
Segall, Andrew [9404-24] SPTues, 9410 Program Committee  
Segura Puchades, Josep [9403-3] S1  
Seidel, Hans-Peter [9394-5] S1  
**Sekar, Sathiyarayanan** [9407-30] S7  
Selesnick, Ivan W. 9399 Program Committee  
Selvaraj, Siddharth [9397-26] SPTues  
Semenishchev, Evgeny [9404-26] SPTues  
Semmen, Darren L. [9401-20] SPTues  
Sencan, Onur [9406-6] S2  
Sencar, Husrev Taha 9409 Program Committee, 9409 S5 Session Chair, [9409-29] S5  
Seo, Juwon [9391-1] S1  
Seo, Min-Woong [9403-11] S2  
Seo, Seung Ji [9410-5] S1  
Seo, Wontaek [9391-1] S1  
Seo, Woongjin [9396-11] S3, [9396-11] S7  
Seo, Youngjun [9395-35] S6  
Serranti, Silvia [9403-26] SPTues, [9405-35] SPTues  
Sersic, Damir 9399 Program Committee  
Serstobitov, Alexander I. [9410-15] S3  
Sešek, Aleksander [9403-2] S1  
Seth, Sharad [9402-21] S6  
Seubert, Chris [9398-22] S2, [9398-22] S3  
Seulin, Ralph 9405 Program Committee  
Seuret, Mathias [9402-2] S1  
**Seybold, Tamara N.** [9393-13] S4, [9400-26] SPTues  
Shah, Kuldeep [9405-14] S4  
Shahid, Muhammad [9394-47] SPTues  
Shaji, Appu [9394-27] S6  
Shakya, Bicky [9406-7] S2  
**Sharma, Gaurav** 9395 S8 Session Chair, [9395-39] S8, 9409 Program Committee, 9409 SKey Session Chair, 9410 Program Committee, SC1154

# Index of Authors, Chairs, and Committee Members

- Sharma, Sharad [9392-7] S2  
Sharma, Vinay 9400 Program Committee
- Shaw, Christopher D. [9392-12] S3, 9397 Conference CoChair
- Shaw, Mark Q. [9401-15] S3  
Sheikh Faridul, Hasan [9409-18] S6
- Shen, Bin [9408-3] S2
- Sheng, Liu [9393-22] SPTues
- Sherman, William R. [9392-23] S4
- Sherstobitov, Alexander I. [9399-29] SPTues
- Shi, Yun Qing 9409 Program Committee
- Shibata, Takashi [9404-15] S5
- Shim, Hyunjung [9394-44] SPTues, [9401-19] SPTues, [9405-27] SPTues
- Shimizu, Masayoshi [9392-17] S4
- Shin, Dong-Won [9395-24] S4  
**Shin, Jang-Kyoo** [9403-23] S5
- Shin, Tae-Sung [9405-5] S1
- Shirvaikar, Mukul V. 9400 Program Committee, 9400 S2 Session Chair, [9400-4] S1
- Shoji, Kenji [9410-25] SPTues
- Shrestha, Raju [9405-16] S4  
**Sidike, Paheding** [9405-1] S1
- Sidla, Oliver 9407 Program Committee, 9407 S4 Session Chair, [9407-11] S3, [9407-28] S6
- Sie, Yiping [9395-18] S3
- Silva Rocha Aguiar, Carla [9392-6] S2
- Silva, Alessandro R. [9393-10] S3
- Silva, Alexandre F. [9394-31] S6
- Silvén, Olli 9411 Program Committee
- Simmons, Jeffrey P. [9401-8] S2
- Simon-Liedtke, Joshua Thomas [9395-40] S8, [9395-43] S8
- Simpkins, Jonathan D. [9404-8] S3
- Simpson, Garth J. [9401-7] S2
- Simske, Steven J. [9398-27] S5
- Sinclair, Stefan [9394-37] S8
- Singh, Gurshamnnot [9401-13] S3
- Sinha, Ashoke Kumar [9396-3] S1
- Sitnik, Robert 9393 Conference Chair, 9393 S1 Session Chair, 9393 S3 Session Chair, 9393 S5 Session Chair
- Sjöström, Märten 9404 Program Committee
- Skodras, Athanassios N. 9400 Program Committee
- Skodras, Evangelos [9394-28] S6
- Skotheim, Øystein [9393-9] S3
- Slavuj, Radovan [9395-13] S3, [9395-17] S3
- Sliskovic, Maja [9405-8] S2
- Sлити, Nabil [9402-3] S1
- Slonaker, Steven D. [9404-12] S4
- Slusallek, Philipp [9397-2] S1
- Smirnov, Sergey [9399-22] S6
- Smith, Jesse [9392-1] S1
- Smith, John R. 9411 Program Committee
- Smithwick, Quinn Y. [9391-16] S5
- Smolka, Bogdan [9400-27] SPTues
- Smolka, Bogdan [9400-29] SPTues
- Sohelli, Mohammad Reza [9402-10] S3, [9402-15] S4
- Sohn, Kwanghoon** [9393-17] S5, [9393-18] S5, [9406-8] S3
- Sole, Aditya S. [9398-18] S2
- Somincelli, Eero [9394-17] S3
- Son, Kwang-Chul [9391-38] S10
- Song, Byung Cheol [9410-5] S1
- Sonn, Ezri [9407-14] S3
- Soto-Cajiga, J. A. [9407-34] SPTues
- Soudene, Wided [9407-22] S5
- Soukup, Daniel [9409-21] S6
- Soulier, Laurent [9403-15] S3
- Sousa, Ricardo M.** [9403-5] S1
- Sridhar, Shubang [9392-1] S1
- Srihari, Sargur N.** 9402 Program Committee, [9402-25] S7
- Srinivasa Rao, Phanish H. [9404-4] S2
- Srivastava, Rajneesh Kumar [9410-18] S4
- Šroubek, Filip 9404 S4 Session Chair, [9404-10] S4, [9404-6] S2
- Stalnaker, David [9402-5] S2
- Stamm, Matthew C. [9409-28] S5
- Stanco, Filippo D. 9404 Program Committee
- Starikov, Sergey N. [9406-25] SPTues
- Stauffer, Michael A. [9395-8] S2
- Stavrakis, Efstathios [9411-2] S4
- Stechele, Walter [9400-26] SPTues
- Steed, Chad A. 9397 Program Committee
- Stefas, Mickaël [9397-15] S7
- Steiger, Martin [9397-21] S10
- Steinhausen, Heinz Christian [9398-14] S2, [9398-9] S1
- Stern, John D.** 9391 Program Committee
- Stevenson, Robert L.** [9404-8] S3, 9410 Conference Chair, 9410 S1 Session Chair, 9410 S4 Session Chair, [9410-2] S1
- Stokkermans, Mariska G. M. [9394-20] S4
- Štolc, Svorad 9405 Program Committee, 9405 S6 Session Chair, [9409-21] S6
- Stolz, Christophe 9405 Program Committee
- Stork, David G.** SC965
- Storvik, Jehans Jr. [9396-24] S7
- Stotzka, Rainer [9402-4] S1
- Stramacci, Alessio [9399-41] SPTues
- Stricker, Didier [9402-10] S3, [9402-15] S4
- Strothkaemper, Christian [9398-24] S4
- Su, Guan-Ming [9404-16] S5, [9404-23] SPTues
- Subedar, Mahesh M. [9394-13] S2, [9394-13] S3
- Subramaniam, Venkata 9402 Program Committee
- Subramanian, Kalpathi R. 9397 Program Committee
- Suenaga, Ryo [9393-15] S5
- Sugawa, Shigetoshi [9403-13] S3
- Suginohara, Hidetsugu [9391-37] S10
- Sugiura, Yuki [9403-1] S1
- Suk, Hyeon-Jeong [9394-41] SPTues, [9395-30] S5
- Sullivan, Shane Z. [9401-7] S2
- Sun, Jun [9402-19] S5
- Sun, Lin [9405-3] S1
- Sun, Pei-Li [9395-18] S3
- Sun, Wenxiu [9393-6] S2
- Sun, Yufang [9395-6] S2
- Sundaram, Hari 9411 Program Committee
- Sung, Geeyoung [9391-1] S1
- Sung, Jung-Min [9395-32] S6
- Sung, Meng-Che [9407-35] SPTues
- Süsstrunk, Sabine** 9394 Program Committee, [9394-27] S6, [9394-39] S8, [9395-39] S8, 9398 Program Committee, 9404 Program Committee, [9404-14] S5
- Suveg, Ildiko [9399-12] S3
- Suyama, Shiro [9391-37] S10
- Suzuki, Kazuyoshi [9393-15] S5
- Švigelj, Andrej [9403-2] S1
- Swaminathan, Ashwin 9409 Program Committee
- Swartzlander, Grover A.** [9401-11] S3
- Swingle, Scott D. [9402-6] S2
- Syll, Miguel [9411-11] S3
- Taeymans, Yves [9399-14] S3
- Taghva, Kazem 9402 Program Committee
- Tahboub, Khalid [9407-17] S4, [9408-9] S3
- Tajbakhsh, Touraj 9404 Program Committee
- Takada, Hideaki [9391-7] S2
- Takahashi, Hideya** [9391-19] S5
- Takahashi, Hiroshi [9394-51] SPTues
- Takahashi, Keita [9391-42] SPTues, [9391-43] SPTues, [9393-15] S5
- Takahashi, Shigeo 9397 Program Committee
- Takala, Jarmo Henrik 9411 Program Committee
- Takasawa, Taishi [9403-11] S2
- Takeda, Tomoyuki [9398-10] S1
- Takemiya, Hiroshi [9397-28] SPTues
- Talebi, Hossein [9404-16] S5
- Tamm, Georg [9397-2] S1
- Tan, Tieniu [9409-16] S4
- Tanaka, Masayuki [9404-15] S5
- Tanaka, Satomi [9394-51] SPTues
- Tang, Zhi [9402-22] S6, [9402-7] S2
- Tanksale, Tejas Madan [9398-28] S5
- Tann, Hokchhay [9406-7] S2
- Tastl, Ingeborg 9398 Program Committee, 9398 S5 Session Chair, [9398-15] S2
- Tavakoli, Samira [9394-4] S1
- Tay, Mei Chen [9393-24] SPTues
- Taylor, Steven [9403-22] S5
- te Pas, Susan F. [9394-54] SPTues
- Tehrani, Mehrdad Panahpour [9391-42] SPTues, [9391-43] SPTues, [9393-15] S5
- Teichert, Sven [9398-24] S4
- Temeltas, Hakan [9406-6] S2
- Tempelman, Erik [9398-32] S5
- Teng, Wen Chih [9407-35] SPTues
- Teow, Jing Min [9393-24] SPTues
- Teranishi, Nobukazu 9403 Program Committee
- Terribery, Timothy B. [9410-10] SPTues
- Tescher, Andrew G.** 9410 Program Committee
- Tezaur, Radka 9404 Conference Chair, 9404 S3 Session Chair, [9404-12] S4
- Tezuka, Tomoyuki [9393-15] S5
- Theisen, Bernard L. 9406 Program Committee
- Thoma, George R.** 9402 Program Committee
- Thomas, Rahul [9403-28] SPTues
- Thomas, Rohit [9403-28] SPTues
- Thompkins, Phillip [9392-1] S1
- Thorstensen, Jostein [9393-9] S3
- Thoyyetti, Ushakiran [9400-10] S2
- Thum, Simon [9397-21] S10
- Tian, Dongwen [9395-14] S3, [9395-15] S3
- Tian, Fengwen [9395-14] S3
- Tian, Qiyuan [9404-2] S1, [9404-3] S1
- Tian, Yonghong 9408 Program Committee
- Tico, Marius 9411 Program Committee
- Tikanmäki, Antti [9406-1] S1
- Tinet, Eric [9403-16] S3, [9403-29] S2
- Toivanen, Pekka J. [9399-2] S1
- Tokai, Shogo [9393-14] S4
- Tokareva, Svetlana V. [9399-21] S6
- Tolone, William J. [9397-3] S1
- Tolonen, Teemu [9399-2] S1
- Tolstaya, Ekaterina V. [9393-2] S1
- Tominaga, Shoji** 9395 Program Committee, [9398-18] S2
- Tomioka, Satoshi [9401-17] SPTues
- Tong, Xin [9392-12] S3
- Tonne, Danah [9402-4] S1
- Toque, Jay Arre O. [9398-10] S1
- Torres, Juan [9400-28] SPTues
- Toscani, Matteo [9394-23] S4
- Toth, Scott J. [9401-7] S2
- Toyama, Fubito [9410-25] SPTues
- Toyoshima, Yoshiaki [9403-1] S1
- Toyota, Saori [9398-8] S1
- Tran, John J.** [9401-20] SPTues
- Tran, Loc [9399-3] S1, [9399-31] SPTues
- Trémeau, Alain [9398-17] S2
- Triantaphillidou, Sophie 9396 Conference Chair, 9396 S2 Session Chair, [9396-20] S6, [9396-22] S6, [9396-33] S8, 9404 S6 Session Chair
- Tricha, Nawfel [9401-10] S2
- Trontelj, Janez** [9403-2] S1
- Truchetet, Frédéric** 9393 Program Committee, [9393-11] S4, [9393-24] SPTues, [9393-7] S3
- Tsakatakis, Grigorios [9401-5] S1, [9403-6] S2
- Tsai, Dong-Chen [9404-21] SPTues
- Tsai, Du-Ming [9406-2] S1
- Tsakalides, Panagiotis [9401-5] S1, [9403-6] S2
- Tse, Kevin [9405-40] SPTues
- Tseng, Tzu-Hsun [9406-2] S1
- Tsifouti, Anastasia [9396-22] S6, [9396-33] S8
- Tsoy, Yury [9396-2] S1
- Tsubaki, Ikuko [9399-20] S6
- Tsumura, Norimichi [9394-51] SPTues, [9398-4] S1, [9398-8] S1
- Tu, Yan [9396-35] S9
- Tualle, Jean-Michel 9403 Program Committee, 9403 S3 Session Chair, [9403-16] S3, [9403-29] S2
- Tubaro, Stefano 9393 Program Committee
- Tyler, Christopher W. 9394 Program Committee
- Tziortziotis, Nikolaos [9410-12] S3
- 
- U**
- Uchino, Shunpei [9393-14] S4
- Uhring, Wilfried** [9403-3] S1
- Ulichney, Robert A. [9395-19] S3
- Um, JiYong [9403-21] S5
- Uno, Miho [9396-13] S4
- Urban, Philipp [9396-38] S9, 9398 Conference Chair, 9398 S5 Session Chair, [9398-21] S2, [9398-21] S3, [9398-28] S5, [9398-31] S5
- Usher, Colin T. [9407-12] S3
- Uz Kent, Burak [9407-6] S1
- 
- V**
- Vajuvalli, Nithin N. [9399-37] SPTues
- Valentín, Kristián [9409-21] S6
- Valin, Jean-Marc [9410-8] S2
- Valpreda, Fabrizio [9398-33] S5
- van de Wouw, Dennis W. J. M. [9407-25] S6, [9407-27] S6
- van der Lans, Ivo [9398-21] S2, [9398-21] S3
- van Doorn, Andrea Jacoba [9394-11] S2, [9394-11] S3
- Van Ngo, Khai [9396-24] S7
- VanderZwaag, John [9397-27] SPTues
- Vanscheidt, Philipp [9402-4] S1
- Vantaram, Sreenath Rao 9407 Program Committee
- Varsani, Vimal Vimal [9407-2] S1
- Vasiliev, Igor A. [9401-16] SPTues
- Vasilii, Marius [9403-16] S3
- Vavra, Radomir [9398-25] S4
- Vazquez-Cervantes, Alberto [9407-29] S7, [9407-34] SPTues
- Vazquez-Corral, Javier [9394-26] S5, [9394-50] SPTues
- Veeraraghavan, Ashok 9404 Program Committee
- Venkatrayappa, Darshan [9393-1] S1
- Verdoliva, Luisa [9409-27] S5
- Verhofstad, Wim [9398-32] S5
- Venhorst, Kevin [9405-14] S4
- Vetro, Anthony 9410 Program Committee

# Index of Authors, Chairs, and Committee Members

Viard-Gaudin, Christian 9402 Program Committee  
Vibert, Benoît [9409-10] S3  
Vielhauer, Claus [9393-25] SPTues, [9393-5] S2, 9409 Program Committee, [9409-11] S3, [9409-9] S3  
Villegas, Javier [9394-34] S7  
Virtanen, Toni [9396-26] S7  
Vishwanathan, S. V. N. [9394-30] S6, [9408-6] S2  
Vivian, Anthony [9391-8] S3  
Vizcarra Melgar, Max E. [9404-25] SPTues  
Vodacek, Anthony [9407-6] S1  
Vögele, Anna [9397-13] S6  
Vogels, Ingrid M. L. C. [9394-20] S4  
**Vogelsang, Thomas** 9404 Program Committee  
**Voloshynovskiy, Svyatoslav V.** 9409 Program Committee, 9409 S2 Session Chair, [9409-20] S6  
Vornicu, Ion [9403-17] S4  
Vorobiev, Dmitry [9403-9] S2  
**Voronin, Viacheslav V.** [9399-21] S6, [9399-29] SPTues, [9401-16] SPTues

## W

Wachs, Juan P. 9400 Program Committee  
Wagner, Jerry K. [9395-11] S2, [9396-14] S4, [9401-15] S3  
Wainwright, Ian [9399-8] S2  
Wakashima, Shunichi [9403-13] S3  
Walworth, Vivian K. 9391 Program Committee  
Wan, Chung Chun (Gordon) 9403 Program Committee, 9403 S2 Session Chair  
Wan, Li [9406-15] S4  
Wan, Xiazi [9394-43] SPTues  
Wandell, Brian A. [9404-2] S1, [9404-3] S1  
Wang, Baokang [9408-22] S6  
Wang, Chaoli 9397 Program Committee, [9397-5] S3  
Wang, Cheng-i [9392-16] S4  
Wang, Danli [9391-26] S7  
Wang, Dongsheng [9396-7] S2, [9396-7] S6  
Wang, GengYun [9403-19] S4, [9403-20] S4, [9403-25] SPTues  
Wang, Haitao [9405-10] S3  
Wang, Haoyu [9405-24] S6  
**Wang, Jianping** [9391-46] SPTues  
Wang, Jihong [9399-31] SPTues  
Wang, Jin [9411-29] SPTues  
Wang, Jing [9394-12] S2, [9394-12] S3  
Wang, Jue [9404-9] S3  
Wang, Kun [9394-46] SPTues  
Wang, Lu [9399-39] SPTues  
Wang, MengMeng 9411 Program Committee  
Wang, Michael 9404 Program Committee  
Wang, Qi [9400-21] SPTues, [9400-22] SPTues, [9400-23] SPTues, [9400-24] SPTues, [9400-25] SPTues  
Wang, Qifan [9408-3] S2  
Wang, Ran [9409-25] S7  
Wang, Ronggang [9393-8] S3, [9410-7] S2

Wang, Shengjin 9408 Program Committee  
Wang, Wei [9409-16] S4  
Wang, Weixing [9395-26] S4  
Wang, Weixing [9393-23] SPTues, [9393-26] SPTues, [9399-4] S1, [9399-40] SPTues  
Wang, Wiley H. 9408 Program Committee, [9408-19] S5  
Wang, Xiaohua [9408-2] S1  
Wang, Xiaoyu [9397-3] S1  
Wang, Xinheng [9400-25] SPTues  
Wang, Xinyang 9403 Program Committee, 9403 S1 Session Chair, [9403-4] S1  
Wang, Xiyang [9405-10] S3  
Wang, Yongtian [9391-27] S7  
Wang, Yu [9401-6] S1  
Wang, Zhiwei [9393-23] SPTues  
Wang, Zhiwei [9395-26] S4  
Wang, Zhou [9394-3] S1  
Wang, Zibin [9393-6] S2  
Wány, Martin [9403-5] S1  
Ward, Chris 9391 Program Committee  
Ward, Greg 9398 Program Committee, 9398 S1 Session Chair  
Wat, Peter [9405-9] S2  
Watamaniuk, Scott N. J. [9391-24] S7  
Watanabe, Katsumi [9391-39] S10  
Watson, Andrew B. 9394 Program Committee, [9394-1] SKey  
Weaver, Matthew [9409-6] S2  
Weber, Christopher [9397-8] S4  
Weber, Philip [9397-26] SPTues  
Webster, Michael A. 9394 Program Committee  
Wei, Hao [9402-2] S1  
Wei, Yuxing [9400-14] S3  
Weissman, Michael A. 9391 Program Committee  
Welch, David [9397-27] SPTues  
Wen, ZhiGang [9410-23] SPTues  
West, Ruth G. [9392-13] S3  
Westhofen, Martin [9391-9] S3  
Westland, Stephen 9395 Program Committee  
Whangboo, Taeg Keun [9391-3] S2  
Whitaker, James M. [9409-26] S7  
Whitaker, Jerry [9409-32] SKey  
**Widenhorn, Ralf** 9403 Conference Chair  
Wijnhoven, Rob G. J. [9407-20] S5, [9407-21] S5  
Wijntjes, Maarten W. A. [9394-11] S2, [9394-11] S3  
Wilcox, Laurie M. [9391-23] S6  
Wild, Jevon [9408-19] S5  
Wiley, Bridgette [9392-2] S1  
Wilhelm, Nils [9397-13] S6  
Willey, Jefferson M. [9401-2] S1  
Williams, Benjamin C. [9406-7] S2  
Williams, Donald R. SC807  
Williamson, Owen [9392-12] S3  
**Winer, Eliot** [9392-1] S1, [9392-15] S4  
Wischgoll, Thomas 9397 Conference Chair, 9397 SKey Session Chair, [9397-12] S6  
Wittebrood, Rimmert [9401-3] S1  
Wong, Adelia [9406-5] S2

Wong, Alexander [9406-9] S3, [9410-4] S1  
Wong, Christina [9394-36] S8  
Wong, Cindy M. [9405-2] S1  
Woo, Jihwan [9406-10] S3  
Woo, Sungjoo [9395-44] S8  
**Woods, Andrew J.** Symposium Committee, 9391 Conference Chair, 9391 Session Chair, SC060  
Woods, John W. 9410 Program Committee  
Wright, Steve T. [9391-24] S7  
Wu, Chyuan-Tyng [9395-4] S1  
Wu, Wencheng [9407-3] S1  
Wu, Yingcai 9397 Program Committee  
Wüller, Dietmar 9404 Conference Chair, [9404-19] S3, [9404-19] S7  
Wyckens, Emmanuel [9391-21] S6  
Wyse, Terry [9408-14] S4

## X

Xia, Yatong [9410-20] S4  
Xiao, Liangliang [9408-18] S5  
Xie, Yaohua [9391-26] S7  
Xin, Tiantian [9399-39] SPTues  
Xiong, Weihua 9404 Program Committee  
Xiu, Pingping 9402 Program Committee  
Xu, Beilei [9407-9] S2  
Xu, Chang [9401-6] S1  
Xu, Lichao [9405-17] S4  
Xu, Shuyu [9397-17] S9  
Xu, Yaowu 9407 Program Committee  
Xu, Zhen [9402-25] S7  
Xu, Zhimin [9400-13] S3  
Xue, Kang [9405-10] S3

## Y

Yabu, Hirofumi [9391-19] S5  
**Yamada, Kenji** [9391-19] S5  
Yamaguchi, Nobuyasu [9392-17] S4  
**Yamamoto, Hirotsugu** [9391-37] S10  
Yamamoto, Shoji [9398-4] S1  
Yamanaka, Satoshi [9391-37] S10  
Yamashita, Hirofumi [9403-1] S1  
Yamashita, Hiromu [9393-14] S4  
Yan, Ni [9396-15] S4  
Yan, Peng [9411-21] SPTues  
Yan, Rong 9408 Program Committee, 9411 Program Committee  
Yan, Ya Xing [9411-29] SPTues  
Yang, Byungchoon [9395-35] S6  
Yang, Daiqin [9410-20] S4  
Yang, Jun 9411 Program Committee  
Yang, Ying [9394-36] S8  
Yanikoglu, Berrin 9402 Program Committee  
Yasutomi, Keita [9403-11] S2  
Yeh, Anthony Gar-On [9405-18] S5

Yen, Hsu-Chun 9397 Program Committee  
Yendo, Tomohiro [9391-2] S1, [9391-35] S9, [9392-24] SPTues  
Yi, Guo [9394-46] SPTues  
Yi, Ji Young [9395-5] S2  
Yildirim, Gökhan [9394-27] S6  
Yin, Peng [9404-16] S5, [9404-23] SPTues  
Yoo, Chang Dong 9409 Program Committee  
Yoo, Jang Jin [9396-39] S10  
Yoo, Ji-hoon [9395-32] S6, [9395-7] S2  
Yoo, Kwan-Hee [9391-36] S10  
Yoon, Seung-Chul 9405 Program Committee, 9405 S5 Session Chair, [9405-5] S1  
Yoon, Soosung [9391-28] S8  
Yoshimoto, Kayo [9391-19] S5  
**Young, Rupert** [9407-19] S4  
**Yousefhussein, Mohammed** [9401-15] S3, [9406-5] S2  
Yousefi, Mohammad Reza [9402-15] S4  
Yu, Bo [9391-30] S8  
Yu, Shan [9392-22] SPTues  
Yu, Yinyan [9402-7] S2  
Yu, Zhan 9404 Program Committee  
Yuan, Chang [9405-3] S1  
Yung, Nelson Hon Ching [9405-18] S5

## Z

Zaghetto, Alexandre [9404-25] SPTues  
Zakhor, Avideh [9401-13] S3  
Zamir, Syed Waqas [9394-26] S5  
Zanibbi, Richard 9402 Program Committee, 9402 S1 Session Chair, [9402-5] S2  
**Zauner, Gerald** 9405 Program Committee  
Zavalishin, Sergey S. [9395-10] S2  
Zeise, Eric K. 9396 Program Committee  
Zellmann, Stefan [9397-10] S5  
Zeng, Kai [9394-3] S1  
Zeng, Likai [9409-23] S7  
Zhang, Baofeng [9406-11] S3, [9406-23] S6  
Zhang, Bo [9403-11] S2  
Zhang, Buyue [9408-16] S5  
Zhang, Caixia 9397 Program Committee  
Zhang, Dili 9406 Program Committee  
Zhang, Fan [9400-13] S3  
Zhang, Fan [9394-22] S4  
Zhang, Jia [9396-19] S5  
Zhang, Lei 9404 Program Committee  
Zhang, Lu [9408-2] S1  
Zhang, Mei [9391-13] S4, [9391-6] S2  
Zhang, Pengchang [9398-10] S1

Zhang, Song 9397 Program Committee, 9397 S6 Session Chair, [9397-24] SPTues, [9397-27] SPTues  
Zhang, Tao [9409-25] S7  
Zhang, Wang [9396-7] S2, [9396-7] S6  
Zhang, Wei Q. [9410-12] S3  
Zhang, Xiao [9391-13] S4, [9391-15] S4  
Zhang, Xiao Mou [9411-29] SPTues  
Zhang, Xin [9393-26] SPTues, [9395-26] S4  
Zhang, Yuhai [9406-26] SPTues  
Zhang, Zhaoxing [9391-15] S4, [9391-6] S2  
Zhang, Zhijun [9405-13] S4  
Zhao, Cong [9405-3] S1  
Zhao, Hongying [9399-39] SPTues  
Zhao, Ping [9396-27] S7  
Zhao, Yonghui 9408 Program Committee  
Zhao, Yu [9405-17] S4, [9406-26] SPTues  
**Zhen, Ruiwen** [9410-2] S1  
Zheng, Geng [9391-6] S2  
Zhong, Xuefei [9396-35] S9  
Zhou, Deqi [9399-31] SPTues  
Zhou, Quan [9403-4] S1  
Zhou, Samuel 9391 Program Committee  
**Zhou, Zengxiang** [9391-46] SPTues  
Zhu, Junchao [9406-15] S4  
Zhu, Tong [9394-8] S1  
**Zhu, Wenwu** 9410 Program Committee  
Zhu, Xueqian [9403-8] S2  
Zhu, Yi [9394-7] S1  
Zhu, Yixin [9397-26] SPTues  
Zhuravlev, Andrew [9401-16] SPTues  
Ziemkiewicz, Caroline 9397 Program Committee  
Zimmer, Beate G. [9399-1] S1  
Zimmer, Volker [9404-5] S2  
Zinger, Svitlana [9407-25] S6  
Zlokolica, Vladimir [9403-14] S3  
Zou, Bochao [9391-27] S7  
Zou, Jie 9402 Program Committee  
Zsoldos, Rebeka [9397-13] S6  
Zubiaga Peña, Carlos J. [9398-7] S1  
Zwemer, Matthijs H. [9407-25] S6



# Journal of Electronic Imaging

Call for Papers

| Published by SPIE and IS&T



**Gaurav Sharma**  
Univ. of Rochester, USA  
Editor-in-Chief

## Aims and Scope

The *Journal of Electronic Imaging* publishes papers in all technology areas that make up the field of electronic imaging and are normally considered in the design, engineering, and applications of electronic imaging systems.

Contributed papers cover the following research areas that apply directly to electronic imaging or focus on applied electronic imaging technology:

- Image acquisition
- Hard copy output
- Image data storage
- Image visualization
- Image data communication
- Image processing
- Display of image data
- Electronic imaging applications

2013 Impact Factor

Two-year: 0.850

Five-year: 1.024

Subject Category Rankings:

- Imaging Science & Photographic Technology: 16/23
- Electrical & Electronic Engineering: 159/247
- Optics: 60/82

## Benefits of Publishing in Journal of Electronic Imaging

- Wide availability to readers via the SPIE Digital Library
- Rapid publication; each article is published when it is ready
- Coverage by Web of Science and Journal Citation Reports as well as other relevant abstracting and indexing services and search engines
- Professional copyediting and typesetting ensure high-quality presentation and reduce work for authors
- Video and color content at no charge to authors
- Reference linking via CrossRef
- Mobile access to articles
- Figures may be downloaded and captured as PowerPoint slides with citations
- Open Access for articles immediately with voluntary payment of \$100 per page



**SPIE.**

[www.JElectronicImaging.org](http://www.JElectronicImaging.org)

# General Information

## Registration

### Onsite Registration and Badge Pick-Up Hours

Sunday 8 February . . . . .	7:00 am to 8:00 pm
Monday 9 February . . . . .	7:00 am to 4:00 pm
Tuesday 10 February . . . . .	7:30 am to 4:00 pm
Wednesday 11 February . . . . .	7:30 am to 5:00 pm
Thursday 12 February . . . . .	7:30 am to noon

### Conference Registration

Conference registration includes: access to all symposium conferences, Interactive Paper and Demonstration Sessions, Exhibition, coffee breaks, All-Conference Reception, and choice of conference proceedings: printed or CD. Courses are not automatically included; you can add a course registration with your conference registration.

### Short Course Registration

Courses and workshops are priced separately. Course-only registration includes your selected course(s), course notes, coffee breaks, and admittance to the exhibition. Course prices include applicable taxes. Courses will take place in various meeting rooms at the Hilton San Francisco, Union Square. Room assignments are noted on the course admission tickets and distributed with registration materials.

### Cashier

*Registration Area*

Open during registration hours  
IS&T cashier can assist with registration payments, adding a course, receipts, and badge corrections.

### Refund Information

To cover bank charges and processing fees, there is a cancellation fee of \$75 until 29 January 2015. After that date, the cancellation fee is 50% of the total plus \$75. All requests for refunds must be made in writing. No refunds will be given after 29 January 2015.

## Author / Presenter Information

### Speaker AV Preparation

*California Room*

Open during Registration Hours

Each conference room has an LCD projector, screen, lapel microphone, and laser pointer. All presenters are encouraged to visit the Speaker AV Prep Room to confirm that their presentation is compatible with the audiovisual equipment supplied in the conference rooms. Speakers who have requested special equipment, prior to the request deadline, are asked to report to the AV Prep Room to confirm their requested equipment is available. No shared laptops are provided.

### Interactive Paper Set-Up Instructions

Poster Session authors can set up on Tuesday, 8 am. Pushpins are provided; other supplies can be obtained at the Conference Registration Desk. Authors must remove poster papers at the conclusion of the Interactive Session; posters not removed are considered unwanted and will be removed by staff and discarded. Neither sponsoring Society assumes responsibility for posters left up or before or after the Interactive Paper Session.

## Onsite Services

### Business Center

In-house Business Center/FedEx Office for all of your printing and faxing needs

Monday through Friday . . . . . 6:30 am to 7:00 pm

Saturday & Sunday . . . . . 9:00 am to 5:00 pm

### IS&T Bookstore and Membership Booth

IS&T publishes and/or distributes technical materials on a broad range of subjects pertinent to the field of electronic imaging. In addition to titles from leading scientific publishers, IS&T showcases proceedings from its Digital Printing Technologies, Digital Fabrication, Archiving and Color Imaging conferences, as well as selected books on related topics. Information on upcoming meetings and membership, and gratis copies of journals are also available.

### SPIE Bookstore

The SPIE Bookstore is your source for the latest SPIE Press Books, Proceedings, and Education and Professional Development materials. International Year of Light t-shirts are available, together with children's books, toys, and souvenirs.

## Hotel Information

### Hilton San Francisco Union Square

333 O'Farrell Street, San Francisco, CA 94102

- Reservations cut-off/deadline: 23 January 2015
- Reservations toll-free number:  
1-800-HILTONS (1-800-445-8667)
- No fax number for reservations; online or call-in only
- Complimentary Internet in guest rooms

## Travel to San Francisco

### Welcome to San Francisco

San Francisco is a unique and breathtaking metropolis. From the famous icon of the Golden Gate Bridge to the exquisite art galleries at SFMOMA, the city takes pride in its unrivaled attractions, renowned museums, and its unique neighborhoods that are treasures of its own. Discover the variety of sites, shops, and restaurants that reflect the city's great ethnic and cultural diversity.

### Airport Information

San Francisco is serviced by two international airports: San Francisco International Airport (SFO) and Oakland International Airport (OAK). San Francisco International Airport is located approximately 15 miles from downtown hotels. Oakland International Airport is approximately 20 miles from SFO downtown hotels (30-55 minute drive).

## Policies

### Granting Attendee Registration and Admission

IS&T/SPIE, or their officially designated event management, in their sole discretion, reserves the right to accept or decline an individual's registration for an event. Further, IS&T/SPIE, or event management, reserves the right to prohibit entry or remove any individual whether registered or not, be they attendees, exhibitors, representatives, or vendors, who in their sole opinion are not, or whose conduct is not, in keeping with the character and purpose of the event. Without limiting the foregoing, IS&T/SPIE and event management reserve the right to remove or refuse entry to any attendee, exhibitor, representative, or vendor who has registered or gained access under false pretenses, provided false information, or for any other reason whatsoever that they deem is cause under the circumstances.

### Misconduct Policy

IS&T/SPIE are professional, not-for-profit societies committed to providing valuable conference and exhibition experiences. IS&T/SPIE are dedicated to equal opportunity and treatment for all their members and meeting attendees. Attendees are expected to be respectful to other attendees, IS&T/SPIE staff, and contractors. Harassment and other misconduct will not be tolerated; violators will be asked to leave the event.

## Identification

To verify registered participants and provide a measure of security, IS&T/SPIE will ask attendees to present a government-issued Photo ID at registration to collect registration materials. Individuals are not allowed to pick up badges for attendees other than themselves. Further, attendees may not have some other person participate in their place at any conference-related activity. Such other individuals will be required to register on their own behalf to participate.

## Capture and Use of a Person's Image

By registering for an IS&T/SPIE event, I grant full permission to IS&T/SPIE to capture, store, use, and/or reproduce my image or likeness by any audio and/or visual recording technique (including electronic/digital photographs or videos), and create derivative works of these images and recordings in any IS&T/SPIE media now known or later developed, for any legitimate IS&T/SPIE marketing or promotional purpose.

By registering for an IS&T/SPIE event, I waive any right to inspect or approve the use of the images or recordings or of any written copy. I also waive any right to royalties or other compensation arising from or related to the use of the images, recordings, or materials. By registering, I release, defend, indemnify and hold harmless IS&T/SPIE from and against any claims, damages or liability arising from or related to the use of the images, recordings or materials, including but not limited to claims of defamation, invasion of privacy, or rights of publicity or copyright infringement, or any misuse, distortion, blurring, alteration, optical illusion or use in composite form that may occur or be produced in taking, processing, reduction or production of the finished product, its publication or distribution.

## Payment Method

Registrants for paid elements of the event, who do not provide a method of payment, will not be able to complete their registration. Individuals with incomplete registrations will not be able to attend the conference until payment has been made. IS&T/SPIE accepts VISA, MasterCard, American Express, Discover, Diner's Club, checks and wire transfers. Onsite registrations can also pay with Cash.

## Authors/Coauthors

By submitting an abstract, you agree to the following conditions:

- An author or coauthor (including keynote, invited, and solicited speakers) will register at the author registration rate, attend the meeting, and make the presentation as scheduled.
- A full-length manuscript (6 pages minimum) for any accepted oral or poster presentation will be submitted for publication in the IS&T/SPIE Digital Library, printed conference Proceedings, and CD. (Some IS&T/SPIE events have other requirements that the author is made aware of at the time of submission.)
- Only papers presented at the conference and received according to publication guidelines and timelines will be published in the conference Proceedings and IS&T/SPIE Digital Library (or via the requirements of that event).

# General Information

## Audio, Video, Digital Recording Policy

Conferences, courses, and poster sessions: For copyright reasons, recordings of any kind are prohibited without prior written consent of the presenter. Attendees may not capture nor use the materials presented in any meeting room without written permission. Consent forms are available at Speaker Check-In. Individuals not complying with this policy will be asked to leave a given session and asked to surrender their recording media.

Exhibition Hall: For security and courtesy reasons, recordings of any kind are prohibited unless one has explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their recording media and to leave the exhibition hall.

Your registration signifies your agreement to be photographed or videotaped by IS&T/SPIE in the course of normal business. Such photos and video may be used in IS&T/SPIE marketing materials or other IS&T/SPIE promotional items.

## Laser Pointer Safety Information/Policy

IS&T/SPIE supplies tested and safety-approved laser pointers for all conference meeting rooms. For safety reasons, IS&T/SPIE requests that presenters use provided laser pointers.

Use of a personal laser pointer represents user's acceptance of liability for use of a non-IS&T/SPIE-supplied laser pointer. If you choose to use your own laser pointer, it must be tested to ensure <5 mW power output. Laser pointers in Class II and IIIa (<5 mW) are eye safe if power output is correct, but output must be verified because manufacturer labeling may not match actual output. Come to Speaker Check-In and test your laser pointer on our power meter. You are required to sign a waiver releasing IS&T/SPIE of any liability for use of potentially non-safe, personal laser pointers. Misuse of any laser pointer can lead to eye damage.

## Underage Persons on Exhibition Floor Policy

For safety and insurance reasons, no one under the age of 16 will be allowed in the exhibition area during move-in and move-out. During open exhibition hours, only children over the age of 12 accompanied by an adult will be allowed in the exhibition area.

## Unauthorized Solicitation Policy

Unauthorized solicitation in the Exhibition Hall is prohibited. Any nonexhibiting manufacturer or supplier observed to be distributing information or soliciting business in the aisles, or in another company's booth, will be asked to leave immediately.

## Unsecured Items Policy

Personal belongings should not be left unattended in meeting rooms or public areas. Unattended items are subject to removal by security. IS&T/SPIE is not responsible for items left unattended.

## Wireless Internet Service Policy

At IS&T/SPIE events where wireless is included with your registration, IS&T/SPIE provides wireless access for attendees during the conference and exhibition but cannot guarantee full coverage in all locations, all of the time. Please be respectful of your time and usage so that all attendees are able to access the internet.

Excessive usage (e.g., streaming video, gaming, multiple devices) reduces bandwidth and increases cost for all attendees. No routers may be attached to the network. Properly secure your computer before accessing the public wireless network. Failure to do so may allow unauthorized access to your laptop as well as potentially introduce viruses to your computer and/or presentation. IS&T/SPIE is not responsible for computer viruses or other computer damage.

## Mobile Phones and Related Devices Policy

Mobile phones, tablets, laptops, pagers, and any similar electronic devices should be silenced during conference sessions. Please exit the conference room before answering or beginning a phone conversation.

## Smoking

For the health and consideration of all attendees, smoking is not permitted at any event elements, such as but not limited to: plenaries, conferences, workshops, courses, poster sessions, hosted meal functions, receptions, and in the exhibit hall. Most facilities also prohibit smoking in all or specific areas. Attendees should obey any signs preventing or authorizing smoking in specified locations.

## Hold Harmless

Attendee agrees to release and hold harmless IS&T/SPIE from any and all claims, demands, and causes of action arising out of or relating to your participation in the event you are registering to participate in and use of any associated facilities or hotels.

## Event Cancellation

If for some unforeseen reason IS&T/SPIE should have to cancel the event, registration fees processed will be refunded to registrants. Registrants will be responsible for cancellation of travel arrangements or housing reservations and the applicable fees.

# Order Proceedings volumes now and receive low prepublication prices.

Vol#	Title (Editors)	Prepublication Price
9391	<b>Stereoscopic Displays and Applications XXVI</b> (Nicolas S. Holliman, Andrew J. Woods, Gregg E. Favalora, Takashi Kawai)	\$ 80
9392	<b>The Engineering Reality of Virtual Reality 2015</b> (Margaret Dolinsky, Ian E. McDowall)	\$ 53
9393	<b>Three-Dimensional Image Processing, Measurement (3DIPM), and Applications 2015</b> (Robert Sitnik, William Puech)	\$ 53
9394	<b>Human Vision and Electronic Imaging XX</b> (Bernice E. Rogowitz, Thrasyvoulos N. Pappas, Huib de Ridder)	\$ 80
✓ 9395	<b>Color Imaging XX: Displaying, Processing, Hardcopy, and Applications</b> (Reiner Eschbach, Gabriel G. Marcu, Alessandro Rizzi)	\$ 70
✓ 9396	<b>Image Quality and System Performance XII</b> (Mohamed-Chaker Larabi, Sophie Triantaphyllidou)	\$ 70
✓ 9397	<b>Visualization and Data Analysis 2015</b> (David L. Kao, Ming C. Hao, Mark A. Livingston, Thomas Wischgoll)	\$ 53
9398	<b>Measuring, Modeling, and Reproducing Material Appearance 2015</b> (Maria V. Ortiz Segovia, Philipp Urban, Francisco H. Imai)	\$ 60
9399	<b>Image Processing: Algorithms and Systems XIII</b> (Karen O. Egiazarian, Sos Agaian, Atanas P. Gotchev)	\$ 70
9400	<b>Real-Time Image and Video Processing 2015</b> (Nasser Kehtarnavaz, Matthias F. Carlsohn)	\$ 60
9401	<b>Computational Imaging XIII</b> (Charles A. Bouman, Ken D. Sauer)	\$ 60
✓ 9402	<b>Document Recognition and Retrieval XXII</b> (Eric K. Ringger, Bart Lamiroy)	\$ 53
9403	<b>Image Sensors and Imaging Systems 2015</b> (Ralf Widenhorn, Antoine Dupret)	\$ 53
9404	<b>Digital Photography XI</b> (Nitin Sampat, Radka Tezaur, Dietmar Wüller)	\$ 53
9405	<b>Image Processing: Machine Vision Applications VIII</b> (Edmund Y. Lam, Kurt S. Niel)	\$ 60
✓ 9406	<b>Intelligent Robots and Computer Vision XXXII: Algorithms and Techniques</b> (Juha Rönning, David Casasent)	\$ 53
9407	<b>Video Surveillance and Transportation Imaging Applications 2015</b> (Robert P. Loce, Eli Saber)	\$ 60
9408	<b>Imaging and Multimedia Analytics in a Web and Mobile World 2015</b> (Qian Lin, Jan P. Allebach, Zhigang Fan)	\$ 53
9409	<b>Media Watermarking, Security, and Forensics 2015</b> (Adnan M. Alattar, Nasir D. Memon, Chad D. Heitzenrater)	\$ 53
9410	<b>Visual Information Processing and Communication VI</b> (Amir Said, Onur G. Guleryuz, Robert L. Stevenson)	\$ 53
9411	<b>Mobile Devices and Multimedia: Enabling Technologies, Algorithms, and Applications 2015</b> (Reiner Creutzburg, David Akopian)	\$ 60

✓ Indicates volumes that will be available at the meeting.  
Other Proceedings will be available an average of 6 weeks after the meeting.

## Searchable CD with Multiple Conferences

CDs are now available within 8 weeks of the meeting.

Full-text papers from all 21 Proceedings volumes.



## Electronic Imaging 2015

(Includes Proceedings Vols. 9391-9411)

**Order No. CDS563**

Est. pub. April 2015

Meeting attendee: \$155

Nonattendee member price: \$885

Nonattendee nonmember price: \$1,165

# IS&T/SPIE Electronic Imaging

SCIENCE AND TECHNOLOGY

8-12 February 2015

Hilton San Francisco, Union Square  
San Francisco, California, USA

# Publications Order Form

IS&T/SPIE Member ID #

\_\_\_\_\_  
 First Name M.I. Last Name

\_\_\_\_\_  
 Title

\_\_\_\_\_  
 Company

\_\_\_\_\_  
 Address (include Mail Stop)

\_\_\_\_\_  
 City State/Province Zip/Postal Code

\_\_\_\_\_  
 Country other than USA

\_\_\_\_\_  
 Phone Fax

\_\_\_\_\_  
 E-Mail Address (SPIE does not sell e-mail addresses) Date of Birth (Optional)

For Office Use Only

Date \_\_\_\_\_

Amt. Recd. \_\_\_\_\_

CC Cash Check TC

Check # \_\_\_\_\_

P.O. # \_\_\_\_\_

IDN # \_\_\_\_\_

ORD # \_\_\_\_\_

Check this box if you do not wish to receive information from organizations other than SPIE.

## IS&T/SPIE Membership

**IS&T** (\$95 US address/\$105 non-US address; Student \$25) with choice of JIST or JEI online subscription

IS&T Full Membership  IS&T Student Membership

IS&T Online Journal Option:

Online Journal of Imaging and Science Technology (JIST)  Online Journal of Electronic Imaging (JEI)

**SPIE** (\$105; Student \$20) with choice of SPIE online subscription  SPIE Full Membership  SPIE Student Membership

SPIE Online Journal Option:

Optical Engineering  Electronic Imaging  Biomedical Optics  Microlithography, Microfabrication, and Microsystems  
 Applied Remote Sensing  Nanophotonics

## SPIE Digital Library Subscription

1-year subscription, **up to 25** full-article downloads: Regular  \$145 Student/Retired  \$95 Nonmember  \$250

1-year subscription, **up to 50** full-article downloads: Regular  \$195 Student/Retired  \$125 Nonmember  \$335

Once form is submitted and validated, you will receive an email confirmation with instructions for setting up your account. At that point, you may begin using all the features of the Digital Library.

## Proceedings and Publications

Fill in the volume or order number(s) and price(s) of the publications you wish to order below.

QTY.	VOL NO.	TITLE	PRICE (USD)

CA, FL, WA residents add sales tax; Canadian residents must add GST. . . . . \$ \_\_\_\_\_ USD

Shipping/Handling (Books & CD-ROMs). . . . . \$ \_\_\_\_\_ USD

U.S. 5% of order total [2-3 weeks delivery] Elsewhere 10% of order total [3-5 weeks delivery]

Express Shipping: U.S. \$15 USD for 1st item; \$10 USD each addl item [2-3 days delivery]

Elsewhere \$30 USD for 1st item; \$15 USD each addl item [1 week delivery]

## Method of Payment

Check enclosed. Payment in U.S. dollars (by draft on a U.S. bank or international money order) is required. Do not send currency. Wire transfers from banks must include a copy of the transfer order.

Charge to my:  VISA  MasterCard  Discover  American Express  Diners Club

Card Number \_\_\_\_\_ Security code: \_\_\_\_\_

Expiration date \_\_\_\_\_

Signature \_\_\_\_\_

Purchase order enclosed (Purchase orders must be preapproved).

All orders must be PREPAID in U.S. dollars. Prices subject to change without notice. No returns without written authorization of SPIE. ITEMS WILL NOT BE SHIPPED UNLESS PAYMENT IS RECEIVED.

MEMBERSHIP TOTAL

\$ \_\_\_\_\_ USD

DIGITAL LIBRARY TOTAL

\$ \_\_\_\_\_ USD

PUBLICATIONS TOTAL

\$ \_\_\_\_\_ USD

SUBTOTAL

\$ \_\_\_\_\_ USD

TOTAL

\$ \_\_\_\_\_ USD

**Mail or fax this form to  
 SPIE, PO Box 10  
 Bellingham, WA 98227-0010 USA  
 Phone +1 360 676 3290  
 Fax +1 360 647 1445  
 www.spie.org/ei  
 help@spie.org**

## About the Symposium Organizers



IS&T, the Society for Imaging Science and Technology, is an international non-profit dedicated to keeping members and others apprised of the latest developments in fields related to imaging science through conferences, educational programs, publications, and its website. IS&T encompasses all aspects of imaging, with particular emphasis on digital printing, electronic imaging, color science, photofinishing, image preservation, silver halide, pre-press technology, and hybrid imaging systems.

### **IS&T offers members:**

- Free, downloadable access to more than 16,000 papers from IS&T conference proceedings via [www.imaging.org](http://www.imaging.org)
- Complimentary online subscriptions to the *Journal of Imaging Science & Technology* or the *Journal of Electronic Imaging*
- Reduced rates on IS&T and other publications, including books, conference proceedings, and a second journal subscription.
- Reduced registration fees at all IS&T sponsored or co-sponsored conferences—a value equal to the difference between member and non-member rates alone—as well as on conference short courses
- Access to the IS&T member directory
- Networking opportunities through active participation in chapter activities and conference, program, and other committees
- Subscription to the IS&T *The Reporter*, a bi-monthly newsletter
- An honors and awards program

Contact IS&T for more information on these and other benefits.

### **IS&T**

7003 Kilworth Lane  
Springfield, VA 22151  
703/642-9090; 703/642-9094 fax

[info@imaging.org](mailto:info@imaging.org)

[www.imaging.org](http://www.imaging.org)

## **SPIE.**

SPIE is an international society advancing an interdisciplinary approach to the science and application of light. SPIE advances the goals of its Members, and the broader scientific community, in a variety of ways:

- SPIE acts as a catalyst for collaboration among technical disciplines, for information exchange, continuing education, publishing opportunities, patent precedent, and career and professional growth.
- SPIE is the largest organizer and sponsor of international conferences, educational programs, and technical exhibitions on optics, photonics and imaging technologies. SPIE manages 25 to 30 events in North America, Europe, Asia, and the South Pacific annually; over 40,000 researchers, product developers, and industry representatives participate in presenting, publishing, speaking, learning and networking opportunities.
- The Society spends more than \$3.2 million annually in scholarships, grants, and financial support. With more than 200 Student Chapters around the world, SPIE is expanding opportunities for students to develop professional skills and utilize career opportunities, supporting the next generation of scientists and engineers.
- SPIE publishes ten scholarly journals and a variety of print media publications. The SPIE Digital Library also publishes the latest research—close to 20,000 proceedings papers each year.

### **SPIE International Headquarters**

1000 20th St., Bellingham, WA 98225-6705 USA

Tel: +1 360 676 3290

Fax: +1 360 647 1445

[help@spie.org](mailto:help@spie.org) • [www.SPIE.org](http://www.SPIE.org)

# 2015 Electronic Imaging

SCIENCE AND TECHNOLOGY



---

**Thank you for your  
participation!**

[www.electronicimaging.org](http://www.electronicimaging.org)



**SPIE.**