2013 Electronic Imaging

SCIENCE AND TECHNOLOGY

Technical Program

Conferences & Courses
3–7 February 2013

Location
Hyatt Regency San Francisco Airport Hotel
Burlingame, California, USA

www.electronicimaging.org

IS&T
imaging.org

SPIE®

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 25th 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 2013, 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 2013 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.

Symposium Chair
Gaurav Sharma
University of Rochester

Symposium Co-Chair
Sergio Goma
Qualcomm Inc.

Short Course Chair
Choon-Woo Kim
Inha University

Symposium Steering Committee

Gaurav Sharma, Symposium Chair, Univ. of Rochester (United States)

Sergio R. Goma, Symposium Co-Chair, Qualcomm Inc. (United States)

Choon-Woo Kim, Short Course Chair, Inha Univ. (Korea, Republic of)

Andrew J. Woods, Technical Advisor, Curtin Univ. (Australia)

Majid Rabbani, Past Symposium Chair, Eastman Kodak Co. (United States)

Suzanne E. Grinnan, IS&T Executive Director

Rob Whitner, SPIE Event Manager

Technical Program

IS&T/SPIE
Electronic Imaging
SCIENCE AND TECHNOLOGY

3–7 February 2013
Hyatt Regency San Francisco Airport Hotel
Burlingame, California, USA

Sponsored by

IS&T imaging.org

SPIE

Platinum Symposium Sponsor:

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8650 **3D Image Processing (3DIP) and Applications 2013** *(Baskurt, Sitnik)* 19

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Mobile Imaging

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8667C **Mobile Imaging System Design and Image Quality** *(Wüller, Matherson)* 65
8667D **Mobile Computational Photography** *(Georgiev, Lumsdaine)* 66

Special Events

Onsite Registration Hours

Sunday 3 February . . . . . 7:00 am to 4:00 pm
Monday 4 February. . . . . .7:00 am to 4:00 pm
Tuesday 5 February. . . . . 7:30 am to 4:00 pm
Wednesday 6 February . . . . . 7:30 am to 4:00 pm
Thursday 7 February . . . . . .7:30 am to noon

Highlighted Talks from the IS&T/SPIE *Journal of Electronic Imaging*

Grand Peninsula Ballroom E

Monday-Thursday, 4–7 February

Conference attendees are encouraged to attend the Highlighted talks from the *Journal of Electronic Imaging* Session in which invited JEI authors will present their selected articles. Please refer to room signs onsite for scheduling changes and updates.

3D Theatre

Grand Peninsula Ballroom D

Monday 4 February . . . . . 5:40 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.

Symposium-wide Keynote Track

Grand Peninsula Ballroom E

Monday-Thursday, 4-7 February

Conference attendees are encouraged to attend the Symposium-wide Keynote Track throughout the week. Attendees will hear a variety of keynote talks presented by industry leaders and academia. Please refer to the room sign on-site for scheduling updates and changes.

Monday 4 February

9:30 to 10:20 am: **Predicting visual memorability,** Aude Oliva, Massachusetts Institute of Technology [8651-02]

10:50 to 11:40 am: **World, environment, umwelt, and innerworld: a biological perspective on visual awareness,** Jan Koenderink, Technische Univ. Delft (Netherlands) [8651-03]

11:40 am to 12:30 pm: **Does evolution favor true perceptions?,** Donald Hoffman, Univ. of California, Irvine (United States) [8561-04]

2:00 to 3:00 pm: **Why high performance visual data analytics is both relevant and difficult,** Edward W. Bethel, Lawrence Berkeley National Lab. (United States) [8654-10]

Tuesday 5 February

11:00 am to 12:00 pm: **Tangible imaging systems,** James Ferwerda, Rochester Institute of Technology, (United States) [8664-25]

2:00 to 3:00 pm: **Social media analysis and platform,** Meichun Hsu, Hewlett-Packard Labs. (United States) [8654-18]

4:00 to 5:00 pm: **That thing in your pocket is really a computer!: the future of mobile imaging,** Edward Delp, Purdue Univ. (United States) [8664-24]

Wednesday 6 February

9:30 to 10:15 am: **History of the Tesseract OCR engine: what worked and what didn't,** Ray Smith, Google (United States) [8658-15]

10:45 to 11:30 am: **Petapixel photography and the limits of camera information capacity,** David J. Brady, Duke Univ. (United States) [8657-35]

Thursday 6 February

9:45 to 10:30 am: **What does the future hold for search user interface?,** Marti Hearst, Univ. of California, Berkeley (United States) [8658-25]

Symposium Demonstration Session

Grand Peninsula Ballroom A

Tuesday 5 February. . . . . 5:30 to 7:30 pm

Demonstration Set-up: Tuesday 5 February, 3:00 to 5:30 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 EI products.

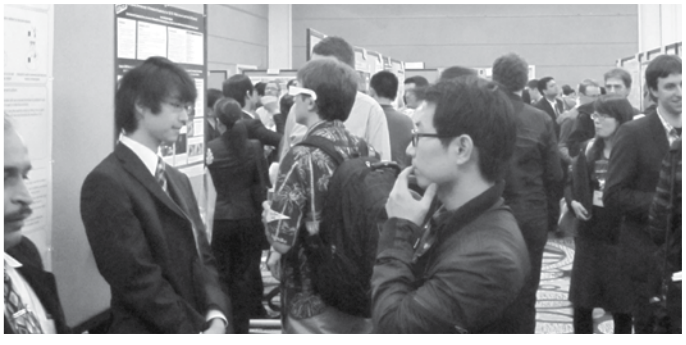
Panel Discussion:

Online Learning: Will Technology Transform Higher Education?

Grand Peninsula Ballroom D

Tuesday 5 February. . . . . 6:00 to 7:30 pm

Panel Moderator: **Bernd Girod,** Stanford Univ. (United States)



Interactive Paper Session

Grand Peninsula Ballroom A

Wednesday 6 February . . . . . 3:30 to 5:30 pm

Interactive Paper Set-up, Viewing, and Presentations

Author Set-up: Wednesday 6 February, 12:30 to 3:30 pm

General Viewing: Wednesday 6 February, 12:30 am to 3:30 pm

Interactive Paper Session: Wednesday 6 February, 3:30 to 5:30 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. Please note that conference registration badges are required for entrance and that posters may be previewed by all attendees beginning Wednesday 10:30 am.

Authors are asked to set up their poster papers between 7:30 and 10:30 am on Wednesday. Posters will be on display Wednesday 10:30 am to 3:00 pm.

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.

The Optical Mission Behind the Stratos Project

Grand Peninsula Ballroom D

Wednesday 6 February . . . . . 5:30 to 7:00 pm

The recent Red Bull Stratos Project enabled Felix Baumgartner to skydive from over 120,000 feet, breaking a number of world records, and also become the first person to break the sound barrier in free fall. This incredible example of human achievement was documented by a group of optical imaging scientists who worked for over two years to develop the necessary systems and equipment. This monumental leap was captured by 35 cameras to provide a full picture of what this endeavor means for the future of scientific exploration. This special evening presentation will feature an insider look behind the Stratos Project: goals, challenges, and lessons learned.

All-Conference Reception

Hyatt Regency Hotel Atrium

Wednesday 6 February . . . . . 7:00 to 9:00 pm

The All-Conference Reception provides a wonderful opportunity to get to know and interact with Electronic Imaging colleagues. Plan to join us for this relaxing and enjoyable event.

Download the Conference App

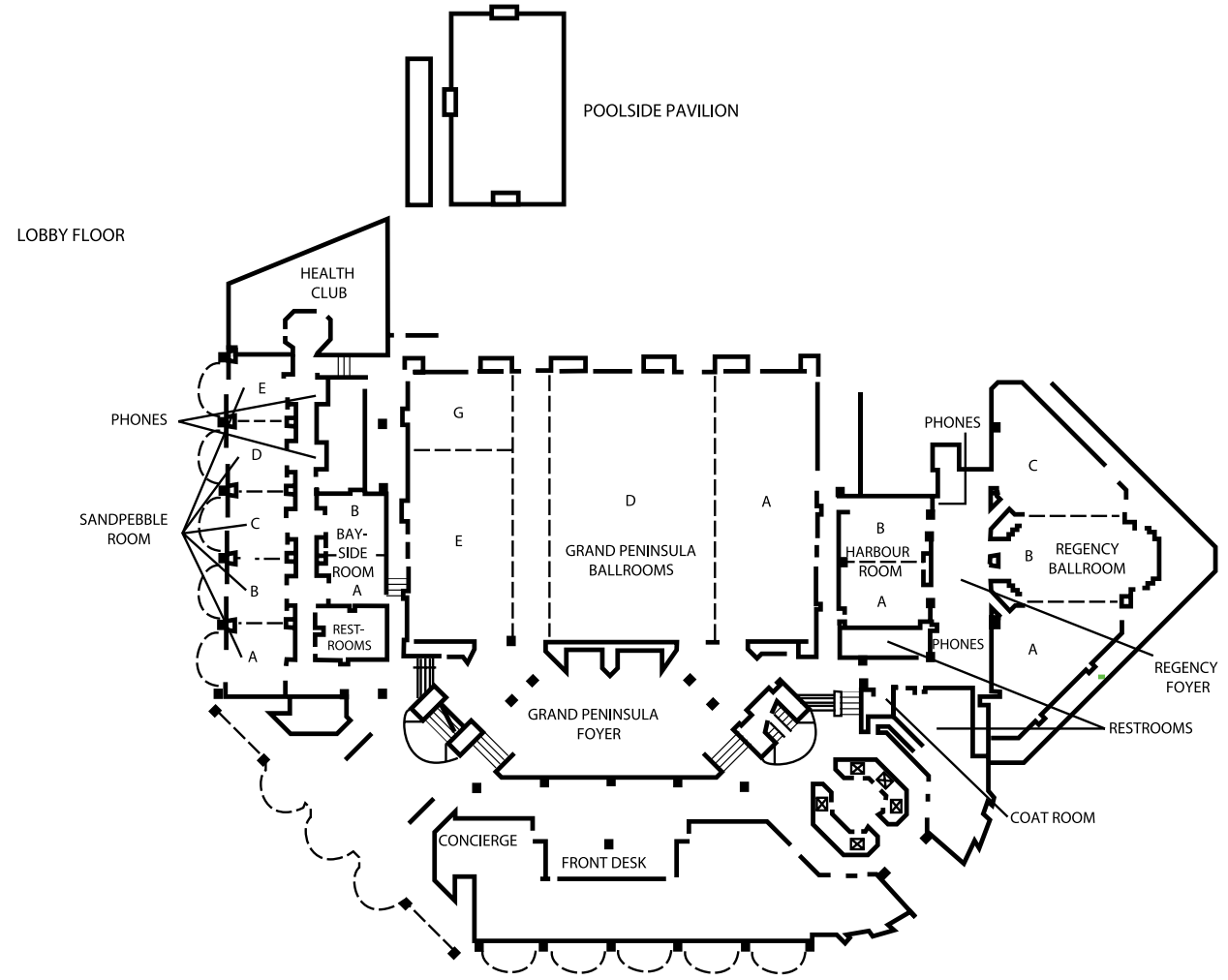
Create your schedule—search and browse the Technical Program and special events, participants, and exhibitors.

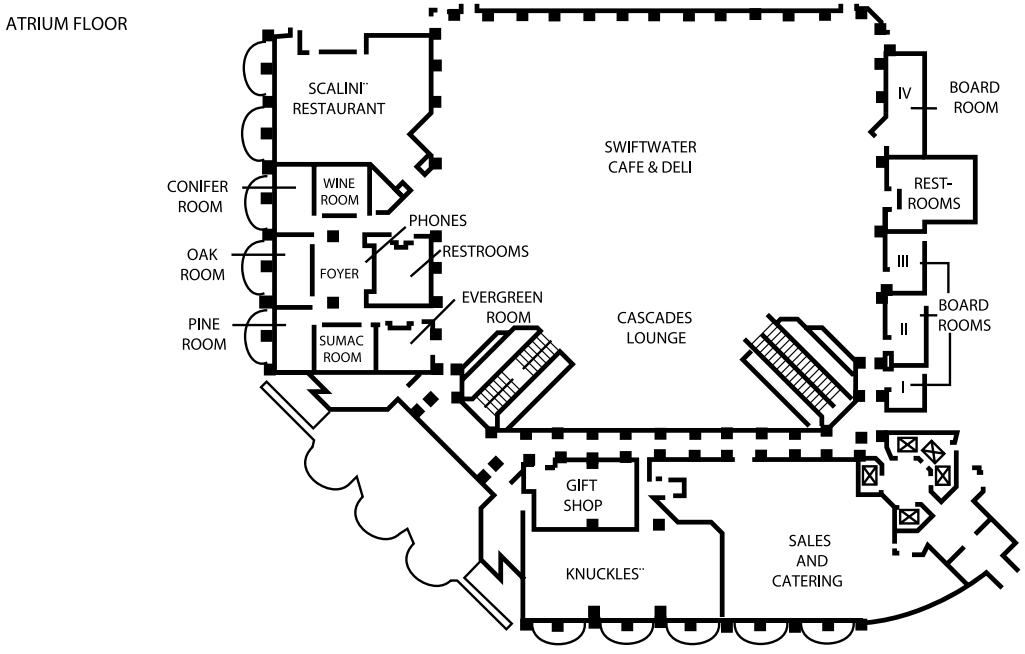
Available on the App Store

ANDROID APP ON Google play

Meeting Room Locations

Hyatt Regency San Francisco Airport Hotel





Plenary Session and Society Award Presentations

Grand Peninsula Ballroom D

Tuesday 5 February

Welcome . . . . . 8:20 to 8:25 am

Plenary Presentation . . . . . 8:25 to 9:10 am

Society Award Announcements . . . . . 9:10 to 9:20 am

8:25 am: Another Look at Signals and Images

Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Abstract: Information theory and signal processing have classically used the notion of "side information" to formally describe and analyze situations where providing more information to either the encoding or the decoding process improves system performance. We consider and extend this viewpoint to modern day imaging systems, where in addition to images representing visual information, devices also capture a variety of side information. In the ubiquitous smartphone, for example, multiple sensors (microphone, GPS, accelerometer, compass, etc.) augment the two cameras that have become the norm. Additionally, these devices are usually connected to a large network of digital data. This rich "side information" can improve the performance of imaging applications and enable completely new functionality. Using research examples from our group and the literature, ranging from optics, illumination to semantics, we present applications of how such "side information" enables functionality and improvements in computational photography and computer vision.

Biography: Prof. **Sabine Süsstrunk** (ivrg.epfl.ch/people/susstrunk) leads the Images and Visual Representation Group (IVRG) at Ecole Polytechnique Fédérale de Lausanne (EPFL) since 1999. Her research interests are in computational photography, color image processing and computer vision, and image quality. She has published more than 100 scientific papers and holds six patents. She was general chair of the IS&T/SPIE Electronic Imaging Symposium in 2011 and co-chair in 2010. She is currently Vice-President for Conferences of IS&T.

Plenary Session and Conference Award Presentations

Grand Peninsula Ballroom D

Wednesday 6 February

Welcome . . . . . 8:20 to 8:25 am

Plenary Presentation . . . . . 8:25 to 9:10 am

Conference Award Announcements . . . . . 9:10 to 9:20 am

A Trillion Photos

Steven Seitz, Univ. of Washington (United States)

Abstract: Collectively, we take upwards of a trillion photos each year. These images together comprise a nearly complete visual record of the world's people, places, things and events. However, this record is massively disorganized, unlabeled, and untapped. This talk explores ways of transforming this massive, unorganized photo collection into reconstructions and visualizations of the world's sites, cities, and people. After a brief recap of our work on Photosynth and reconstructing Rome in a day, I will present new work on modeling places and people from large photo collections from my research group at the University of Washington, and the product group that I direct at Google.

Biography: **Steven Seitz** is a Professor in the Department of Computer Science and Engineering at the University of Washington. He also directs a computer vision group at Google's Seattle office. He received his B.A. in computer science and mathematics at the University of California, Berkeley in 1991 and his Ph.D. in computer sciences at the University of Wisconsin in 1997. Following his doctoral work, he spent one year visiting the Vision Technology Group at Microsoft Research and the subsequent two years as an Assistant Professor in the Robotics Institute at Carnegie Mellon University. He joined the faculty at the University of Washington in July 2000. He was twice awarded the David Marr Prize for the best paper at the International Conference of Computer Vision, and he has received an NSF Career Award, and ONR Young Investigator Award, and an Alfred P. Sloan Fellowship, and is an IEEE Fellow. His work on Photo Tourism (joint with Noah Snavely and Rick Szeliski) formed the basis of Microsoft's Photosynth technology. Professor Seitz is interested in problems in computer vision and computer graphics. His current research focuses on 3D modeling and visualization from large photo collections.

IS&T/SPIE Electronic Imaging

SCIENCE AND TECHNOLOGY

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Philip R. Bingham, Oak Ridge National Lab. (United States)

Charles A. Bouman, Purdue Univ. (United States)

Peter D. Burns, Burns Digital Imaging (United States)

Matthias F. Carlsohn, Computer Vision and Image Communication at Bremen (Germany)

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Chaomei Chen, Drexel Univ. (United States)

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Chad D. Heitzenrater, Air Force Research Lab. (United States)

Nicolas S. Holliman, Durham Univ. (United Kingdom)

David L. Kao, NASA Ames Research Ctr. (United States)

Nasser Kehtarnavaz, The Univ. of Texas at Dallas (United States)

Lyndon S. Kennedy, Yahoo! Research (United States)

Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China)

Qian Lin, Hewlett-Packard Labs. (United States)

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Alessandro Rizzi, Univ. degli Studi di Milano (Italy)

Bernice E. Rogowitz, Visual Perspectives Consulting (United States)

Juha Röning, Univ. of Oulu (Finland)

Eli Saber, Rochester Institute of Technology (United States)

Amir Said, Hewlett-Packard Labs. (United States)

Nitin Sampat, Rochester Institute of Technology (United States)

Nicu Sebe, Univ. degli Studi di Trento (Italy)

Robert Sitnik, Warsaw Univ. of Technology (Poland)

Cees G. M. Snoek, Univ. van Amsterdam (Netherlands)

Robert L. Stevenson, Univ. of Notre Dame (United States)

Sophie Triantaphillidou, Univ. of Westminster (United Kingdom)

Ralf Widenhorn, Portland State Univ. (United States)

Patrick J. Wolfe, Harvard Univ. (United States)

Pak Chung Wong, Pacific Northwest National Lab. (United States)

Andrew J. Woods, Curtin Univ. (Australia)

Dietmar Wüller, Image Engineering GmbH & Co. KG (Germany)

Richard Zanibbi, Rochester Institute of Technology (United States)

Electronic Imaging 2013

Hyatt Regency San Francisco Airport Hotel
1333 Bayshore Hwy, Burlingame, CA 94010

Short Course Registration and Course Notes

Course-only registration

Sunday 3 February . . . . . .7:00 am to 10:00 am

Courses and workshops are priced separately. Course-only registration includes your selected course(s), course notes, coffee breaks, and admittance to the exhibition.

Short Courses Notes

Short courses will take place in various meeting rooms at the Hyatt Regency San Francisco Airport Hotel. Room assignments are noted on the course admission tickets and distributed with registration materials.

Onsite Registration Hours

Hyatt Regency San Francisco Airport Hotel, Grand Peninsula Foyer
Conference and course registration

Sunday 3 February . . . . . 7:00 am to 4:00 pm
Monday 4 February . . . . . 7:00 am to 4:00 pm
Tuesday 5 February . . . . . 7:30 am to 4:00 pm
Wednesday 6 February . . . . . 7:30 am to 4:00 pm
Thursday 7 February . . . . . 7:30 am to noon

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.

Speaker AV Prep Room and Hours

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

Authors are asked to set up their poster papers between 12:30 and 3:30 pm Wednesday. Pushpins are provided; other supplies can be obtained at the Conference Registration Desk. Posters will be on display Wednesday. 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.

Internet Availability

The Hyatt Regency offers wireless Internet services in each guest room for a charge of $9.99 per 24-hour period. There is no free wireless service in public areas.

A computer dedicated to printing out boarding passes, at no charge, is located next to the Concierge Desk in the lobby.

Business Center

Hyatt Regency San Francisco Airport Hotel offers a full service 24-hour business center with the following amenities:

Internet access with printers - 20 minutes @ $5.00

Wireless NIC cards for rent or purchase

Copy services in black and white (Notes: Currently there are no options for color copying) - $.25 per copy ($1.25 minimum)

Color copies are available at the local FedEx Office Print & Ship

Computers available for use - 20 minutes @ $5.00

Facsimile services - no charge

Shipping services and supplies

The business center is located in the lobby of the hotel, adjacent to the registration desk.

Cashier

IS&T cashier can assist with registration payments, adding a short course, receipts, and badge corrections.

Message Center

There will be a message board next to the conference registration desk. Attendees are asked to check the board daily for any messages.

IS&T Bookstore and Membership Booth

Open Sunday through Thursday during registration hours.

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

Open during registration hours.

The SPIE Bookstore is your source for the latest SPIE Press books, Proceedings and educational and professional development materials.

Free Shuttle to Burlingame

There are free shuttles available for attendees to travel from the conference center to downtown Burlingame in the evening. A complete schedule is available at the information desk.

Child Care Services

American Childcare is the preferred babysitting services for the hotel. They are accredited. Phone: 415-285-2300.

IS&T/SPIE do not imply an endorsement or recommendation of these services. They are provided on an "information only" basis for your further analysis and decision. Other services may be available.

Conference Daily Schedule

SUNDAY | MONDAY | TUESDAY | WEDNESDAY | THURSDAY

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Courses at Electronic Imaging

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

- 19 Courses in fundamental and current topics in electronic imaging including mobile imaging, 3D, image processing & analysis, and more
- Course attendees receive CEUs to fulfill continuing education requirements
- Full-time students receive 50% off courses
- All-new and featured courses for 2013 include
  - Head Mounted Displays for Augmented Reality Applications
  - Document and Image Analysis on Android Devices
  - HDR Imaging in Cameras, Displays and Human Vision
  - The EMVA1288 Standard
  - Theory and Methods of Lightfield Photography

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.

Course Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
3D Imaging, Interaction, and Metrology				
NEW · SC1096 **Head Mounted Displays for Augmented Reality Applications** (Browne, Melzer) 8:30 am to 5:30 pm, $575 / $685		SC927 **3D Imaging** (Agam) 8:30 am to 12:30 pm, $350 / $405	SC1047 **Autostereoscopic and Holographic Display Technologies** (Lee) 8:30 am to 12:30 pm, $350 / $405	
SC060 **Stereoscopic Display Application Issues** (Merritt, Woods) 8:30 am to 5:30 pm, $575 / $685				
SC1046 **Video Processing Techniques for 3D Television** (Ho) 8:30 am to 12:30 pm, $350 / $405				
SC1045 **Evaluation Methodology for 2D and 3D Displays** (de Ridder, Heynderickx) 1:30 to 5:30 pm, $350 / $405				
Computer Vision				
SC468 **Image Enhancement, Deblurring and Super-Resolution** (Rabbani) 8:30 am to 5:30 pm, $575 / $685	**NEW** · SC1084 **Characterizing and Specifying Industrial, Medical and Scientific Image Sensors and Cameras: The EMVA1288 Standard** (Darmont) 1:30 pm to 5:30 pm, $350 / $405	SC1015 **Understanding and Interpreting Images** (Rabbani) 1:30 pm to 5:30 pm, $350 / $405		
Image Capture				
SC967 **High Dynamic Range Imaging: Sensors and Architectures** (Darmont) 8:30 am to 5:30 pm, $620 / $730	**NEW** · SC1098 **Document and Image Analysis on Android Devices** (Doermann, Liu) 8:30 am to 5:30 pm, $575 / $685	SC916 **Digital Camera and Sensor Evaluation Using Photon Transfer** (Janesick) 8:30 am to 5:30 pm, $630 / $740	**NEW** · SC1097 **HDR Imaging in Cameras, Displays and Human Vision** (Rizzi, McCann) 8:30 am to 12:30 pm, $350 / $405	
SC1058 **Image Quality and Evaluation of Cameras In Mobile Devices** (Artmann, Matherson) 8:30 am to 5:30 pm, $575 / $685	SC504 **Introduction to CCD and CMOS Imaging Sensors and Applications** (Janesick) 8:30 am to 5:30 pm, $715 / $825		SC980 **Theory and Methods of Lightfield Photography** (Georgiev, Lumsdaine) 8:30 am to 5:30 pm, $575 / $685	
SC1021 **Mobile Computational Photography** (Pulli, Ahonen, Troccoli) 8:30 am to 5:30 pm, $575 / $685	SC1049 **Objective and Subjective Image Quality Camera Benchmarking** (Phillips, Touchard) 8:30 am to 5:30 pm, $575 / $685			
SC1048 **Image Processing for Single-Sensor Imaging Devices** (Battiato) 1:30 pm to 5:30 pm, $350 / $405	**NEW** · SC1084 **Characterizing and Specifying Industrial, Medical and Scientific Image Sensors and Cameras: The EMVA1288 Standard** (Darmont) 1:30 pm to 5:30 pm, $350 / $405			
Image Processing				
SC967 **High Dynamic Range Imaging: Sensors and Architectures** (Darmont) 8:30 am to 5:30 pm, $620 / $730	**NEW** · SC1098 **Document and Image Analysis on Android Devices** (Doermann, Liu) 8:30 am to 5:30 pm, $575 / $685	SC927 **3D Imaging** (Agam) 8:30 am to 12:30 pm, $350 / $405	**NEW** · SC1097 **HDR Imaging in Cameras, Displays and Human Vision** (Rizzi, McCann) 8:30 am to 12:30 pm, $350 / $405	
SC468 **Image Enhancement, Deblurring and Super-Resolution** (Rabbani) 8:30 am to 5:30 pm, $575 / $685		SC1015 **Understanding and Interpreting Images** (Rabbani) 1:30 pm to 5:30 pm, $350 / $405	SC980 **Theory and Methods of Lightfield Photography** (Georgiev, Lumsdaine) 8:30 am to 5:30 pm, $575 / $685	
SC1058 **Image Quality and Evaluation of Cameras In Mobile Devices** (Artmann, Matherson) 8:30 am to 5:30 pm, $575 / $685				
SC1021 **Mobile Computational Photography** (Pulli, Ahonen, Troccoli) 8:30 am to 5:30 pm, $575 / $685				
SC060 **Stereoscopic Display Application Issues** (Merritt, Woods) 8:30 am to 5:30 pm, $575 / $685				
SC1048 **Image Processing for Single-Sensor Imaging Devices** (Battiato) 1:30 pm to 5:30 pm, $350 / $405				

Course Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY

Media Processing and Communication

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
SC967 **High Dynamic Range Imaging: Sensors and Architectures** (Darmont) 8:30 am to 5:30 pm, $620 / $730	SC1049 **Objective and Subjective Image Quality Camera Benchmarking** (Phillips, Touchard) 8:30 am to 5:30 pm, $575 / $685			
SC468 **Image Enhancement, Deblurring and Super-Resolution** (Rabbani) 8:30 am to 5:30 pm, $575 / $685				
SC1058 **Image Quality and Evaluation of Cameras In Mobile Devices** (Artmann, Matherson) 8:30 am to 5:30 pm, $575 / $685				
SC1021 **Mobile Computational Photography** (Pulli, Ahonen, Troccoli) 8:30 am to 5:30 pm, $575 / $685				
SC1046 **Video Processing Techniques for 3D Television** (Ho) 8:30 am to 12:30 pm, $350 / $405				
SC1048 **Image Processing for Single-Sensor Imaging Devices** (Battiato) 1:30 pm to 5:30 pm, $350 / $405				

Mobile Imaging

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
NEW · SC1096 **Head Mounted Displays for Augmented Reality Applications** (Browne, Melzer) 8:30 am to 5:30 pm, $575 / $685	**NEW** · SC1098 **Document and Image Analysis on Android Devices** (Doermann, Liu) 8:30 am to 5:30 pm, $575 / $685	SC1015 **Understanding and Interpreting Images** (Rabbani) 1:30 pm to 5:30 pm, $350 / $405	SC980 **Theory and Methods of Lightfield Photography** (Georgiev, Lumsdaine) 8:30 am to 5:30 pm, $575 / $685	
SC468 **Image Enhancement, Deblurring and Super-Resolution** (Rabbani) 8:30 am to 5:30 pm, $575 / $685				
SC1058 **Image Quality and Evaluation of Cameras In Mobile Devices** (Artmann, Matherson) 8:30 am to 5:30 pm, $575 / $685				
SC1021 **Mobile Computational Photography** (Pulli, Ahonen, Troccoli) 8:30 am to 5:30 pm, $575 / $685				

Visualization, Perception, and Color

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
SC1045 **Evaluation Methodology for 2D and 3D Displays** (de Ridder, Heynderickx) 1:30 to 5:30 pm, $350 / $405	SC1049 **Objective and Subjective Image Quality Camera Benchmarking** (Phillips, Touchard) 8:30 am to 5:30 pm, $575 / $685	SC927 **3D Imaging** (Agam) 8:30 am to 12:30 pm, $350 / $405	**NEW** · SC1097 **HDR Imaging in Cameras, Displays and Human Vision** (Rizzi, McCann) 8:30 am to 12:30 pm, $350 / $405	
NEW · SC1096 **Head Mounted Displays for Augmented Reality Applications** (Browne, Melzer) 8:30 am to 5:30 pm, $575 / $685	**NEW** · SC1084 **Characterizing and Specifying Industrial, Medical and Scientific Image Sensors and Cameras: The EMVA1288 Standard** (Darmont) 1:30 pm to 5:30 pm, $350 / $405	SC1015 **Understanding and Interpreting Images** (Rabbani) 1:30 pm to 5:30 pm, $350 / $405		
SC967 **High Dynamic Range Imaging: Sensors and Architectures** (Darmont) 8:30 am to 5:30 pm, $620 / $730				
SC468 **Image Enhancement, Deblurring and Super-Resolution** (Rabbani) 8:30 am to 5:30 pm, $575 / $685				
SC1058 **Image Quality and Evaluation of Cameras In Mobile Devices** (Artmann, Matherson) 8:30 am to 5:30 pm, $575 / $685				
SC060 **Stereoscopic Display Application Issues** (Merritt, Woods) 8:30 am to 5:30 pm, $575 / $685				
SC1048 **Image Processing for Single-Sensor Imaging Devices** (Battiato) 1:30 pm to 5:30 pm, $350 / $405				

See course descriptions and register for courses onsite at the registration desk

Conference 8648

Monday–Wednesday 4–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8648

Stereoscopic Displays and Applications XXIV

Conference Chairs: **Andrew J. Woods,** Curtin Univ. (Australia); **Nicolas S. Holliman,** Durham Univ. (United Kingdom); **Gregg E. Favalora,** Optics for Hire (United States)

Program Committee: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Hideki Kakeya,** Univ. of Tsukuba (Japan); **Takashi Kawai,** Waseda Univ. (Japan); **John D. Stern,** Intuitive Surgical, Retired (United States); **Vivian K. Walworth,** StereoJet, Inc. (United States); **Chris Ward,** Lightspeed Design, Inc. (United States); **Michael A. Weissman,** Perspective Systems (United States); **Samuel Zhou,** IMAX Corp. (Canada)

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

Gold Sponsors:

Silver Sponsor:

Monday 4 February

Session 1

Room: Grand Peninsula
Ballroom D . . . . . .Mon 8:30 to 9:10 am

Visual Comfort

Session Chair: **Andrew J. Woods,** Curtin Univ. (Australia)

8:30 am: **Simulator sickness analysis of 3D video viewing on passive 3DTV**, Kjell E. Brunnström, Kun Wang, Acreo AB (Sweden) and Mid Sweden Univ. (Sweden); Börje Andrén, Acreo AB (Sweden) . . . . . [8648-1]

8:50 am: **Study of visual fatigue/discomfort generated by S3D video using eye-tracking data**, Iana Iatsun, Mohamed-Chaker Larabi, Christine Fernandez-Maloigne, XLIM-SIC (France) . . . . . [8648-2]

Room: Grand Peninsula
Ballroom D . . . . . .Mon 9:10 to 9:20 am

SD&A Opening Remarks

Room: Grand Peninsula
Ballroom D . . . . . .Mon 9:20 to 10:20 am

SD&A Keynote Session I

The SD&A Keynote presentations provide an opportunity to hear an eminent speaker discuss a topic of interest to the global stereoscopic community.

9:20 am: **History of polarized image stereoscopic display** *(Keynote Presentation)*, Vivian K. Walworth, StereoJet, Inc. (United States) . . . . . [8648-80]

Coffee Break . . . . . Mon 10:20 am to 10:50 am

Sessions 2 and 5 run concurrently.

Session 2

Room: Grand Peninsula
Ballroom D . . . . . Mon 10:50 am to 12:30 pm

3D Image Quality I: Displays

Session Chair: **Nicolas S. Holliman,** Durham Univ. (United Kingdom)

10:50 am: **Optical modeling of lenticular array for autostereoscopic displays**, Sung-Min Jung, Keong-Jin Lee, Seung-Chul Lee, Kyoung-Moon Lim, Sang-Deog Yeo, LG Display (Korea, Republic of). . . . . [8648-4]

11:10 am: **Simple measurement of lenticular lens quality for autostereoscopic displays**, Stuart Gray, Robert A. Boudreau, Corning Incorporated (United States) . . . . . [8648-6]

11:30 am: **Visibility of binocular crosstalk for high-dynamic range displays**, Marc Lambooij, Martin Hammer, TP Vision (Netherlands)[8648-8]

11:50 am: **Method to test and quantify 3D active shutter glasses**, Kurt Hoffmeister, Mechdyne Corp. (United States) . . . . . [8648-10]

12:10 pm: **Towards standardized 3DTV QoE assessment: cross-lab study on display technology and viewing environment parameters**, Marcus Barkowsky, Jing Li, Polytech' Nantes (France); Taehwan Han, Sungwook Youn, Jiheon Ok, Chulhee Lee, Yonsei Univ. (Korea, Republic of); Christer Hedberg, Inirajith V. Ananth, Acreo AB (Sweden); Kun Wang, Kjell E. Brunnström, Acreo AB (Sweden) and Mid Sweden Univ. (Sweden); Patrick Le Callet, Polytech' Nantes (France). . . . . [8648-12]

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

Session 5

Room: Grand Peninsula
Ballroom G . . . . . Mon 10:50 am to 12:30 pm

3D Content and Coding

Session Chair: **Michael A. Weissman,** Perspective Systems (United States)

10:50 am: **Optical axes misalignment compensation method for stereo camera zooming**, Jinmo Kang, Junyong Lee, Changseob Park, Korean Broadcasting System (Korea, Republic of) . . . . . [8648-3]

11:10 am: **Stereo rendering of rain in real time**, Syed A. Hussain, David F. McAllister, North Carolina State Univ. (United States) . . . . . [8648-5]

11:30 am: **A new 3D video format for multiview/freeview depth image based rendering**, Lin Du, Yan Xu, Gang Cheng, Technicolor Beijing (China) . . . . . [8648-7]

11:50 am: **Subjective evaluation of an edge-based depth image compression scheme**, Yun Li, Mårten Sjöström, Ulf Jennehag, Roger Olsson, Sylvain Tourancheau, Mid Sweden Univ. (Sweden). . . . . [8648-9]

12:10 pm: **Cooperative ARQ for 3D video transmission**, Yan Xu, Lin Du, Technicolor (China) Technology Co., Ltd. (China). . . . . [8648-11]

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

Sessions 3 and 6 run concurrently.

Session 3

Room: Grand Peninsula
Ballroom D . . . . . Mon 2:00 pm to 3:20 pm

Autostereo I: Paths to Large-Scale Display

Session Chair: **Gregg E. Favalora,** Optics for Hire (United States)

2:00 pm: **Natural 3D content on glasses-free light-field 3D cinema**, Tibor Balogh, Péter Tamás Kovács, Zsolt Nagy, Holografika Kft. (Hungary) . . . . . [8648-14]

2:20 pm: **Large-scale autostereoscopic outdoor display**, Joerg Reitterer, Franz Fidler, Ferdinand Saint Julien-Wallsee, TriLite Technologies GmbH (Austria); Gerhard Schmid, Wolfgang Gartner, Walter Leeb, Ulrich Schmid, Technische Univ. Wien (Austria) . . . . . [8648-15]

2:40 pm: To be advised.

3:00 pm: **Multi-view display module using MEMS projectors for an ultra-large screen autostereoscopic display**, Kenji Hirabayashi, Tokyo Univ. of Agriculture and Technology (Japan); Hiromitsu Takenaka, Osamu Konuma, Yasuhiro Morimoto, Samsung Yokohama Research Institute Co., Ltd. (Japan); Yasuhiro Takaki, Tokyo Univ. of Agriculture and Technology (Japan). . . . . [8648-20]

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

Session 6

Room: Grand Peninsula
Ballroom G . . . . . Mon 2:00 pm to 3:20 pm

Multi-Layer 3D Displays

Session Chair: **John D. Stern,** Intuitive Surgical, Inc. (United States)

2:00 pm: **Real-time handling of existing content sources on a multi-layer display**, Darryl Singh, Jung Shin, PureDepth Inc. (New Zealand). . . . . [8648-13]

2:20 pm: **Switching dual layer display with a dynamic mask**, Quinn Y. J. Smithwick, Mark Reichow, Walt Disney Imagineering (United States) . . . . . [8648-16]

2:40 pm: **Design of time-multiplexed autostereoscopic displays based on virtual stacking of multi-layer panels**, Hironobu Gotoda, National Institute of Informatics (Japan) . . . . . [8648-18]

3:00 pm: **A new method to enlarge a range of continuously perceived depth in DFD (depth-fused 3D) display**, Atsuhiro Tsunakawa, Tomoki Soumiya, Hirotsugu Yamamoto, Shiro Suyama, Univ. of Tokushima (Japan). . . . . [8648-19]

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

Sessions 4 and 7 run concurrently.

Session 4

Room: Grand Peninsula
Ballroom D . . . . . Mon 4:00 pm to 5:20 pm

Human Factors: 3D User Studies

Session Chair: **John O. Merritt,** The Merritt Group (United States)

4:00 pm: **Subjective and objective measurements of visual fatigue induced by excessive disparities in stereoscopic images**, Yong Ju Jung, Dongchan Kim, Sohn Hosik, Seong-il Lee, Yong Man Ro, Hyun Wook Park, KAIST (Korea, Republic of) . . . . . [8648-22]

4:20 pm: **Depth distortion in color-interlaced stereoscopic 3D displays**, Joohwan Kim, Paul V. Johnson, Martin S. Banks, Univ. of California, Berkeley (United States) . . . . . [8648-23]

4:40 pm: **Depth perception from stationary and moving stereoscopic three-dimensional images**, Yu-Chi Tai, Sowjanya Gowrisankaran, Shunnan Yang, James E. Sheedy, John Hayes, Pacific Univ. (United States) . . . . . [8648-26]

5:00 pm: **Immersion, tangibility, and realism: explaining the qualitative experience of stereopsis**, Dhanraj Vishwanath, Univ. of St. Andrews (United Kingdom). . . . . [8648-27]

Session 7

Room: Grand Peninsula
Ballroom G . . . . . Mon 4:00 pm to 5:20 pm

Autostereo II: Display, Computation, and Capture

Session Chair: **Hideki Kakeya,** Univ. of Tsukuba (Japan)

4:00 pm: **Aerial 3D LED display by use of retroreflective sheeting**, Hirotsugu Yamamoto, Shiro Suyama, Univ. of Tokushima (Japan)[8648-21]

4:20 pm: **Implementation of shading effect for reconstruction of smooth layer-based 3D holographic images**, Daping Chu, Univ of Cambridge (United Kingdom); Quinn Y. J. Smithwick, Walt Disney Imagineering (United States); Jhen-Si Chen, Univ of Cambridge (United Kingdom) . . . . . [8648-24]

4:40 pm: **An autostereoscopic display system with four viewpoints in full resolution using active anaglyph parallax barrier,** Qu Zhang, Hideki Kakeya, Univ. of Tsukuba (Japan). . . . . [8648-25]

5:00 pm: **Integral imaging camera for capturing hologram using focal image stack,** Sung-Keun Lee, Yong-Soo Kim, Sung-In Hong, Kyeong-Min Jeong, Jae-Hyeung Park, Chungbuk National Univ. (Korea, Republic of) . . . . . [8648-28]

Room: Grand Peninsula
Ballroom D . . . . . Mon 5:40 pm to 7:30 pm

3D Theatre

Session Chairs: **Andrew J. Woods,** Curtin Univ. (Australia);
Chris Ward, Lightspeed Design, Inc. (United States);
John D. Stern, Intuitive Surgical, Inc. (United States)

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.

SD&A Annual Dinner . . . . .Mon 7:45 pm to 10:00 pm

The annual informal SD&A dinner for attendees. An opportunity to meet with colleagues and discuss the latest advances. There is no host for the dinner. Information on venue and cost will be provided on the day at the conference.

Tuesday 5 February

Room: Grand Peninsula
Ballroom D . . . . . Tue 8:20 am to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Room: Grand Peninsula
Ballroom D . . . . . Tue 9:30 am to 10:30 am

SD&A Keynote Session II

The SD&A Keynote presentations provide an opportunity to hear an eminent speaker discuss a topic of interest to the global stereoscopic community.

9:30 am: **Coverage of the London 2012 Olympic Games in 3D** *(Keynote Presentation)*, Jim DeFilippis, Consultant (United States) . . . . . [8648-81]

Coffee Break . . . . . .Tue 10:30 am to 11:00 am

Session 8

Room: Grand Peninsula
Ballroom D . . . . . Tue 11:00 am to 12:40 pm

2D to 3D Conversion and Depth Mapping/Remapping

Session Chair: **Takashi Kawai,** Waseda Univ. (Japan)

11:00 am: **The psychology of the 3D experience**, Sophie H. Janicke, Andrew Ellis, Florida State Univ. (United States) . . . . . [8648-29]

11:20 am: **A semi-automatic 2D to stereoscopic 3D image and video conversion system in a semi-automated segmentation perspective**, Raymond Phan, Dimitrios Androutsos, Ryerson Univ. (Canada) . [8648-30]

11:40 am: **Temporally consistent disparity estimation using PCA dual cross-bilateral grid,** Jin Zhu, Technische Univ. Eindhoven (Netherlands); Patrick Vandewalle, Philips Research (Netherlands); Gerard de Haan, Philips Research Nederland B.V. (Netherlands) . . . . . [8648-31]

12:00 pm: **Automatic depth grading tool to successfully adapt stereoscopic 3D content to digital cinema and home viewing environments**, Cédric Thébault, Didier Doyen, Technicolor S.A. (France); Pierre Routhier, Technicolor S.A. (Canada); Thierry Borel, Technicolor S.A. (France) . . . . . [8648-32]

12:20 pm: **Disparity remapping to ameliorate visual comfort of stereoscopic video**, Sohn Hosik, Yong Ju Jung, Seong-il Lee, KAIST (Korea, Republic of); Filippo Speranza, Communications Research Ctr. Canada (Canada); Yong Man Ro, KAIST (Korea, Republic of) . . . [8648-33]

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

Session 9

Room: Grand Peninsula
Ballroom D . . . . . Tue 2:00 pm to 3:20 pm

3D Image Quality II: Content

Session Chair: **Samuel Zhou,** IMAX Corp. (Canada)

2:00 pm: **Disparity analysis of 3D movies and emotional representations**, Takashi Kawai, Masahiro Hirahara, Yuya Tomiyama, Daiki Atsuta, Waseda Univ. (Japan); Jukka Häkkinen, Aalto Univ. (Finland) . . . . . [8648-34]

2:20 pm: **Methodology of stereoscopic motion picture quality assessment**, Dmitriy Vatolin, Alexander Voronov, Denis Sumin, Vyacheslav Napadovsky, Alexey Borisov, Moscow State Univ. (Russian Federation) . . . . . [8648-35]

2:40 pm: **Critical alignment methods for stereoscopic production and post-production image registration**, Christopher A. Mayhew, Craig M. Mayhew, Vision III Imaging, Inc. (United States) . . . . . [8648-36]

3:00 pm: **Towards a metric of antialiasing sufficiency for stereoscopic displays**, Charles J. Lloyd, Visual Performance, LLC (United States) . . . . . [8648-37]

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

Session 10

Room: Grand Peninsula
Ballroom D . . . . . Tue 3:50 pm to 5:30 pm

3D Games and 3D Audio

Session Chair: **Chris Ward,** Lightspeed Design, Inc. (United States)

3:50 pm: **Stereoscopic game design and evaluation**, Nicolas S. Holliman, Durham Univ. (United Kingdom) . . . . . [8648-38]

4:10 pm: **Impact of floating windows on the accuracy of depth perception in games**, Brodie M. Stanfield, Chris R. Zerebecki, Andrew Hogue, Bill Kapralos, Univ. of Ontario Institute of Technology (Canada); Karen Collins, Univ. of Waterloo (Canada) . . . . . [8648-39]

4:30 pm: To be advised.

4:50 pm: **The effects of 5.1 sound presentations on the perception of stereoscopic imagery in video games**, Brian Cullen, Univ. of Ontario Institute of Technology (Canada); Daniel Galperin, Karen Collins, Univ. of Waterloo (Canada); Andrew Hogue, Bill Kapralos, Univ. of Ontario Institute of Technology (Canada) . . . . . [8648-41]

5:10 pm: **Depth perception of audio sources in stereo 3D environments**, David Corrigan, Marcin Gorzel, John Squires, Frank Boland, Trinity College Dublin (Ireland) . . . . . [8648-42]

Room: Grand Peninsula
Ballroom A . . . . . 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 6 February

Room: Grand Peninsula
Ballroom D . . . . . .Wed 8:20 am to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: A Trillion Photos, Steven Seitz, Univ. of Washington (United States)

Sessions 11 and 13 run concurrently.

Session 11

Room: Grand Peninsula
Ballroom D . . . . . Wed 9:30 am to 10:30 am

Accommodation and 3D Display

Session Chair: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom)

9:30 am: **Accommodation responses to horizontal-parallax-only super multiview display**, Junya Nakamura, Kosuke Tanaka, Yasuhiro Takaki, Tokyo Univ. of Agriculture and Technology (Japan) . . . . . [8648-44]

9:50 am: **Lightweight spatial-multiplexed dual focal-plane near to eye display using two freeform prisms**, Dewen Cheng, Yongtian Wang, Beijing Institute of Technology (China); Guofan Jin, Tsinghua Univ. (China) . . . . . [8648-45]

10:10 am: **An optical see-through, multi-focal-plane stereoscopic display prototype enabling nearly-correct focus cues**, Xinda Hu, Hong Hua, College of Optical Sciences, The Univ. of Arizona (United States) . . . . . [8648-47]

Coffee Break . . . . . Wed 10:30 am to 11:10 am

Session 13

Room: Grand Peninsula
Ballroom G . . . . . Wed 9:30 am to 10:30 am

3D Developments I

Session Chair: **Nicolas S. Holliman,** Durham Univ. (United Kingdom)

Please note the room change for this session.

9:30 am: **S3D depth-axis interaction for video games: performance and engagement**, Chris R. Zerebecki, Brodie Stanfield, Andrew Hogue, Bill Kapralos, Univ. of Ontario Institute of Technology (Canada); Karen Collins, Univ. of Waterloo (Canada). . . . . [8648-43]

9:50 am: **Comfortable stereo viewing on mobile devices**, Takashi Shibata, Tokyo Univ. of Social Welfare (Japan) and Waseda Univ. (Japan); Fumiya Muneyuki, Keisuke Oshima, Junki Yoshitake, Takashi Kawai, Waseda Univ. (Japan) . . . . . [8648-64]

10:10 am: **Discernible difference and change in object depth afforded by stereoscopic three-dimensional content,** Shunnan Yang, John Hayes, James E. Sheedy, Sowjanya Gowrisankaran, Pacific Univ. (United States) . . . . . [8648-48]

Coffee Break . . . . . Wed 10:30 am to 11:10 am

Sessions 12 and 14 run concurrently.

Session 12

Room: Grand Peninsula
Ballroom D . . . . . Wed 11:10 am to 12:30 pm

Applications and Volumetric Displays

Session Chair: **Gregg E. Favalora,** Optics for Hire (United States)

11:10 am: **Is the use of 55" LCD 3D screen practicable in large seminar to lecture-hall size audiences?**, Justus F. Ilgner M.D., Ingo Sparrer M.D., Martin Westhofen M.D., Univ. Hospital Aachen (Germany) . . . . . [8648-50]

11:30 am: **Immersive stereoscopic panoramas**, John S. Toeppen, HoloGraphics (United States); Jason Buchheim, Odyssey Expeditions (United States). . . . . [8648-52]

11:50 am: **Extended depth-of-field in integral imaging by depth-dependent deconvolution**, Hector Navarro, Genaro Saavedra-Tortosa, Manuel Martinez-Corral, Univ. de València (Spain); Mårten Sjöström, Roger Olsson, Mid Sweden Univ. (Sweden) . . . . . [8648-63]

12:10 pm: **Experimental verification of conditions for bubble-projection three-dimensional display**, Takuma Uchida, Hitoshi Ozaki, Hiroshi Kawakami, Jippei Suzuki, Mie Univ. (Japan); Koichi Nakayama, Saga Univ. (Japan). . . . . [8648-55]

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

Session 14

Room: Grand Peninsula
Ballroom G . . . . . Wed 11:10 am to 12:30 pm

3D Developments II

Session Chair: **John O. Merritt,** The Merritt Group (United States)

Please note the room change for this session.

11:10 am: **Depth enhanced multi-layered display using polarization dependent double reflection**, Na-Young Jo, Hee-Seung Kim, Jae-Hyeung Park, Chungbuk National Univ. (Korea, Republic of) . . . . . [8648-49]

11:30 am: **Polarization analysis of the light emitted by liquid-crystal-based 3D displays,** Pierre M. Boher, Thierry Leroux, Thibault Bignon, Véronique Collomb-Patton, ELDIM (France). . . . . [8648-51]

11:50 am: **Accurate depth estimation using spatiotemporal consistency in arbitrary camera array**, Woo-Seok Jang, Yo-Sung Ho, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [8648-53]

12:10 pm: **Stereoscopic 3D video coding artifacts quality evaluation with 2D objective metrics**, Kun Wang, Kjell E. Brunnström, Acreo AB (Sweden) and Mid Sweden Univ. (Sweden); Marcus Barkowsky, Patrick Le Callet, Univ. de Nantes (France); Mårten Sjöström, Sylvain Tourancheau, Mid Sweden Univ. (Sweden) . . . . . [8648-56]

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

Session 15

Room: Grand Peninsula Ballroom D . . . . . Wed 2:00 pm to 2:20 pm

3D Cinema

Session Chair: **Andrew J. Woods,** Curtin Univ. (Australia)

2:00 pm: **Case study: The Avengers 3D: cinematic techniques and digitally created 3D**, Graham D. Clark, Stereo D (United States) [8648-57]

Room: Grand Peninsula Ballroom D . . . . . .Wed 2:20 pm to 3:20 pm

Discussion Forum: 3D Movies: Is There Enough Depth?

The SD&A Discussion Forum is a great opportunity to hear a panel of stereoscopic luminaries discuss a topic of high stereoscopic relevance. The title of this year's discussion forum is an intentional play on words. The forum could be a discussion of whether 3D movies have sufficient narrative quality and whether they rely too much on the 3D effects. Or it could be a discussion about the depth budget in 3D movies; there has been an ongoing discussion that some 3D movies are simply too flat and overly conservative in their parallax range, however there are also concerns that depth range needs to be managed to ensure visual safety. Of course, the latter topic is the substantive one, although it would be fun to consider both aspects. Be prepared for a lively discussion with opportunity for questions from the audience.

Room: Grand Peninsula Ballroom D . . . . . .Wed 3:20 pm to 3:30 pm

SD&A Closing Remarks

Session Chair: **Andrew J. Woods,** Curtin Univ. (Australia)

Further information about the SD&A conference is available at the conference website ww.stereoscopic.org

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

3D Displays

Wide viewing angle three-dimensional display using curved HOE lens array, Hideya Takahashi, Yoshiaki Oshima, Joji Kanda, Osaka City Univ. (Japan); Kenji Yamada, Osaka Univ. (Japan) . . . . . [8648-58]

Volumetric display based on optical scanning of an inclined image plane by an image rotator and imaging by a dihedral corner reflector array, Yuki Maeda, Diasuke Miyazaki, Takaaki Mukai, Osaka City Univ. (Japan); Satoshi Maekawa, National Institute of Information and Communications Technology (Japan) . . . . . [8648-59]

Resolution-enhanced display of three-dimensional objects by using the dynamic mask pattern in a depth-priority integral-imaging system, Suk-Pyo Hong, Eun-Seong Kim, Kwangwoon Univ. (Korea, Republic of); Donghak Shin, Dongseo Univ. (Korea, Republic of); Eun-Soo Kim, Kwangwoon Univ. (Korea, Republic of). . . . . [8648-60]

A method of reducing number of pixels on display device for super-multiview display, Yuki Adachi, Tomohiro Yendo, Nagaoka Univ. of Technology (Japan) . . . . . [8648-61]

Development of super multiview head-up display and evaluation of motion parallax smoothness, Hiroyuki Nishio, Yasuhiro Takaki, Tokyo Univ. of Agriculture and Technology (Japan) . . . . . [8648-62]

Human Factors

Subjective assessment of visual discomfort induced by disparity magnitude and stimulus width in stereoscopic images, Seong-il Lee, Yong Ju Jung, Sohn Hosik, Yong Man Ro, KAIST (Korea, Republic of) . . . . . [8648-65]

Evaluation of the no-disparity realistic image from a sense of presence and low fatigue, Hisaki Nate, Nobutaka Natui, Naoki Hayashi, Kazuo Ishikawa, Tokyo Polytechnic Univ. (Japan); Toyohiko Hatada, Tokyo Optometric College (Japan); Yutaka Ichihara, Nobuyuki Miyake, Yoshijiro Ushio, Nikon Corp. (Japan) . . . . . [8648-66]

Boosting paired comparison methodology in measuring visual discomfort of 3DTV: performances of three different designs, Jing Li, Marcus Barkowsky, Patrick Le Callet, Polytech' Nantes (France) [8648-68]

3D Camera Systems

Stereoscopic cameras for the real-time acquisition of panoramic 3D images and videos, Luis E. Gurrieri, Eric Dubois, Univ. of Ottawa (Canada) . . . . . [8648-70]

Applications of 3D Displays

Applications of 2D to 3D conversion for educational purposes, Yoshihisa Koido, Hiroyuki Morikawa, Saki Shiraishi, Wataru Maruyama, Soya Takeuchi, Waseda Univ. (Japan); Toshio Nakagori, Tokai Univ. (Japan); Masataka Hirakata, Hirohisa Shinkai, Toppan Printing (Japan); Takashi Kawai, Waseda Univ. (Japan) . . . . . [8648-72]

An interactive in-game approach to user adjustment of stereoscopic 3D settings, Mina Tawadrous, Andrew Hogue, Bill Kapralos, Univ. of Ontario Institute of Technology (Canada); Karen Collins, Univ of Waterloo (Canada) . . . . . [8648-73]

A stereoscopic archive for the heritage of industrial modernization and the evaluation, Hayoung Yoon, Kohei Ando, Waseda Univ. (Japan); Takashi Kawai, Waseda University (Japan); Keiji Ohta, Quality eXperience Design Co., Ltd. (Japan) . . . . . [8648-74]

3D Image Quality

A wavelet-based image quality metric for the assessment of 3D synthesized views, Emilie Bosc, Institut National des Sciences Appliquées de Rennes (France); Federica Battisti, Marco Carli, Univ. degli Studi Roma Tre (Italy); Patrick Le Callet, Polytech' Nantes (France) . . . . . [8648-75]

Stereoscopic display gray-to-gray crosstalk measurement, Yi-Heng Chou, Fu Hao Chen, Kuo-Chung Huang, Kuen Lee, Ching-Chiu Liao, Yi-hen Chen, Industrial Technology Research Institute (Taiwan) . . . [8648-76]

Image Processing and Coding

Compressing stereo images in discrete Fourier transform domain, Chee Sun Won, Dongguk Univ. (Korea, Republic of); Shahram Shirani, McMaster Univ. (Canada) . . . . . [8648-77]

Depth inloop resampling using dilation filter for free viewpoint video system, Seok Lee, Seungsin Lee, Hocheon Wey, Jaejoon Lee, Dusik Park, Samsung Advanced Institute of Technology (Korea, Republic of) [8648-78]

Adaptive hole filling for 3D warping-based virtual view synthesis, Tatsuro Mori, Nagoya Univ. (Japan); Mehrdad Panahpour Tehrani, National Institute of Information and Communications Technology (Japan); Toshiaki Fujii, Nagoya Univ. (Japan); Masayuki Tanimoto, Nagoya Industrial Science Research Institute (Japan). . . . . [8648-79]

Room: Hyatt Regency Atrium . . Wed 7:00 to 9:00 pm

All-Conference Reception

The annual Electronic Imaging All-Conference Reception provides a wonderful opportunity to get to know and interact with new and old SD&A colleagues. Plan to join us for this relaxing and enjoyable event.

Conference 8649

Monday–Tuesday 4–5 February 2013 • Proceedings of IS&T/SPIE Vol. 8649

The Engineering Reality of Virtual Reality 2013

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

Program Committee: **Todd Margolis,** Univ. of California, San Diego (United States); **Tracy Cornish,** Univ. of California, San Diego (United States)

Monday 4 February

Session 1

Room: Harbour Room A . . . . . Mon 9:30 am to 10:10 am

Welcome to Future Tech 3000

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

9:30 am: **CalVR: an advanced open-source virtual reality software framework**, Jurgen Schulze, Andrew Prudhomme, Philip Weber, Thomas A. DeFanti, Univ. of California, San Diego (United States) . . . . . [8649-1]

9:50 am: **CAVE2: a next-generation hybrid environment for immersive simulation and information analysis**, Alessandro Febretti, Arthur Nishimoto, Terrance Thigpen, Jonas Talandis, Lance Long, J. D. Pirtle, Alan Verlo, Maxine Brown, Dana Plepys, Daniel J. Sandin, Luc Renambot, Andrew Johnson, Jason Leigh, Univ. of Illinois at Chicago (United States) . . . . . [8649-2]

Coffee Break . . . . . Mon 10:10 am to 10:30 am

Session 2

Room: Harbour Room A . . . . . Mon 10:30 am to 12:30 pm

Can I Borrow Your Swiss Army Knife?

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

10:30 am: **MASCARET: create virtual learning environments from system modeling,** Ronan Querrec, Paola Vallejo, Cédric Buche, Ecole Nationale d'Ingénieurs de Brest (France) . . . . . [8649-3]

10:50 am: **Employing WebGL to develop interactive stereoscopic 3D content for use in biomedical visualization**, Semay Johnston, Univ. of Illinois at Chicago (United States) and Biomedical and Health Information Sciences (United States); Luc Renambot, Univ. of Illinois at Chicago (United States); Daniel Sauter, Univ. of Illinois at Chicago (United States) and School of Art and Design (United States). . . . . [8649-4]

11:10 am: **VRX: honoring the past, looking to the future**, William R. Sherman, Indiana Univ. (United States); Daniel Coming, Google (United States) . . . . . [8649-5]

11:30 am: **An industrial approach to design compelling VR and AR experience**, Simon Richir, Ecole Nationale Supérieure d'Arts et Métiers (France) . . . . . [8649-6]

11:50 am: **3D interactive, augmented, reality-enhanced digital learning systems for mobile devices**, Kai-Ten Feng, National Chiao Tung Univ. (Taiwan); Po-Hsuan Tseng, National Taipei Univ. of Technology (Taiwan); Pei-Shuan Chiu, Jia-Lin Yang, Chun-Jie Chiu, National Chiao Tung Univ. (Taiwan) . . . . . [8649-7]

12:10 pm: **User contexts: identifying specificity of user needs**, Diane Gromala, Simon Fraser Univ. (Canada). . . . . [8649-8]

Lunch Break . . . . . Mon 12:30 pm to 2:20 pm

Session 3

Room: Harbour Room A . . . . . Mon 2:20 pm to 3:20 pm

Every Picture Tells a Story, Don't It?

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

2:20 pm: **Using the computer-driven VR environment to promote experiences of natural world immersion**, Lisa A. Frank, Beckman Institute for Advanced Science and Technology (United States) and The Wisconsin Institute for Discovery (United States) . . . . . [8649-10]

2:40 pm: **A virtual reality environment of oriental residences**, Catherine Chi, Indiana Univ. (United States) . . . . . [8649-11]

3:00 pm: **Mrs. Squandertime**, Josephine Anstey, Dave Pape, Univ. at Buffalo (United States) . . . . . [8649-12]

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

Session 4

Room: Harbour Room A . . . . . Mon 4:00 pm to 5:20 pm

Discover Secret Worlds

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

4:00 pm: **There's an app for that shirt!: evaluation of augmented reality tracking methods on deformable surfaces for fashion design**, Silvia Ruzanka, Rensselaer Polytechnic Institute (United States); Katherine Behar, Baruch College (United States); Ben Chang, Rensselaer Polytechnic Institute (United States). . . . . [8649-13]

4:20 pm: **Augmented reality: past, present, and future**, Laura Inzerillo, Palermo Univ. (Italy). . . . . [8649-14]

4:40 pm: **Vroom: an augmented reality environment for creative collaboration**, Todd Margolis, Univ. of California San Diego (United States) . . . . . [8649-15]

5:00 pm: **New perspectives and limitations in the use of virtual and augmented reality in the rehabilitation of motor disorders**, Alessandro De Mauro, Aitor Ardanza, Vicomtech-IK4 (Spain); Esther Monge, Ctr. de Terapia Integral del Niño, Momo (Spain); Francisco Molina Rueda, Univ. Rey Juan Carlos (Spain) . . . . . [8649-16]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: Another Look at Signals and Images, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

PANEL DISCUSSION

Room: Harbour Room A . . . .Tue 9:30 am to 10:30 am

Panel Session: Art, Science, and Immersion: Data-Driven Experience

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

Coffee Break . . . . . Tue 10:30 am to 11:10 am

Session 5

Room: Harbour Room A . . . . . Tue 11:10 am to 12:30 pm

Viewing Ports of Call

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

11:10 am: **Nomad devices for interactions in immersive virtual environments**, Paul George, Renault S.A. (France) and Arts et Métiers ParisTech, Institut Image, LE2I– CNRS (France) and Univ. de Technologie Compiègne (France); Andras Kemeny, Renault Technocentre (France) and Arts et Métiers ParisTech, Institut Image, LE2I– CNRS (France); Frédéric Merienne, Arts et Métiers ParisTech, Institut Image, LE2I– CNRS (France); Jean-Rémy Chardonnet, Ecole Nationale Supérieure d'Arts et Métiers (France); Indira Thouvenin, Univ. de Technologie Compiègne (France); Javier Posselt, Emmanuel Icart, Renault S.A. (France) . . . . . [8649-18]

11:30 am: **Analysis of tactors for wearable simulator feedback: a tactile vest architecture**, David Prater, Stephen Gilbert, Eliot Winer, Iowa State Univ. (United States) . . . . . [8649-19]

11:50 am: **Use of virtual reality to promote hand therapy post-stroke**, Daria Tsoupikova, Univ. of Illinois at Chicago (United States); Nikolay Stoykov, Rehabilitation Institute of Chicago (United States); Randy M. Vick, The Art Institute of Chicago (United States); Yu Li, Rehabilitation Institute of Chicago (United States) . . . . . [8649-20]

12:10 pm: **Collaborative imaging of urban forest dynamics: augmenting re-photography to visualize changes over time**, Ruth G. West, Univ. of California San Diego (United States); Jarlath O'Neil-Dunne, Univ. of Vermont (United States); Robert B. Pless, Washington Univ. in St. Louis (United States) . . . . . [8649-21]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

A Trillion Photos, Steven Seitz, Univ. of Washington (United States)

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive Paper Session

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Integral virtual display for long distance view, Kosuke Shimazu, Tomohiro Yendo, Nagaoka Univ. of Technology (Japan) . . . . . [8649-22]

Wednesday–Thursday 6–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8650

3D Image Processing (3DIP) and Applications 2013

Conference Chairs: **Atilla M. Baskurt,** Univ. of Lyon (France); **Robert Sitnik,** Warsaw Univ. of Technology (Poland)

Program Committee: **Mongi A. Abidi,** The Univ. of Tennessee (United States); **Hugues Benoit-Cattin,** Institut National des Sciences Appliquées de Lyon (France); **Adrian G. Bors,** The Univ. of York (United Kingdom); **Saida Bouakaz,** Univ. Claude Bernard Lyon 1 (France); **Mohamed Daoudi,** TELECOM Lille 1 (France); **Eduardo da Silva,** Univ. Federal do Rio de Janeiro (Brazil); **Jean-Luc E. Dugelay,** EURECOM (France); **Florent Dupont,** Univ. Claude Bernard Lyon 1 (France); **Afzal Godil,** National Institute of Standards and Technology (United States); **Benoît M. Macq,** Univ. Catholique de Louvain (Belgium); **Serge Miguet,** Univ. Lumière Lyon 2 (France); **Levent Onural,** Bilkent Univ. (Turkey); **Eric Paquet,** National Research Council Canada (Canada); **Marc Pollefeys,** The Univ. of North Carolina at Chapel Hill (United States); **William Puech,** Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France); **Bülent Sankur,** Bogaziçi Üniv. (Turkey); **Peter Schelkens,** Vrije Univ. Brussel (Belgium); **Michela Spagnuolo,** Consiglio Nazionale delle Ricerche (Italy); **Frédéric Truchetet,** Univ. de Bourgogne (France); **Stefano Tubaro,** Politecnico di Milano (Italy)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 1

Room: Bayside Room B . . . . . Wed 9:30 am to 10:30 am

3D Data Preprocessing

9:30 am: **Depth image completion using a modified robust PCA**, Hyunjung Shim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . [8650-1]

9:50 am: **Depth image post processing method by diffusion**, Yun Li, Mårten Sjöström, Ulf Jennehag, Roger Olsson, Mid Sweden Univ. (Sweden) . . . . . [8650-2]

10:10 am: **Beta-function B-spline smoothing on triangulations**, Lubomir T. Dechevsky, Peter Zanaty, Narvik Univ. College (Norway). . . . . [8650-3]

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

Session 2

Room: Bayside Room B . . . . . Wed 10:50 am to 12:30 pm

Time-Of-Flight Data, Depth Maps Analysis

10:50 am: **Evaluation of efficient high quality depth up-sampling methods**, Luc P. J. Vosters, Gerard de Haan, Technische Univ. Eindhoven (Netherlands) . . . . . [8650-4]

11:10 am: **Multiview ToF sensor fusion technique for high-quality depth map**, Deuk Hyeon Kim, Jinwook Choi, Kwanghoon Sohn, Yonsei Univ. (Korea, Republic of) . . . . . [8650-5]

11:30 am: **Time-of-flight depth image enhancement using variable integration time**, Sun Kwon Kim, Ouk Choi, Byong Min Kang, James D. K. Kim, Chang-Yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of). . . . . [8650-6]

11:50 am: **Pseudo-random modulation for multiple 3D time-of-flight camera operation**, Dong-Ki Min, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Ilia Ovsiannikov, SAMSUNG Electronics Co., Ltd. (United States); Yohwan Noh, Wanghyun Kim, SAMSUNG Electronics Semiconductor (Korea, Republic of); Sunhwa Jung, Joonho Lee, Deokha Shin, Hyekyung Jung, Lawrence Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Gregory Waligorski, Lilong Shi, Samsung Semiconductor, Inc. (United States); Yoondong Park, Chilhee Chung, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . [8650-7]

12:10 pm: **Lossy contour-coding in segmentation-based intra depth map coding**, Jan Hanca, Adrian Munteanu, Peter Schelkens, Vrije Univ. Brussel (Belgium) and Interdisciplinary Institute for Broadband Technology (Belgium) . . . . . [8650-8]

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

Session 3

Room: Bayside Room B . . . . . Wed 2:00 pm to 3:00 pm

3D Data Processing for Specific Applications

2:00 pm: **Estimation of spreading fire geometrical characteristics using near infrared stereovision**, Lucile L. Rossi, Tom Toulouse, Univ. di Corsica Pasquale Paoli (France); Moulay Akhloufi, Ctr. of Robotics and Vision (Canada); Antoine Pieri, Yves Tison, Univ. di Corsica Pasquale Paoli (France) . . . . . [8650-9]

2:20 pm: **Uniform grid upsampling of 3D lidar point cloud data**, Prudhvi Gurram, Shuowen Hu, John F. Dammann, U.S. Army Research Lab. (United States). . . . . [8650-10]

2:40 pm: **Improvements on an MMI-based method for automatic texture mapping of 3D dense models**, Pasquale Ferrara, Istituto Nazionale di Ottica (Italy); Francesca Uccheddu, Univ. degli Studi di Firenze (Italy); Anna Pelagotti, Istituto Nazionale di Ottica (Italy) . [8650-11]

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive Paper Session

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Passive stereoscopic panomorph system, Anne-Sophie Poulin-Girard, Simon Thibault, Denis Laurendeau, Univ. Laval (Canada) . . . . . [8650-27]

3D hand localization by low-cost webcams, Cheng-Yuan Ko, Chung-Te Li, Chen-Han Chung, Liang-Gee Chen, National Taiwan Univ. (Taiwan) . . . . . [8650-28]

3D shape extraction of internal and external surfaces of glass objects, Alban Bajard, Olivier Aubreton, Frédéric Truchetet, Univ. de Bourgogne (France) . . . . . [8650-29]

Real-time self-calibration of depth sensing systems based on structured-light 3D, Vikas Ramachandra, Kalin Atanassov, James Nash, Sergio R. Goma, Qualcomm Inc. (United States) . . . . . [8650-30]

Discovering unexpected information using a building energy visualization tool, Benoit Lange, William Puech, Nancy Rodriguez, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France) . . . . . [8650-31]

An efficient anaglyph stereo video compression pipeline, Adhatus Solichah A., National Taiwan Univ of Science and Technology (Taiwan); Guan-Ming Su, Dolby Labs., Inc. (United States); Kai-Lung Hua, Yu-Chi Lai, National Taiwan Univ of Science and Technology (Taiwan). . [8650-32]

3D/2D image registration by image transformation descriptors (ITDs) for thoracic aorta imaging, Pawel J. Lubniewski, Univ. d'Auvergne Clermont-Ferrand I (France); Bruno Miguel M.D., CHU de Clermont-Ferrand (France); Laurent Sarry, Christophe Lohou, Univ. d'Auvergne Clermont-Ferrand I (France) . . . . . [8650-33]

Stereo matching with partially informed Markov random fields, Yusuf Cem Subakan, Omer Can Gurol, Cagatay Dikici, Bogaziçi Üniv. (Turkey) . . . . . [8650-34]

Thursday 7 February

Session 4

Room: Bayside Room B . . . . . Thu 8:50 am to 10:10 am

Scene Analysis: From 2D Views to 3D Reconstruction and Interpretation

8:50 am: **Analysis of weighting of normals for spherical harmonic cross-correlation**, Robert L. Larkins, Michael J. Cree, Adrian A. Dorrington, The Univ. of Waikato (New Zealand) . . . . . [8650-12]

9:10 am: **Edge aided virtual view rendering for multiview video plus depth,** Suryanarayana M. Muddala, Mårten Sjöström, Roger Olsson, Sylvain Tourancheau, Mid Sweden Univ. (Sweden) . . . . . [8650-13]

9:30 am: **Smarter compositing using deferred shading and surface depth**, Alex S. Karantza, Roxanne L. Canosa, Rochester Institute of Technology (United States) . . . . . [8650-14]

9:50 am: **Real time 3D object model reconstruction using self-imaging**, Arezoo Movaghar, Reza Safabakhsh, Khosro Madanipour, Amirkabir Univ. of Technology (Iran, Islamic Republic of) . . . . . [8650-15]

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

Session 5

Room: Bayside Room B . . . . . Thu 10:40 am to 12:00 pm

3D Imaging Systems

10:40 am: **Novel calibration procedure for SVBRDF estimation of 3D objects using directional illumination and structured light projection**, Jakub F. Krzeslowski, Robert Sitnik, Grzegorz Maczkowski, Warsaw Univ. of Technology (Poland) . . . . . [8650-17]

11:00 am: **Wide range time-of-flight camera: design, analysis, and simulation**, Ouk Choi, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8650-18]

11:20 am: **Efficient intensity-based camera pose estimation in presence of depth**, Maha El Choubassi, American Univ. of Beirut (Lebanon); Oscar Nestares, Yi Wu, Igor Kozintsev, Horst Haussecker, Intel Corp. (United States). . . . . [8650-19]

11:40 am: **Depth correction in ToF camera**, Byong Min Kang, Keechang Lee, James D. K. Kim, Chang-Yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8650-20]

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

Session 6

Room: Bayside Room B . . . . . Thu 2:00 pm to 3:00 pm

3D Analysis, Feature Extraction, Segmentation, and Pattern Recognition

2:00 pm: **Karate moves recognition from skeletal motion**, Simone Bianco, Francesco Tisato, Raimodno Schettini, Univ. degli Studi di Milano-Bicocca (Italy) . . . . . [8650-21]

2:20 pm: **Analyzing the relevance of shape descriptors in automated recognition of facial gestures in 3D images**, Julian S. Rodriguez, Flavio Prieto, Univ. Nacional de Colombia (Colombia) . . . . . [8650-22]

2:40 pm: **3D segmentation of the true and false lumens on CT aortic dissection images**, Nawel Fetnaci, Pawel J. Lubniewski, Univ. d'Auvergne Clermont-Ferrand I (France); Bruno Miguel M.D., Univ. d'Auvergne Clermont-Ferrand I (France) and CHU Gabriel Montpied, Service de Chirurgie Cardio-Vasculaire, Pôle Cardiologie (France); Christophe Lohou, Univ. d'Auvergne Clermont-Ferrand I (France) . . . . . [8650-23]

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

Session 7

Room: Bayside Room B . . . . . Thu 3:30 pm to 4:30 pm

Quality Assessment

3:30 pm: **Adaptive quality assurance of the product development process of additive manufacturing with modern 3D data evaluation methods**, Julia W. Kroll, Sabine Botta, Jannis Breuninger, Alexander Verl, Fraunhofer-Institut für Produktionstechnik und Automatisierung (Germany) . . . . . [8650-24]

3:50 pm: **Quality assessment of adaptive 3D video streaming**, Samira Tavakoli, Jesús Gutiérrez Sánchez, Univ. Politécnica de Madrid (Spain); Narciso García Santos, Univ. Politécnica de Madrid (Spain) . . . . . [8650-25]

4:10 pm: **Evaluation methodology for 3D structured light depth map systems**, Tom Osborne, Vikas Ramachandra, Kalin Atanassov, James Nash, Sergio R. Goma, Qualcomm Inc. (United States) . . . . . [8650-26]

Monday–Thursday 4–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8651

Human Vision and Electronic Imaging XVIII

Conference Chairs: **Bernice E. Rogowitz,** Visual Perspectives Consulting (United States); **Thrasyvoulos N. Pappas,** Northwestern Univ. (United States); **Huib de Ridder,** Technische Univ. Delft (Netherlands)

Program Committee: **Albert J. Ahumada Jr.,** NASA Ames Research Ctr. (United States); **Jan P. Allebach,** Purdue Univ. (United States); **Erhardt Barth,** Univ. zu Lübeck (Germany); **Walter R. Bender,** MIT Media Lab. (United States); **Michael H. Brill,** Datacolor (United States); **John C. Dalton,** Synthetik Software (United States); **Scott J. Daly,** Dolby Labs., Inc. (United States); **Elena A. Fedorovskaya,** Kodak Research Labs. (United States); **James A. Ferwerda,** Rochester Institute of Technology (United States); **Jennifer L. Gille,** Qualcomm Inc. (United States); **Sergio R. Goma,** Qualcomm Inc. (United States); **Sheila S. Hemami,** Cornell Univ. (United States); **Laurent Itti,** The Univ. of Southern California (United States); **Stanley A. Klein,** Univ. of California, Berkeley (United States); **Patrick Le Callet,** Univ. de Nantes (France); **Lora T. Likova,** The Smith-Kettlewell Eye Research Institute (United States); **John J. McCann,** McCann Imaging (United States); **Jeffrey B. Mulligan,** NASA Ames Research Ctr. (United States); **Karol Myszkowski,** Max-Planck-Institut für Informatik (Germany); **Adar Pelah,** The Univ. of York (United Kingdom); **Eliezer Peli,** Schepens Eye Research Institute (United States); **Robert Pepperell,** Cardiff School of Art & Design (United Kingdom); **Sylvia C. Pont,** Technische Univ. Delft (Netherlands); **Hawley K. Rising III,** Consultant (United States); **Sabine Süsstrunk,** École Polytechnique Fédérale de Lausanne (Switzerland); **Christopher W. Tyler,** The Smith-Kettlewell Eye Research Institute (United States); **Andrew B. Watson,** NASA Ames Research Ctr. (United States); **Michael A. Webster,** Univ. of Nevada, Reno (United States)

Sponsored by: datacolor

Monday 4 February

Room: Regency Ballroom B Mon 9:10 am to 9:20 am

Welcome to HVEI 25th Anniversary

Room: Grand Peninsula Ballroom E . . . . . .Mon 9:30 am to 12:30 pm

Keynote Session

9:30 am: **Predicting visual memorability** *(Keynote Presentation)*, Aude Oliva, Massachusetts Institute of Technology (United States) . . . . . [8651-2]

Coffee Break . . . . . Mon 10:20 am to 10:50 am

10:50 am: **World, environment, umwelt, and innerworld: a biological perspective on visual awareness** *(Keynote Presentation)*, Jan J. Koenderink, Technische Univ. Delft (Netherlands) . . . . [8651-3]

11:40 am: **Does evolution favor true perceptions?** *(Keynote Presentation)*, Donald D Hoffman, Univ. of California, Irvine (United States) . . . . . [8651-4]

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

Session 1

Room: Regency Ballroom B . . . .Mon 2:00 pm to 3:20 pm

Lightness and Color

2:00 pm: **Lightness perception in imaging and art** *(Invited Paper)*, Alan L. Gilchrist, Rutgers, The State Univ. of New Jersey (United States) . [8651-5]

2:30 pm: **Human lightness perception is guided by simple assumptions about shape and reflectance**, Richard F. Murray, York Univ. (Canada) . . . . . [8651-6]

2:50 pm: **Spatial imaging in color and HDR: Prometheus unchained** *(Invited Paper)*, John J. McCann, McCann Imaging (United States) [8651-7]

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

Session 2

Room: Regency Ballroom B . . . .Mon 3:40 pm to 5:40 pm

Vision and the Evolution of Technology

3:40 pm: **Presenting visual stimuli: past and present** *(Invited Paper)*, Gerald Westheimer, Univ. of California, Berkeley (United States). . [8651-8]

4:10 pm: **Emerging technologies: 25 years** *(Invited Paper)*, Hawley K. Rising III, Consultant (United States). . . . . [8651-9]

4:40 pm: **What brain imaging technology can tell us about perception and consciousness** *(Invited Paper)*, Lora T. Likova, The Smith-Kettlewell Eye Research Institute (United States) . . . . . [8651-10]

5:10 pm: **Perceptual approaches to finding features in data** *(Invited Paper)*, Bernice E. Rogowitz, Visual Perspectives Consulting (United States) . . . . . [8651-11]

Room: Regency Ballroom B Mon 5:40 pm to 6:30 pm

Interactive Discussion Session

An interactive discussion of the day's papers, where authors and members of the multidisciplinary HVEI community can explore the work, and its implications, more deeply.

Room: Regency Ballroom B Mon 7:30 pm to 10:30 pm

Human Vision and Electronic Imaging Banquet

Banquet Speaker: **Walter Bender,** Sugar Labs (United States)

Building interactive, intuitive interfaces for children: how the Sugar environment drew inspiration from research presented at HVEI

Abstract: UNESCO estimates that eleven percent of primary school–age children—seventy-two million worldwide—are not enrolled in or attending school. Children who do attend may find themselves in schools that lack adequate space, facilities, or resources—impossible situations for learning. It is against this backdrop of profound need that One Laptop per Child (OLPC) emerged in 2005. The mission of the organization is to "empower the children of developing countries to learn." We created the first affordable netbook, specifically built to withstand harsh climates and the handling of young children and the Sugar software tools, uniquely designed to help children educate themselves. The hardware and software development was inspired by learning research of Seymour Papert, but also by the research community represented by the HVEI conference. From the beautifully efficient transflective display designed by Mary Lou Jepsen, to the use of color in the desktop designed by Red Hat and Pentagram, to the learning activities in which the children directly engage, consideration was given to convergence of our expanding knowledge of the human visual system and advances in engineering and signal processing. This talk will touch on the variety of ways in which OLPC and Sugar Labs have been touched by HVEI and have subsequently touched the lives of millions of children around the world.

Tuesday 5 February

Room: Grand Peninsula Ballroom D . . . . . Tue 8:20 am to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 3

Room: Regency Ballroom B . . . .Tue 9:30 am to 10:30 am

Early Vision Image Quality I

9:30 am: **Is image quality a function of contrast perception? The side-by-side developments at HVEI** *(Invited Paper)*, Andrew M. Haun, Eli Peli, Schepens Eye Research Institute (United States). . . . . [8651-12]

10:00 am: **Visible contrast energy metrics for detection and discrimination** *(Invited Paper)*, Albert J. Ahumada, NASA Ames Research Ctr. (United States) . . . . . [8651-13]

Coffee Break . . . . . .Tue 10:30 am to 11:00 am

Session 4

Room: Regency Ballroom B . . Tue 11:00 am to 12:30 pm

Early Vision Image Quality II

11:00 am: **Visual image quality: coding** *(Invited Paper)*, Sheila S. Hemami, Cornell Univ. (United States) . . . . . [8651-14]

11:30 am: **Initial spatio-temporal domain expansion of the Modelfest database**, Thom Carney, Sahar Mozaffari, Sean Sun, Ryan Johnson, Sharona Shirvastava, Priscilla Shen, Emma Ly, Univ. of California, Berkeley (United States). . . . . [8651-15]

11:50 am: **A database of local masking thresholds in natural images**, Md. Mushfiqul Alam, Kedarnath P. Vilankar, Damon M. Chandler, Oklahoma State Univ. (United States). . . . . [8651-16]

12:10 pm: **Interplay between image coding and quality estimation**, Guilherme O. Pinto, Sheila S. Hemami, Cornell Univ. (United States) . . . . . [8651-17]

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

Session 5

Room: Regency Ballroom B . . . . Tue 2:00 pm to 3:30 pm

Higher-Level Issues in Image Quality I

2:00 pm: **From image quality to atmosphere experience: how evolutions in technology impact experience assessment** *(Invited Paper)*, Ingrid Heynderickx, Philips Research Nederland B.V. (Netherlands) and Technische Univ. Delft (Netherlands); Huib de Ridder, Technische Univ. Delft (Netherlands) . . . . . [8651-18]

2:30 pm: **Limits of the visual dynamic range for ultra high quality and aesthetic conveyance**, Scott J. Daly, Timo Kunkel, Xing Sun, Suzanne Farrell, Poppy Crum, Dolby Labs., Inc. (United States). . . . . [8651-19]

2:50 pm: **Quantifying image quality in graphics: perspective on subjective, objective metrics, and their performance in computer graphics applications**, Rafal Mantiuk, Bangor Univ. (United Kingdom) . . . . . [8651-20]

3:10 pm: **Visualizing lighting with images: converging between the predictive value of renderings and photographs**, Ulrich Engelke, Mariska G. M. Stokkermans, Philips Research (Netherlands); Michael J. Murdoch, Philips Research Nederland B.V. (Netherlands) . . . . . [8651-21]

Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

Session 6

Room: Regency Ballroom B . . . . Tue 4:00 pm to 5:10 pm

Higher-Level Issues in Image Quality II

4:00 pm: **A survey of 3D quality of experience and 3D quality assessment**, Anush K. Moorthy, Texas Instruments Inc. (United States); Alan C. Bovik, The Univ. of Texas at Austin (United States) . . . . . [8651-22]

4:20 pm: **Visual quality beyond artifact visibility**, Judith A. Redi, Technische Univ. Delft (Netherlands) . . . . . [8651-23]

4:40 pm: **Subjective matters: from image quality to image psychology** *(Invited Paper)*, Elena A. Fedorovskaya, RadixNova (United States); Huib de Ridder, Technische Univ. Delft (Netherlands) . . . . . [8651-24]

PANEL DISCUSSION

Room: Regency Ballroom B . . Tue 5:10 pm to 6:10 pm

Image Quality Panel Discussion: Past, Present, and Future

This panel features leaders working on perceptual, cognitive, aesthetic, and emotional issues in image quality. This interactive discussion of these perspectives, and relevant papers from the technical session, will ensue, allowing the audience to explore the work, and its implications, more deeply.

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D . . . . . .Wed 8:20 am to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 7

Room: Regency Ballroom B . . . Wed 9:30 am to 10:30 am

Perception and Natural Environments: Image Statistics, Texture, and Features I

9:30 am: **The rough side of texture: texture analysis through the lens of HVEI** *(Invited Paper)*, Thrasyvoulos N. Pappas, Northwestern Univ. (United States) . . . . . [8651-25]

10:00 am: **Adapting environments to observers** *(Invited Paper)*, Michael A. Webster, Univ. of Nevada, Reno (United States) . . . . . [8651-26]

Coffee Break . . . . . .Wed 10:30 am to 11:00 am

Session 8

Room: Regency Ballroom B . . Wed 11:00 am to 12:10 pm

Perception and Natural Environments: Image Statistics, Texture, and Features II

11:00 am: **Efficient image representations and features** *(Invited Paper)*, Erhardt Barth, Univ. zu Lübeck (Germany); Michael Dorr, Harvard Medical School (United States); Eleonora Vig, Harvard Univ. (United States) . . . . . [8651-27]

11:30 am: **Highly overcomplete sparse coding**, Bruno A. Olshausen, Helen Wills, Univ. of California, Berkeley (United States) . . . . . [8651-28]

11:50 am: **Blind image quality assessment without training on human opinion scores**, Anish Mittal, Rajiv Soundararajan, Gautam S. Muralidhar, Alan C. Bovik, Joydeep Ghosh, The Univ. of Texas at Austin (United States) . . . . . [8651-29]

Room: Regency Ballroom B . Wed 12:10 to 12:30 pm

Poster Preview Session

In this session, authors of poster presentations will each give a 60-second oral introduction to their work, showing one slide each.

Lunch Break . . . . . Tue 12:30 pm to 1:50 pm

Session 9

Room: Regency Ballroom B . . . . Wed 1:50 pm to 3:30 pm

The Dark Side of Color: Joint Session with Conferences 8651 and 8652

Session Chairs: **Carinna E. Parraman,** Univ. of the West of England (United Kingdom)

1:50 pm: **Can trichromats really know what dichromats see?** *(Invited Paper)*, Michael H. Brill, Datacolor (United States) . . . . . [8652-35]

2:05 pm: **Color scales for visualization: traveling though color space** *(Invited Paper)*, Bernice E. Rogowitz, Visual Perspectives Consulting (United States). . . . . [8652-36]

2:20 pm: **Color spaces** *(Invited Paper)*, Jan J. Koenderink, Technische Univ. Delft (Netherlands) . . . . . [8652-37]

2:35 pm: **You can't rely on color, yet we all do** *(Invited Paper)*, Floris L. van Nes, Technische Univ. Eindhoven (Netherlands) . . . . . [8652-38]

2:50 pm: **How 'high-level' is human color perception?** *(Invited Paper)*, Michael E. Rudd, Univ. of Washington (United States). . . . . [8652-39]

3:05 pm: **Complex spatiochromatic interactions in a real world art laboratory**, Scott J. Daly, Dolby Labs., Inc. (United States). . . . . [8652-40]

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Picture perception and visual field, Andrea J. van Doorn, Huib de Ridder, Technische Univ. Delft (Netherlands); Jan J. Koenderink, Technische Univ. Delft (Netherlands) and Katholieke Univ. Leuven (Belgium) . . . . . [8651-46]

Measurements of achromatic and chromatic contrast sensitivity functions for an extended range of adaptation luminance, Kil Joong Kim, Seoul National Univ. (Korea, Republic of); Rafal Mantiuk, Bangor Univ. (United Kingdom); Kyoung Ho Lee, Seoul National Univ. (Korea, Republic of) and Bundang Hospital (Korea, Republic of). . . . . [8651-47]

Viewer preferences for adaptive playout, Sachin G. Deshpande, Sharp Labs. of America, Inc. (United States). . . . . [8651-48]

The effect of familiarity on perceived interestingness of images, Elena A. Fedorovskaya, RadixNova (United States); Sharon Lynn Chu, Virginia Polytechnic Institute and State Univ. (United States); Jeffrey Snyder, Kodak Research Labs. (United States); Francis Quek, Virginia Polytechnic Institute and State Univ. (United States). . . . . [8651-49]

Quantifying patterns of dynamics in eye movement to measure goodness in organization of design elements in interior architecture, Hasti Mirkia, Arash Sangari, Mark Nelson, Amir H. Assadi, Univ. of Wisconsin-Madison (United States) . . . . . [8651-51]

Development of a human vision simulation camera and its application: implementation of specific color perception, Hiroshi Okumura, Shoichiro Takubo, Shoichi Ozaki, Takeru Kawasaki, Indra N. Abdullah, Kohei Arai, Saga Univ. (Japan); Osamu Fukuda, National Institute of Advanced Individual Science and Technology (Japan). . . . . [8651-52]

IMF-based chaotic characterization of AP and ML visually-driven postural responses, Hanif Azhar, Guillaume Giraudet, Jocelyn Faubert, Univ. de Montréal (Canada). . . . . [8651-53]

Application of imaging technology for archaeology research: framework design for connectivity analysis in pieces of Jomon pottery, Kimiyoshi Miyata, National Museum of Japanese History (Japan); Ryota Yajima, Kenichi Kobayashi, Chuo Univ. (Japan) . . . . . [8651-54]

Top-down visual search in Wimmelbild, Julia Bergbauer, Technische Univ. München (Germany); Sibel Tari, Middle East Technical Univ. (Turkey) . . . . . [8651-55]

Visual discrimination and adaptation using non-linear unsupervised learning, Valero V. Laparra, Sandra Jiménez, Jesus Malo Lopez, Univ. de València (Spain). . . . . [8651-56]

Chromatic induction and contrast masking: similar models, different goals?, Sandra Jiménez, Univ. de València (Spain); Xavier Otazu, Univ. de Barcelona (Spain); Valero V. Laparra, Jesus Malo Lopez, Univ. de València (Spain) . . . . . [8651-57]

Aesthetics and entropy II: a critical examination, Melville R Sahyun, Consultant (United States) . . . . . [8651-58]

Thursday 7 February

Session 10

Room: Regency Ballroom B . . . Thu 8:30 am to 10:00 am

Attention and Saliency: From Perception to Applications

8:30 am: **The evolution of attention research: exploring the interplay of bottom-up and top-down processes** *(Invited Paper)*, Laurent Itti, The Univ. of Southern California (United States) . . . . . [8651-30]

9:00 am: **Saliency identified by absence of background structure**, Fred W. Stentiford, Univ. College London (United Kingdom) . . . . . [8651-31]

9:20 am: **Investigation of eye-catching colors using eye tracking**, Mokryun Baik, Hyeon-Jeong Suk, KAIST (Korea, Republic of). . . [8651-32]

9:40 am: **Can skill be determined from a photographic portfolio?**, Abhishek Agrawal, Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore); Rajesh Somavarapu, The Univ. of Texas at Dallas (United States) . . . . . [8651-33]

Coffee Break . . . . . .Thu 10:00 am to 10:30 am

Session 11

Room: Regency Ballroom B . . Thu 10:30 am to 12:00 pm

Eye Movements and Visual Tasks in Complex Environments

10:30 am: **Binocular eye movements in health and disease** *(Invited Paper)*, Christopher W. Tyler, The Smith-Kettlewell Eye Research Institute (United States) . . . . . [8651-34]

11:00 am: **Reflexive and voluntary control of smooth eye movements**, Jeffrey B. Mulligan, NASA Ames Research Ctr. (United States); Scott B. Stevenson, Univ. of Houston (United States) . . . . . [8651-35]

11:20 am: **Simple gaze-contingent cues guide eye movements in a realistic driving simulator**, Laura Pomarjanschi, Univ. zu Lübeck (Germany); Michael Dorr, Peter J. Bex, Schepens Eye Research Institute (United States); Erhardt Barth, Univ. zu Lübeck (Germany) . . . . . [8651-36]

11:40 am: **Designing an obstacle display for helicopter operations in degraded visual environment**, Patrizia M. Knabl, Niklas Peinecke, Sven Schmerwitz, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany) . . . . . [8651-37]

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

Session 12

Room: Regency Ballroom B . . . . Thu 2:00 pm to 3:20 pm

3D Attention and Visual Tracking

2:00 pm: **Visual storytelling in 2D and stereoscopic 3D video: effect of blur on visual attention**, Quan Huynh-Thu, Cyril Vienne, Laurent Blondé, Technicolor S.A. (France) . . . . . [8651-38]

2:20 pm: **Using natural versus artificial stimuli to perform calibration for 3D gaze tracking**, Christophe Maggia, Nathalie Guyader, Anne Guérin-Dugué, Gipsa-Lab (France) . . . . . [8651-39]

2:40 pm: **Study of center-bias in the viewing of stereoscopic image and a framework for extending 2D visual attention models to 3D**, Junle Wang, Matthieu Perreira Da Silva, Patrick Le Callet, Vincent Ricordel, Univ. de Nantes (France) . . . . . [8651-40]

3:00 pm: **How visual attention is modified by disparities and textures changes**, Darya Khaustova, Jérôme Fournier, Emmanuel Wyckens, France Telecom R&D (France); Olivier Le Meur, IRISA / INRIA Rennes (France) . . . . . [8651-41]

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

Session 13

Room: Regency Ballroom B . . . . Thu 3:50 pm to 4:50 pm

Art and Perception

3:50 pm: **Copy-paste in depth: quantifying the pictorial space of paintings**, Maarten W. A. Wijntjes, Technische Univ. Delft (Netherlands) . . . . . [8651-43]

4:10 pm: **Shape matters: analysis of drawing accuracy reveals trade-offs between positive and negative space**, Linda C. Carson, Univ. of Waterloo (Canada); Matthew J. H. Millard, Stanford Univ. (United States); Nadine Quehl, James Danckert, Univ. of Waterloo (Canada) . . . . [8651-44]

4:30 pm: **Fractals in art and nature: why do we like them?**, Branka Spehar, The Univ. of New South Wales (Australia); Richard P. Taylor, Univ. of Oregon (United States) . . . . . [8651-45]

Room: Regency Ballroom B . . . .Thu 4:50 to 5:40 pm

Discussion Session

An interactive discussion of the day's papers, where authors and members of the multidisciplinary HVEI community can examine the work, and its implications, more deeply. This is also the culminating event of the HVEI conference, and over-arching themes, across the four days, will be explored. This final Discussion Session will also serve as the closing ceremony for the 25th Anniversary of HVEI.

Color Imaging XVIII: Displaying, Processing, Hardcopy, and Applications

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

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

Sponsored by: datacolor

Monday 4 February

Session 1

Room: Harbour Room B . . . . . Mon 11:10 am to 12:20 pm

Color Spaces

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

11:10 am: **A spherical perceptual color model** *(Invited Paper)*, Tieling Chen, Univ. of South Carolina (United States); Zhongmin Deng, Wuhan Textile Univ. (China); Jun Ma, Wuhan Textile University (China) . . . [8652-1]

11:40 am: **Chroma-preserved luma controlling technique using YCbCr color space**, Sooyeon Lee, Youngshin Kwak, Ulsan National Institute of Science and Technology (Korea, Republic of); Youn Jin Kim, Samsung Electronics Co., Ltd. (Korea, Republic of) . . . . . [8652-2]

12:00 pm: **Analysis of a color space conversion engine implemented using dynamic partial reconfiguration**, Ryan Toukatly, Dorin Patru, Eli Saber, Eric Peskin, Rochester Institute of Technology (United States); Gene Roylance, Brad Larson, Hewlett-Packard Co. (United States)[8652-3]

Lunch Break . . . . . Mon 12:20 pm to 1:50 pm

Session 2

Room: Harbour Room B . . . . . Mon 1:50 pm to 2:50 pm

Capturing Color

Session Chair: **Davide Gadia,** Univ. degli Studi di Milano (Italy)

1:50 pm: **Color reproductivity improvement with additional virtual color filters for WRGB image sensor**, Shun Kawada, Rihito Kuroda, Shigetoshi Sugawa, Tohoku Univ. (Japan) . . . . . [8652-4]

2:10 pm: **Glare and shadow reduction for desktop digital camera capture systems**, Thanh H. Ha, Chyuan-Tyng Wu, Purdue Univ. (United States); Peter Majewicz, Flextronics International (United States); Kurt R. Bengtson, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . [8652-5]

2:30 pm: **Reducing flicker due to ambient illumination in camera captured images**, Minwoong Kim, Purdue Univ. (United States); Kurt R. Bengtson, Lisa Li, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . [8652-6]

Coffee Break . . . . . Mon 2:50 pm to 3:20 pm

Session 3

Room: Harbour Room B . . . . . Mon 3:20 pm to 4:40 pm

Applications

Session Chair: **Michael H. Brill,** Datacolor (United States)

3:20 pm: **An efficient flicker noise reduction method for single images**, Pan Pan, Yuan He, Shufu Xie, Jun Sun, Satoshi Naoi, Fujitsu Research and Development Center Co., Ltd. (China) . . . . . [8652-42]

3:40 pm: **Binary image compression using conditional entropy-based dictionary design and indexing**, Yandong Guo, Purdue Univ. (United States); Dejan Depalov, Peter Bauer, Brent Bradburn, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States); Charles A. Bouman, Purdue University (United States) . . . . . [8652-8]

4:00 pm: **Segmentation for better rendering of mixed-content pages**, Yi-Ting Chen, Purdue Univ. (United States); Di-Yuan Tzeng, Terry Nelson, Mark Q. Shaw, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . [8652-9]

4:20 pm: **YACCD2: yet another color constancy database updated**, Alessandro Rizzi, Cristian Bonanomi, Davide Gadia, Giuseppe Riopi, Univ. degli Studi di Milano (Italy) . . . . . [8652-11]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 4

Room: Harbour Room B . . . . . Tue 9:30 am to 10:30 am

Reflectance

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

9:30 am: **Gray-world-assumption-based illuminant color estimation using color gamuts with high and low chroma**, Harumi Kawamura, Nippon Telegraph and Telephone Corp. (Japan); Shunichi Yonemura, Shibaura Institute of Technology (Japan); Jun Ohya, Waseda Univ. (Japan); Akira Kojima, Nippon Telegraph and Telephone Corp. (Japan) . . [8652-12]

9:50 am: **Estimation of reflectance based on properties of selective spectrum with adaptive Wiener estimation**, Ji-hoon Yoo, Wang-Jun Kyung, Ho-Gun Ha, Yeong-Ho Ha, Kyungpook National Univ. (Korea, Republic of) . . . . . [8652-13]

10:10 am: **Metal-dielectric object classification by combining polarization property and surface spectral reflectance**, Shoji Tominaga, Hideki Kadoi, Keita Hirai, Takahiko Horiuchi, Chiba Univ. (Japan) [8652-14]

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

Session 5

Room: Harbour Room B . . . . . Tue 10:50 am to 12:30 pm

Watching Colours

Session Chair: **Mohamed-Chaker Larabi,** XLIM-SIC (France)

10:50 am: **An experiment on the color rendering of different light sources**, Simonetta Fumagalli, ENEA (Italy); Cristian Bonanomi, Alessandro Rizzi, Univ. degli Studi di Milano (Italy). . . . . [8652-15]

11:10 am: **Color universal design: analysis of color category Dependency on color vision type (4)**, Tomohiro Ikeda, Kogakuin Univ. (Japan); Yasuyo G. Ichihara, Kogakuin Univ. (Japan) and NPO Color Universal Design Organization (CUDO) (Japan); Natsuki Kojima, Kogakuin Univ (Japan); Hisaya Tanaka, Kogakuin Univ. (Japan); Kei Ito, The Univ. of Tokyo (Japan) and NPO Color Universal Design Organization (CUDO) (Japan). . . . . [8652-16]

11:30 am: **Color naming 65,274,705,768 pixels**, Nathan Moroney, Hewlett-Packard Labs. (United States); Giordano Beretta, Hewlett-Packard Co. (United States) . . . . . [8652-17]

11:50 am: **Analysis of brain activity and response to colour stimuli during learning tasks: an EEG study**, Raffaella Folgieri, Claudio Lucchiari, Daniele L. R. Marini, Univ. degli Studi di Milano (Italy) . . . . . [8652-18]

12:10 pm: **Prototypical colours of skin, green plant, and blue sky**, Huanzhao Zeng, Qualcomm Inc. (United States); M. Ronnier Luo, Univ. of Leeds (United Kingdom) . . . . . [8652-41]

Lunch Break . . . . . Tue 12:30 pm to 1:50 pm

Session 6

Room: Harbour Room B . . . . . Tue 1:50 pm to 3:10 pm

Halftoning

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

1:50 pm: **Direct binary search (DBS) algorithm with constraints**, Kartheek Chandu, Mikel J. Stanich, Ricoh Production Print Solutions, LLC (United States); Chai Wah Wu, Barry M. Trager, IBM Thomas J. Watson Research Ctr. (United States) . . . . . [8652-19]

2:10 pm: **Improved spectral vector error diffusion by dot gain compensation**, Daniel Nyström, Linköping Univ. (Sweden); Ole L. Norberg, Voxvil AB (Sweden) . . . . . [8652-20]

2:30 pm: **Extending color primary set in spectral vector error diffusion by multilevel halftoning**, Ole L. Norberg, Voxvil AB (Sweden); Daniel Nyström, Linköping Univ. (Sweden) . . . . . [8652-21]

2:50 pm: **Reducing auto moiré in discrete line juxtaposed halftoning,** Vahid Babaei, Roger D. Hersch, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8652-22]

Coffee Break . . . . . Tue 3:10 pm to 3:40 pm

Session 7

Room: Harbour Room B . . . . . Tue 3:40 pm to 5:20 pm

Printing

Session Chair: **Giordano B. Beretta,** Hewlett-Packard Labs. (United States)

3:40 pm: **Optimizing CMYK mapping for high speed digital inkjet webpress**, Ruzhu Zeng, Liming Vocational Univ. (China); Huanzhao Zeng, Qualcomm Inc. (United States) . . . . . [8652-23]

4:00 pm: **Estimating toner usage with laser electrophotographic printers**, Lu Wang, Purdue Univ. (United States); Dennis Abramsohn, Thom Ives, Mark Q. Shaw, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . [8652-24]

4:20 pm: **Perceived acceptability of colour matching for changing substrate white point,** Kwame F. Baah, Univ. of the Arts London (United Kingdom); Phil Green, Gjøvik Univ. College (Norway); Michael R. Pointer, London College of Communication (United Kingdom) . . . . . [8652-25]

4:40 pm: **The development of vector based 2.5D print methods for a painting machine**, Carinna E. Parraman, Univ. of the West of England (United Kingdom). . . . . [8652-26]

5:00 pm: **Anti-counterfeiting model of printing micro-mirror in CMYK color space**, Tang Cheng, Yixin Zhang, Jiangnan Univ. (China) . [8652-27]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D . . . . . Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 8

Room: Harbour Room B . . . . . Wed 9:30 am to 10:10 am

Multispectral

Session Chair: **Jan Allebach,** Purdue Univ. (United States)

9:30 am: **Unsupervised correction of relative longitudinal aberrations for multispectral imaging using a multiresolution approach**, Julie Klein, RWTH Aachen (Germany) . . . . . [8652-28]

9:50 am: **Acquisition of multi-spectral flash image using optimization method via weight map**, Bong-Seok Choi, Daechul Kim, Kyungpook National Univ. (Korea, Republic of); Oh-Seol Kwon, Changwon National Univ. (Korea, Republic of); Yeong-Ho Ha, Kyungpook National Univ. (Korea, Republic of). . . . . [8652-29]

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

Session 9

Room: Harbour Room B . . . . . Wed 10:40 am to 12:00 pm

Display and Materials

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

10:40 am: **Adaptive local backlight dimming algorithm based on local histogram and image characteristics**, Ehsan Nadernejad, Nino Burini, Jari Korhonen, Søren O. Forchhammer, Claire Mantel, Technical Univ. of Denmark (Denmark). . . . . [8652-31]

11:00 am: **Color generation and modulation from transparent electroactive polymer gratings**, Eunkyoung Kim, Haejin Shin, Xu Yang, Byeonggwan Kim, Yonsei Univ. (Korea, Republic of) . . . . . [8652-32]

11:20 am: **Optimizing color fidelity for display devices using contour phase predictive coding for text, graphics, and video content**, Fritz Lebowsky, STMicroelectronics (France) . . . . . [8652-33]

11:40 am: **Content-dependent contrast enhancement for displays based on cumulative distribution function**, Seul-Ki Jang, Yoon-Gyoo Lee, Inha Univ. (Korea, Republic of); Gyoung-Soo Park, Inha Univ (Korea, Republic of); Choon-Woo Kim, Inha Univ. (Korea, Republic of) . . [8652-34]

Lunch Break . . . . . .Wed 12:00 pm to 1:50 pm

Session 10

Room: Regency Ballroom B . . . . Wed 1:50 pm to 3:30 pm

The Dark Side of Color: Joint Session with Conferences 8651 and 8652

Session Chairs: **Carinna E. Parraman,** Univ. of the West of England (United Kingdom)

1:50 pm: **Can trichromats really know what dichromats see?** *(Invited Paper)*, Michael H. Brill, Datacolor (United States) . . . . . [8652-35]

2:05 pm: **Color scales for visualization: traveling though color space** *(Invited Paper)*, Bernice E. Rogowitz, Visual Perspectives Consulting (United States). . . . . [8652-36]

2:20 pm: **Color spaces** *(Invited Paper)*, Jan J. Koenderink, Technische Univ. Delft (Netherlands) . . . . . [8652-37]

2:35 pm: **You can't rely on color, yet we all do** *(Invited Paper)*, Floris L. van Nes, Technische Univ. Eindhoven (Netherlands) . . . . . [8652-38]

2:50 pm: **How 'high-level' is human color perception?** *(Invited Paper)*, Michael E. Rudd, Univ. of Washington (United States). . . . . [8652-39]

3:05 pm: **Complex spatiochromatic interactions in a real world art laboratory**, Scott J. Daly, Dolby Labs., Inc. (United States). . . . . [8652-40]

Conference 8653

Tuesday–Thursday 5–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8653

Image Quality and System Performance X

Conference Chairs: **Peter D. Burns,** Burns Digital Imaging (United States); **Sophie Triantaphillidou,** Univ. of Westminster (United Kingdom)

Program Committee: **Majed Chambah,** Univ. de Reims Champagne-Ardenne (France); **Luke C. Cui,** Lexmark International, Inc. (United States); **Mark D. Fairchild,** Rochester Institute of Technology (United States); **Susan P. Farnand,** Rochester Institute of Technology (United States); **Robert D. Fiete,** ITT Exelis (United States); **Frans Gaykema,** Océ Technologies B.V. (Netherlands); **Dirk W. Hertel,** E Ink Corp. (United States); **Robin B. Jenkin,** Apple, Inc. (United States); **Sang Ho Kim,** Samsung Digital City (Korea, Republic of); **Chaker Larabi,** Univ. de Poitiers (France); **Lindsay William MacDonald,** MacColour, Ltd. (United Kingdom); **Toshiya Nakaguchi,** Chiba Univ. (Japan); **Göte S. Nyman,** Univ. of Helsinki (Finland); **Stuart W. Perry,** Canon Australia Pty. Ltd. (Australia); **D. René Rasmussen,** Qi Analytics LLC (United States); **Eric K. Zeise,** Kodak's Graphic Communications Group (United States)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images,** Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Opening Remarks

Room: Regency Ballroom A . . . . Tue 1:50 pm to 2:00 pm

Session 1

Room: Regency Ballroom A . . . . Tue 2:00 pm to 3:20 pm

Image Quality Evaluation Methods/Standards for Mobile and Digital Photography I: Joint Session with Conferences 8653, 8660, and 8667C

Session Chairs: **Sebastiano Battiato,** Univ. degli Studi di Catania (Italy); **Peter D. Burns,** Burns Digital Imaging (United States)

2:00 pm: **SPCA: a no-reference image quality assessment based on the statistic property of the PCA on nature images**, Yun Zhang, Chao Wang, Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . [8660-19]

2:20 pm: **A no-reference quality assessment algorithm for JPEG2000-compressed images based on local sharpness**, Phong V. Vu, Damon M. Chandler, Oklahoma State Univ. (United States) . . . . . [8653-1]

2:40 pm: **Low-light performance of digital cameras**, Dietmar Wüller, Image Engineering GmbH & Co. KG (Germany) . . . . . [8667-50]

3:00 pm: **Local binary pattern statistic feature for reduced reference image quality assessment**, Min Zhang, Gifu Univ. School of Medicine (Japan); Xuanqin Mou, Xi'an Jiaotong Univ. (China); Hiroshi Fujita, Gifu Univ. School of Medicine (Japan); Lei Zhang, The Hong Kong Polytechnic Univ. (China); Xiangrong Zhou, Gifu Univ. School of Medicine (Japan); Wufeng Xue, Xi'an Jiaotong Univ. (China). . . . . [8660-20]

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

Session 2

Room: Regency Ballroom A . . . . Tue 4:00 pm to 5:00 pm

Image Quality Evaluation Methods/Standards for Mobile and Digital Photography II: Joint Session with Conferences 8653, 8660, and 8667C

Session Chairs: **Dietmar Wüller,** Image Engineering GmbH & Co. KG (Germany); **Nitin Sampat,** Rochester Institute of Technology (United States)

4:00 pm: **Measurement and protocol for evaluating video and still stabilization systems**, Etienne Cormier, Frédéric Cao, Frédéric Guichard, Clément Viard, DxO Labs (France) . . . . . [8653-2]

4:20 pm: **Noise evaluation standard of image sensor using visual spatio-temporal frequency characteristics**, Takeyuki Fujii, Shoichi Suzuki, Shinichiro Saito, Sony Corp. (Japan) . . . . . [8667-51]

4:40 pm: **Evaluation of a high dynamic range video camera with non-regular sensor**, Michael Schöberl, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany) and Fraunhofer-Institut für Integrierte Schaltungen (Germany); Joachim Keinert, Matthias Ziegler, Fraunhofer-Institut für Integrierte Schaltungen (Germany); Jürgen Seiler, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany); Marco Niehaus, Gerald Schuller, Technische Univ. Ilmenau (Germany); André Kaup, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany); Siegfried Fößel, Fraunhofer-Institut für Integrierte Schaltungen (Germany) . . . . . [8660-21]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 3

Room: Sandpebble Room A . . . Wed 9:30 am to 10:30 am

Airborne and Security Applications

Session Chair: **Robert D. Fiete,** ITT Exelis (United States)

Please note the room change for the duration of the conference.

9:30 am: **Hyperspectral image quality for unmixing and subpixel detection applications**, John P. Kerekes, Daniel S. Goldberg, Rochester Institute of Technology (United States) . . . . . [8653-3]

9:50 am: **Acceptable bit-rates for human face identification from CCTV imagery,** Anastasia Tsifouti, Ctr. for Applied Science and Technology (United Kingdom) and Univ. of Westminster (United Kingdom); Sophie Triantaphillidou, Efthimia Bilissi, Univ. of Westminster (United Kingdom); Mohamed-Chaker Larabi, Univ. of Poitiers (France) . . . . . [8653-4]

10:10 am: **Visual acuity and task-based video quality in public safety applications**, Joel Dumke, Institute for Telecommunication Sciences (United States) . . . . . [8653-5]

Coffee Break . . . . . Wed 10:30 am to 11:10 am

Session 4

Room: Sandpebble Room A . . Wed 11:10 am to 12:30 pm

3D and Video Applications

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

11:10 am: **Improvement of quality metrics performance using binocular just-noticeable-difference for S3D images**, Bilel Sdiri, Mohamed-Chaker Larabi, XLIM-SIC (France); Azeddine Beghdadi, Univ. Paris 13 (France) . . . . . [8653-6]

11:30 am: **Evaluation of biological effect on luminance of stereoscopic displays,** Kyosuke Takahashi, Toshiya Nakaguchi, R. Okamoto, I. Shimoyama, Y. Miyake, Chiba Univ. (Japan) . . . . . [8653-7]

11:50 am: **Three factors that influence the overall quality of the stereoscopic 3D content: image quality, comfort, and realism**, Raluca Vlad, Patricia Ladret, Anne Guérin-Dugué, GIPSA-lab (France) . . . [8653-8]

12:10 pm: **Performance evaluation of HD camcorders: measuring texture distortions using Gabor filters and spatio-velocity CSF,** Kongfeng Zhu, Dietmar Saupe, Univ. Konstanz (Germany) . . . . . [8653-9]

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

Session 5

Room: Sandpebble Room A . . . . Wed 2:00 pm to 3:20 pm

Perceptual Image Quality

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

2:00 pm: **Evaluation of differences in quality of experience features for test stimuli of good-only and bad-only overall audiovisual quality**, Dominik Strohmeier, Technische Univ. Berlin (Germany); Kristina Kunze, Klemens Göbel, Judith Liebetrau, Ilmenau Univ. of Technology (Germany) . . . . . [8653-10]

2:20 pm: **Contrast sensitivity and discrimination of complex scenes**, Sophie Triantaphillidou, John Jarvis, Gaurav Gupta, Univ. of Westminster (United Kingdom). . . . . [8653-11]

2:40 pm: **Grouping strategies to improve the correlation of subjective and objective image quality data**, Silvia Corchs, Francesca Gasparini, Raimondo Schettini, Univ. degli Studi di Milano-Bicocca (Italy) . . [8653-12]

3:00 pm: **Adapting the ISO 20462 softcopy ruler method for online image quality studies**, Peter D. Burns, Burns Digital Imaging (United States); Jonathan B. Phillips, Imaging Scientist (United States); Donald R. Williams, Imaging Science Associates (United States) . . . . . [8653-13]

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Generation of PDF with vector symbols from scanned document, Ilya V. Kurilin, Ilia V. Safonov, Michael N. Rychagov, Samsung Electronics Co., Ltd. (Russian Federation); Ho Keun Lee, Sang Ho Kim, Don Chul Choi, Samsung Electronics Co., Ltd. (Korea, Republic of) . . . . . [8653-27]

Minimum image quality assessment based on saliency maps: a human visual approach, João Barreira, Maximino Bessa, Luís G. Magalhães, INESC TEC (Portugal) and Univ. de Trás-os-Montes e Alto Douro (Portugal) . . . . . [8653-28]

Qualification process of CR system and quantification of digital image quality, Patrice GARNIER, Laurence HUN, Jeremie Klein, Catherine LEMERLE, CEA-VALDUC (France) . . . . . [8653-29]

Challenges of an automated spectral responsivity characterization system, Mark Helmlinger, Greg A. McKee, Christopher Durell, Labsphere, Inc. (United States) . . . . . [8653-30]

Thursday 7 February

Session 6

Room: Sandpebble Room A . . . Thu 8:30 am to 10:10 am

System Analysis and Objective Image Quality Metrics

Session Chair: **Sophie Triantaphillidou,** Univ. of Westminster (United Kingdom)

8:30 am: **A line-based HDR sensor simulator for motion artifact prediction**, Donald J. Baxter, STMicroelectronics Ltd. (United Kingdom) . . . . . [8653-14]

8:50 am: **On the spectral quality of scanner illumination with LEDs**, Luke C. Cui, Lexmark International, Inc. (United States) . . . . . [8653-15]

9:10 am: **Refined measurement of digital image texture loss**, Peter D. Burns, Burns Digital Imaging (United States) . . . . . [8653-16]

9:30 am: **F-MAD: a feature-based extension of the most apparent distortion algorithm for image quality assessment**, Punit Singh Banga, Damon M. Chandler, Oklahoma State Univ. (United States) . . . . [8653-17]

9:50 am: **An algorithm for no-reference image quality assessment based on log-derivative statistics of natural scenes**, Yi Zhang, Damon M. Chandler, Oklahoma State Univ. (United States) . . . . . [8653-18]

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

Session 7

Room: Sandpebble Room A . . Thu 10:40 am to 12:00 pm

Image Quality In Print I

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

10:40 am: **On the analysis of wavelet-based approaches for print grain artifacts**, Ahmed H. Eid, Brian E. Cooper, Edward E. Rippetoe, Lexmark International, Inc. (United States) . . . . . [8653-19]

11:00 am: **A general approach for assessment of print quality**, Xiaochen Jing, Purdue Univ. (United States); Stephen Astling, Renee Jessome, Eric Maggard, Terry Nelson, Mark Q. Shaw, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . [8653-20]

11:20 am: **Verification of proposed ISO methods to measure resolution capabilities of printing systems**, Milena Cisarova, Gjøvik Univ. College (Norway) and Univ. of Pardubice (Czech Republic); Marius Pedersen, Peter Nussbaum, Gjøvik Univ. College (Norway); Frans Gaykema, Océ PLT (Netherlands) . . . . . [8653-21]

11:40 am: **Assessment of presence of isolated periodic and aperiodic bands in laser electrophotographic printer output**, Jia Zhang, Purdue Univ. (United States); Stephen Astling, Renee Jessome, Eric Maggard, Terry Nelson, Mark Q. Shaw, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . [8653-22]

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

Session 8

Room: Sandpebble Room A . . . . Thu 2:00 pm to 3:00 pm

Image Quality in Print II

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

2:00 pm: **Printing artificial sweat using ink jet printers for the test set generation in forensics: an image quality assessment of the reproducibility of the printing results**, Mario Hildebrandt, Otto-von-Guericke-Univ. Magdeburg (Germany); Jennifer Sturm, Fachhochschule Brandenburg (Germany); Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8653-23]

2:20 pm: **Figure of merit for macrouniformity based on image quality ruler evaluation and machine learning framework**, Weibao Wang, Purdue Univ. (United States); Gary Overall, Travis Riggs, Rebecca Silveston-Keith, Julie Whitney, Lexmark International, Inc. (United States); George T. C. Chiu, Jan P. Allebach, Purdue Univ. (United States) [8653-25]

2:40 pm: **Wavelet-based figure of merit for macro-uniformity**, Xing Liu, Purdue Univ. (United States); Gary Overall, Travis Riggs, Rebecca Silveston-Keith, Julie Whitney, Lexmark International, Inc. (United States); George T. C. Chiu, Jan P. Allebach, Purdue Univ. (United States) [8653-26]

Room: Sandpebble Room A . . . . Thu 3:00 pm to 3:10 pm

Closing Remarks

Conference 8654

Monday–Wednesday 4–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8654

Visualization and Data Analysis 2013

Conference Chairs: **Pak Chung Wong,** Pacific Northwest National Lab. (United States); **David L. Kao,** NASA Ames Research Ctr. (United States); **Ming C. Hao,** Hewlett-Packard Labs. (United States); **Chaomei Chen,** Drexel Univ. (United States)

Conference Co-Chairs: **Christopher G. Healey,** North Carolina State Univ. (United States); **Mark A. Livingston,** U.S. Naval Research Lab. (United States); **Ian Roberts,** Pacific Northwest National Lab. (United States); **Thomas Wischgoll,** Wright State Univ. (United States)

Program Committee: **Madjid Allili,** Bishop's Univ. (Canada); **Barry Becker,** PROS Holdings, Inc. (United States); **Remco Chang,** Tufts Univ. (United States); **Guoning Chen,** The Univ. of Utah (United States); **Yi-Jen Chiang,** Polytechnic Institute of New York Univ. (United States); **George Chin Jr.,** Pacific Northwest National Lab. (United States); **Jaegul Choo,** Georgia Institute of Technology (United States); **Scott E. Dillard,** Pacific Northwest National Lab. (United States); **Sussan Einakian,** The Univ. of Alabama in Huntsville (United States); **John Gerth,** Stanford Univ. (United States); **Matti T. Gröhn,** Finnish Institute of Occupational Health (Finland); **Halldor Janetzko,** Univ. Konstanz (Germany); **Ming Jiang,** Lawrence Livermore National Lab. (United States); **Alark Joshi,** Boise State Univ. (United States); **Daniel F. Keefe,** Univ. of Minnesota, Twin Cities (United States); **Andreas Kerren,** Linnaeus Univ. (Sweden); **Robert R. Lewis,** Washington State Univ. (United States); **Guo-Shi Li,** ExxonMobil Upstream Research Co. (United States); **Peter Lindstrom,** Lawrence Livermore National Lab. (United States); **Lars Linsen,** Jacobs Univ. Bremen gGmbH (Germany); **Zhanping Liu,** Kentucky State Univ. (United States); **Aidong Lu,** The Univ. of North Carolina at Charlotte (United States); **Thomas Malzbender,** Hewlett-Packard Labs. (United States); **Richard May,** Pacific Northwest National Lab. (United States); **Joerg Meyer,** Lawrence Berkeley National Lab. (United States); **Harald Obermaier,** Univ. of California, Davis (United States); **Donald A. Pellegrino,** The Dow Chemical Co. (United States); **Theresa-Marie Rhyne,** Consultant (United States); **René Rosenbaum,** Univ. of California, Davis (United States); **Tobias Schreck,** Univ. Konstanz (Germany); **Anna Shaverdian,** Univ. of Michigan (United States); **Chad A. Steed,** Oak Ridge National Lab. (United States); **Kalpathi R. Subramanian,** The Univ. of North Carolina at Charlotte (United States); **Shigeo Takahashi,** The Univ. of Tokyo (Japan); **Soon Tee Teoh,** San José State Univ. (United States); **Chaoli Wang,** Michigan Technological Univ. (United States); **Gunther Weber,** Lawrence Berkeley National Lab. (United States); **Yingcai Wu,** Univ. of California, Davis (United States); **Jing Yang,** The Univ. of North Carolina at Charlotte (United States); **Caixia Zhang,** Google (United States); **Jian Zhang,** IBM China Research Lab. (China); **Song Zhang,** Mississippi State Univ. (United States); **Caroline Ziemkiewicz,** Brown Univ. (United States)

Sponsored by Kitware, Visual Analytics Community, hp

Monday 4 February

Room: Sandpebble Room C . . . . Mon 8:20 am to 8:50 am

Opening Remarks

Session 1

Room: Sandpebble Room C . . . . Mon 8:50 am to 9:30 am

High Dimensional and Multi-Focus Visualization

8:50 am: **An interactive visual testbed system for dimension reduction and clustering of large-scale, high-dimensional, data**, Jaegul Choo, Hanseung Lee, Zhicheng Liu, John Stasko, Haesun Park, Georgia Institute of Technology (United States) . . . . . [8654-1]

9:10 am: **Multi-focus and multi-level techniques for visualization and analysis of networks with thematic data**, Michele Cossalter, Ole J. Mengshoel, Ted Selker, Carnegie Mellon Univ. (United States) . . . [8654-2]

Session 2

Room: Sandpebble Room C . . . Mon 9:30 am to 10:10 am

Multivariate Time Series

9:30 am: **Visual analytics of cyber physical data streams using spatio-temporal radial pixel visualization**, Ming C. Hao, M. Marwah, Hewlett-Packard Labs. (United States); Sebastian Mittelstaedt, Halldor Janetzko, Daniel A. Keim, Univ. Konstanz (Germany); Umeshwar Dayal, Cullen Bash, Carlos Felix, Chandrakant Patel, Meichun Hsu, Yuen Chen, Hewlett-Packard Labs. (United States); Michael Hund, Univ. Konstanz (Germany) . . . . . [8654-3]

9:50 am: **Exploring large scale time-series data using nested timelines**, Zaixian Xie, Oracle America Inc. (United States); Matthew Ward, Elke Rundensteiner, Worcester Polytechnic Institute (United States) . . [8654-4]

Coffee Break . . . . . Mon 10:30 am to 11:00 am

Session 3

Room: Sandpebble Room C . . Mon 10:50 am to 11:50 am

Flow and Volume Visualization

10:50 am: **Visibility-difference entropy for automatic transfer function generation**, Philipp C. Schlegel, Renato B. Pajarola, Univ. of Zürich (Switzerland) . . . . . [8654-5]

11:10 am: **Coherent view-dependent streamline selection for importance-driven flow visualization**, Jun Ma, Chaoli Wang, Ching-Kuang Shene, Michigan Technological Univ. (United States) . . . . . [8654-6]

11:30 am: **Single-pass GPU-raycasting for structured adaptive mesh refinement data**, Ralf Kaehler, Tom Abel, SLAC National Accelerator Lab. (United States) . . . . . [8654-7]

Session 4

Room: Sandpebble Room C . . Mon 11:50 am to 12:30 pm

High Performance Computing

11:50 am: **Multi-user smartphone-based interaction with large high-resolution displays**, Lynn Nguyen, Jurgen Schulze, Univ. of California, San Diego (United States) . . . . . [8654-8]

12:10 pm: **Stereo frame decomposition for error-constrained remote visualization**, Steven L. Martin, Han-Wei Shen, The Ohio State Univ. (United States) . . . . . [8654-9]

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

Room: Grand Peninsula Ballroom E Mon 2:00 to 3:00 pm

Keynote Session I

Please note the room change for this session.

2:00 pm: **Why high performance visual data analytics is both relevant and difficult** *(Keynote Presentation)*, Edward W. Bethel, Prabhat Prabhat, Surendra Byna, Oliver Ruebel, Kesheng Wu, Michael F Wehner, Lawrence Berkeley National Lab. (United States) [8654-10]

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

Session 5

Room: Sandpebble Room C . . . . Mon 3:40 pm to 4:20 pm

Biomedical Visualization

3:40 pm: **Three-dimensional volume analysis of vasculature in engineered tissues**, Mohammed Yousefhussien, Rochester Institute of Technology (United States); Kelley Garvin, Diane Dalecki, Univ. of Rochester (United States); Eli Saber, María Helguera, Rochester Institute of Technology (United States) . . . . . [8654-11]

4:00 pm: **3D surface reconstruction and visualization of the *Drosophila* wing imaginal disc at cellular resolution,** Linge Bai, Drexel Univ. (United States); Thomas Widmann, Centro de Genómica e Investigación Oncológica (Spain); Frank Jülicher, Max-Planck-Institut für Physik komplexer Systeme (Germany); Christian Dahmann, Dresden Univ. of Technology (Germany); David E. Breen, Drexel Univ. (United States) . . . . . [8654-12]

Session 6

Room: Sandpebble Room C . . . . Mon 4:20 pm to 5:00 pm

Human Factors

4:20 pm: **Visual exploration and analysis of human-robot interaction rules**, Hui Zhang, Indiana Univ.-Purdue Univ. Indianapolis (United States); Michael J. Boyles, Indiana Univ. (United States). . . . . [8654-13]

4:40 pm: **Emotion scents: a method of representing user emotions on GUI widgets**, Daniel Cernea, Technische Univ. Kaiserslautern (Germany) and Linnaeus Univ. (Sweden); Christopher Weber, Achim Ebert, Technische Univ. Kaiserslautern (Germany); Andreas Kerren, Linnaeus Univ. (Sweden) . . . . . [8654-14]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 7

Room: Sandpebble Room C . . . . Tue 9:30 am to 10:30 am

Exploratory Data Analysis

9:30 am: **Visual analysis of situationally aware building evacuations**, Jack Guest, Todd Eaglin, Kalpathi R. Subramanian, William Ribarsky, Univ. of North Carolina at Charlotte (United States). . . . . [8654-15]

9:50 am: **Improving projection-based data analysis by feature space transformations**, Matthias Schaefer, Leishi Zhang, Tobias Schreck, Andrada Tatu, Univ. Konstanz (Germany); John A. Lee, Michel Verleysen, Univ. Catholique de Louvain (Belgium); Daniel A. Keim, Univ. Konstanz (Germany) . . . . . [8654-16]

10:10 am: **Does interactive animation control improve exploratory data analysis of animated trend visualization?**, Felwa A. Abukhodair, Simon Fraser Univ. (Canada) and King Abdullah Univ. of Science and Technology (Saudi Arabia); Bernhard E. Riecke, Halil I. Erhan, Chris D. Shaw, Simon Fraser Univ. (Canada) . . . . . [8654-17]

Coffee Break . . . . . .Tue 10:30 am to 11:00 am

Session 8

Room: Sandpebble Room C . . Tue 11:00 am to 12:30 pm

Posters Fast Forward I

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

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

Room: Grand Peninsula Ballroom E Tue 2:00 to 3:00 pm

Keynote Session II

Please note the room change for this session.

2:00 pm: **Social media analysis and platform** *(Keynote Presentation)*, Meichun Hsu, Hewlett-Packard Labs. (United States) . . . . . [8654-18]

Coffee Break . . . . . Tue 3:00 pm to 3:40 pm

Session 9

Room: Sandpebble Room C . . . . . .Tue 3:40 to 5:30 pm

Posters Fast Forward II

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

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 10

Room: Sandpebble Room C . . . Wed 9:30 am to 10:10 am

Data Analysis Techniques

9:30 am: **iMap: a stable layout for navigating large image collections with embedded search**, Chaoli Wang, John P. Reese, Huan Zhang, Jun Tao, Robert J. Nemiroff, Michigan Technological Univ. (United States) . . . . . [8654-19]

9:50 am: **uVis Studio: an integrated development environment for visualization**, Kostas Pantazos, Mohammad A. Kuhail, Soren Lauesen, Shangjin Xu, The IT Univ. of Copenhagen (Denmark) . . . . . [8654-21]

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

Session 11

Room: Sandpebble Room C . . Wed 10:50 am to 11:50 am

Interactive Techniques

10:50 am: **Interactive visual comparison of multimedia data through type-specific views**, Russ E. Burtner IV, Shawn Bohn, Debbie A. Payne, Pacific Northwest National Lab. (United States) . . . . . [8654-22]

11:10 am: **Evaluating multivariate visualizations on time-varying data**, Mark A. Livingston, U.S. Naval Research Lab. (United States); Jonathan W Decker, US Naval Research Lab (United States); Zhuming Ai, U.S. Naval Research Lab. (United States). . . . . [8654-23]

11:30 am: **Multi-focus and multi-window techniques for interactive network exploration**, Priya Krishnan Sundararajan, Ole J. Mengshoel, Ted Selker, Carnegie Mellon Univ. (United States) . . . . . [8654-24]

Room: Sandpebble Room C . . Wed 11:50 am to 12:10 pm

Closing Remarks

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Effective color combinations in isosurface visualization, Sussan Einakian, Timothy S. Newman, The Univ. of Alabama in Huntsville (United States) . . . . . [8654-25]

Web tools for rapid experimental visualization prototyping, Jonathan W. Decker, Mark A. Livingston, U.S. Naval Research Lab. (United States) . . . . . [8654-26]

Time-based user-movement pattern analysis from location-based social network data, Huey Ling Chuan, Isaraporn Kulkumjon, Surbhi Dangi, Carnegie Mellon Univ. (United States) . . . . . [8654-27]

Visualizing vascular structures in virtual environments, Thomas Wischgoll, Wright State Univ. (United States) . . . . . [8654-28]

A combined multidimensional scaling and hierarchical clustering view for the exploratory analysis of multidimensional data, Paul Craig, Néna Roa-Seïler, Univ. Technológica de la Mixteca (Mexico) . . . . . [8654-29]

Visualization of decision processes using a cognitive architecture, Mark A. Livingston, Arthi Murugesan, Derek Brock, Wende K. Frost, Dennis Perzanowski, U.S. Naval Research Lab. (United States) . . . . . [8654-30]

Vortex core timelines and ribbon summarizations: flow summarization over time and simulation ensembles, Alexis Yee Lyn Chan, Joohwi Lee, Russell M. Taylor II, The Univ. of North Carolina at Chapel Hill (United States) . . . . . [8654-31]

X3DBio2: A visual analysis tool for biomolecular structure comparison, Hong Yi, Sidharth Thakur, Renaissance Computing Institute (United States); Latsavongsakda Sethaphong, Yaroslava G. Yingling, North Carolina State Univ. (United States) . . . . . [8654-32]

Improvement of web-based data acquisition and management system for GOSAT validation lidar data analysis, Hiroshi Okumura, Shoichiro Takubo, Takeru Kawasaki, Indra N. Abdullah, Saga Univ. (Japan); Osamu Uchino, Isamu Morino, Tatsuya Yokota, National Institute for Environmental Studies (Japan); Tomohiro Nagai, Tetsu Sakai, Takashi Maki, Meteorological Research Institute (Japan); Kohei Arai, Saga Univ. (Japan). . . . . [8654-33]

Optimizing threshold for extreme scale analysis, Robert J. H. Maynard, Kitware, Inc. (United States); Kenneth Moreland, Sandia National Labs. (United States); Utkarsh Atyachit, Berk Geveci, Kitware, Inc. (United States); Kwan-Liu Ma, Univ. of California, Davis (United States) . [8654-35]

Perceptualization of geometry using intelligent haptic and visual sensing, Jianguang Weng, Zhejiang Univ. (China); Hui Zhang, Indiana Univ.-Purdue Univ. Indianapolis (United States) . . . . . [8654-36]

Review of chart recognition in document images, Yan Liu, Xiaoqing Lu, Yeyang Qin, Zhi Tang, Peking Univ. (China); Jianbo Xu, Peking Univ. Founder Group Corp. (China) . . . . . [8654-37]

Conference 8655

Monday–Wednesday 4–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8655

Image Processing: Algorithms and Systems XI

Conference Chairs: **Karen O. Egiazarian,** Tampere Univ. of Technology (Finland); **Sos S. Agaian,** The Univ. of Texas at San Antonio (United States); **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); **Reiner Creutzburg,** Fachhochschule Brandenburg (Germany); **Paul Gader,** Univ. of Florida (United States); **John C. Handley,** Xerox Corp. (United States); **Vladimir Vasilyevich Lukin,** National Aerospace Univ. (Ukraine); **Stephen Marshall,** Univ. of Strathclyde (United Kingdom); **Alessandro Neri,** Univ. degli Studi di Roma Tre (Italy); **Françoise Prêteux,** Mines ParisTech (France); **Gianni Ramponi,** Univ. degli Studi di Trieste (Italy); **Jagath K. Samarabandu,** The Univ. of Western Ontario (Canada); **Ivan W. Selesnick,** Polytechnic Institute of New York Univ. (United States); **Damir Sersic,** Consultant (Croatia); **Akira Taguchi,** Musashi Kogyo Univ. (Japan)

Monday 4 February

Session 1

Room: Bayside Room A . . . . . Mon 9:30 am to 10:10 am

Image Classification and Recognition I

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

9:30 am: **Target re-identification in low-quality camera networks**, Federica Battisti, Marco Carli, Giovanna Farinella, Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) . . . . . [8655-3]

9:50 am: **Robust face recognition algorithm for identifition of disaster victims**, Wouter J. R. Gevaert, Eindhoven Univ. of Technology (Netherlands) and Univ. College West Flanders (Belgium); Peter H. N. de With, Eindhoven Univ. of Technology (Netherlands) . . . . . [8655-2]

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

Session 2

Room: Bayside Room A . . . . . Mon 10:50 am to 12:10 pm

Image Classification and Recognition II

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

10:50 am: **Improved image copyright protection scheme exploiting visual cryptography in wavelet domain**, Alessio Meneghetti, Giulia Boato, Francesco G. B. De Natale, Univ. degli Studi di Trento (Italy) . . . . . [8655-5]

11:10 am: **HDR image multi-bit watermarking using bilateral-filtering-based masking**, Vassilis Solachidis, Emanuele Maiorana, Patrizio Campisi, Univ. degli Studi di Roma Tre (Italy) . . . . . [8655-6]

11:30 am: **Body-part estimation from Lucas-Kanade tracked Harris points**, Vladimir Pribula, Roxanne L. Canosa, Rochester Institute of Technology (United States) . . . . . [8655-7]

11:50 am: **Hue processing in tetrachromatic spaces**, Alfredo Restrepo, Univ. de los Andes (Colombia) . . . . . [8655-8]

Lunch Break . . . . . Mon 12:10 pm to 2:20 pm

Session 3

Room: Bayside Room A . . . . . Mon 2:20 pm to 3:20 pm

Image Filtering and Enhancement

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

2:20 pm: **Decomposition of satellite derived images for the distinction of cloud types features**, Jules R. Dim, Hiroshi Murakami, Japan Aerospace Exploration Agency (Japan) . . . . . [8655-9]

2:40 pm: **Locally tuned inverse sine nonlinear technique for color image enhancement**, Saibabu Arigela, Vijayan K. Asari, Univ. of Dayton (United States) . . . . . [8655-10]

3:00 pm: **Fusing electro-optic and infrared signals for high resolution visible images: part I**, Xiaopeng Huang, Stevens Institute of Technology (United States); Ravi Netravali, Columbia Univ. (United States); Hong Man, Victor Lawrence, Stevens Institute of Technology (United States)[8655-12]

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

Session 4

Room: Bayside Room A . . . . . Mon 4:00 pm to 5:00 pm

Image Compression

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

4:00 pm: **Embedding high dynamic range tone mapping in JPEG compression**, Jian Liu, The Univ. of Akron (United States); Firas Hassan, Ohio Northern Univ. (United States); Joan E. Carletta, The Univ. of Akron (United States) . . . . . [8655-13]

4:20 pm: **Formulation, analysis, and hardware implementation of chaotic dynamics based algorithm for compression and feature recognition in digital images**, Chance M. Glenn, Alabama A&M Univ. (United States) and Rochester Institute of Technology (United States); Srikanth Mantha, Antonio Mondragon, Rochester Institute of Technology (United States) . . . . . [8655-14]

4:40 pm: **Quality constraint and rate-distortion optimization for predictive image coders**, Khouloud Samrouth, François Pasteau, Olivier Deforges, Institut National des Sciences Appliquées de Rennes (France) . . . . . [8655-15]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 5

Room: Bayside Room A . . . . . .Tue 9:30 am to 10:30 am

Image Analysis I

Session Chairs: **Sos S. Agaian,** The Univ. of Texas at San Antonio (United States); **Steve T. Kacenjar,** Lockheed Martin Corp. (United States)

9:30 am: **Visual quality analysis for images degraded by different types of noise**, Nikolay Ponomarenko, Vladimir V. Lukin, Oleg Ieremeyev, National Aerospace Univ. (Ukraine); Karen O. Egiazarian, Jaakko Astola, Tampere Univ. of Technology (Finland). . . . . [8655-16]

9:50 am: **Graph cut and image intensity-based splitting improves nuclei segmentation in high-content screening**, Muhammad Farhan, Pekka Ruusuvuori, Tampere Univ. of Technology (Finland); Mario Emmenlauer, Pauli Rämö, Univ. Basel (Switzerland); Olli Yli-Harja, Tampere Univ. of Technology (Finland); Christoph Dehio, Univ. Basel (Switzerland) . . . . . [8655-17]

10:10 am: **Near real-time skin deformation mapping**, Steve T. Kacenjar, Madiha Jafri, Lockheed Martin Corp. (United States); Suzie Chen, Rutgers, The State Univ. of New Jersey (United States); Richard Pedersen, Lockheed Martin Corp. (United States). . . . . [8655-18]

Coffee Break . . . . . .Tue 10:30 am to 11:10 am

Session 6

Room: Bayside Room A . . . . . Tue 11:10 am to 12:10 pm

Image Analysis II

Session Chair: **Sos S. Agaian,** The Univ. of Texas at San Antonio (United States)

11:10 am: **Approximations to camera sensor noise**, Keigo Hirakawa, Xiaodan Jin, Keigo Hirakawa, Univ. of Dayton (United States) . . . [8655-47]

11:30 am: **Object segmentation using graph cuts based edges features**, Yuki Masumoto, Weiwei Du, Nobuyuki Nakamori, Kyoto Institute of Technology (Japan). . . . . [8655-20]

11:50 am: **A hybrid skull-stripping algorithm based on adaptive balloon snake models**, Hung-Ting Liu, Tony W. H. Sheu, Herng-Hua Chang, National Taiwan Univ. (Taiwan) . . . . . [8655-21]

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

Session 7

Room: Bayside Room A . . . . . Tue 2:00 pm to 3:20 pm

Image Denoising

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

2:00 pm: **Fast noise variance estimation by principal component analysis**, Stanislav Pyatykh, Lei Zheng, Jürgen Hesser, Heidelberg Univ. (Germany) . . . . . [8655-22]

2:20 pm: **Spatial-temporal noise reduction method optimized for real-time implementation**, Ilya V. Romanenko, Apical (United Kingdom); Eran Edirisinghe, Loughborough Univ. (United Kingdom); Daniel Larkin, Apical (United Kingdom). . . . . [8655-23]

2:40 pm: **Evolution of image regularization with PDEs toward a new anisotropic smoothing based on half kernels**, Baptiste Magnier, Philippe Montesinos, Ecole des Mines d'Alès (France) . . . . . [8655-24]

3:00 pm: **Poisson shot noise parameter estimation from a single scanning electron microscopy image**, Stephen Kockentiedt, Otto-von-Guericke-Univ. Magdeburg (Germany) and Federal Institute for Occupational Safety and Health (Germany); Klaus D. Tönnies, Otto-von-Guericke-Univ. Magdeburg (Germany); Erhardt Gierke, Nico Dziurowitz, Carmen Thim, Sabine Plitzko, Federal Institute for Occupational Safety and Health (Germany). . . . . [8655-25]

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

Session 8

Room: Bayside Room A . . . . . Tue 4:00 pm to 5:00 pm

Parallel Processing in Image Processing Systems

Session Chairs: **John Recker,** Hewlett-Packard Labs. (United States); **Stephen M. Verrall,** Qualcomm Inc. (United States)

4:00 pm: **Parallel algorithms for fast subpixel detection in hyperspectral imagery**, Chung M. Wong, John Shepanski, Stephanie Sandor-Leahy, Northrop Grumman Aerospace Systems (United States) . . . . . [8655-26]

4:20 pm: **Vasculature segmentation using parallel multi-hypothesis template tracking on heterogeneous platforms**, Dongping Zhang, Lee Howes, Advanced Micro Devices, Inc. (United States). . . . . [8655-27]

4:40 pm: **Massively parallel deconvolution on the GPU**, Michael J. Sherry, Andrew Shearer, National Univ. of Ireland, Galway (Ireland) . . . . . [8655-28]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 9

Room: Bayside Room A . . . . . .Wed 9:30 am to 10:30 am

Image Interpolation, Super-Resolution, and Inpainting I

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

9:30 am: **Fast texture and structure image reconstruction using the perceptual hash**, Viacheslav V. Voronin, Vladimir I. Marchuk, Vladimir A. Frantc, Don State Technical Univ. (Russian Federation); Karen O. Egiazarian, Tampere Univ. of Technology (Finland) . . . . . [8655-29]

9:50 am: **Improved multichannel up-sampling method for reconstruction based super-resolution**, Seunghoon Jee, Moon Gi Kang, Yonsei Univ. (Korea, Republic of) . . . . . [8655-30]

10:10 am: **Kernel-based image upscaling method with shooting artifact reduction**, Chul Hee Park, Joonyoung Chang, Moon Gi Kang, Yonsei Univ. (Korea, Republic of) . . . . . [8655-31]

Coffee Break . . . . . .Wed 10:30 am to 11:10 am

Session 10

Room: Bayside Room A . . . . . Wed 11:10 am to 12:10 pm

Image Interpolation, Super-Resolution, and Inpainting II

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

11:10 am: **A stochastic approach for non-rigid image registration**, Ivan A. Kolesov, Jehoon Lee, Patricio Vela, Georgia Institute of Technology (United States); Allen Tannenbaum, Boston Univ. (United States) [8655-32]

11:30 am: **Video inpainting using scene model and object tracking**, Vladimir A. Frantc, Vyatcheslav V. Voronin, Vladimir I. Marchuk, Don State Technical Univ. (Russian Federation); Karen O. Egiazarian, Tampere Univ. of Technology (Finland) . . . . . [8655-33]

11:50 am: **Fast DCT-based algorithm for signal and image accurate scaling**, Leonid Bilevich, Leonid P. Yaroslavsky, Tel Aviv Univ. (Israel) . . . . . [8655-34]

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Active shape models and depth for image registration, Colin Bellmore, Roxanne L. Canosa, Rochester Institute of Technology (United States) . . . . . [8655-35]

Principal component analysis for through wall image enhancement, Muhammad M. Riaz, Abdul Ghafoor, National Univ. of Sciences and Technology (Pakistan) . . . . . [8655-36]

Parallel GPGPU stereo matching with an energy-efficient cost function based on normalized cross correlation, Sarala Arunagiri, Jaime Jaloma, Patricia J. Teller, The Univ. of Texas at El Paso (United States) . . . . . [8655-37]

Bands regrouping of hyperspectral data based on inter-band spectral correlation structure, Ayman Ahmed, NARSS (Egypt); Mohamed E. El. Sharkawy, Egypt-Japan Univ. of Science and Technology (Egypt); Salwa H. Elramly, Ain Shams Univ. (Egypt) . . . . . [8655-38]

A GPU based implementation of direct multi-bit search (DMS) screen algorithm, Barry M. Trager, IBM Thomas J. Watson Research Ctr. (United States); Kartheek Chandu, InfoPrint Solutions Co. (United States); Chai Wah Wu, IBM Thomas J. Watson Research Ctr. (United States); Mikel J. Stanich, InfoPrint Solutions Co. (United States) . . . . . [8655-39]

Ore minerals textural characterization by hyperspectral imaging, Giuseppe Bonifazi, Silvia Serranti, Univ. degli Studi di Roma La Sapienza (Italy) . . . . . [8655-40]

Colour modification and colour combination in double-cone colour space, Alfredo Restrepo, Univ. de los Andes (Colombia). . . . . [8655-41]

Automatic image and video denoising based on Ising theory, Eliahu Cohen, Tel Aviv Univ. (Israel); Maya Carmi, Ron Heiman, Ofer Hadar, Asaf Cohen, Ben-Gurion Univ. of the Negev (Israel) . . . . . [8655-42]

A study of non-diagonal models for image white balance, Ching-Chun Huang, De-Kai Huang, National Kaohsiung Univ. of Applied Sciences (Taiwan) . . . . . [8655-43]

A comparison between space-time video descriptors, Luca Costantini, Licia Capodiferro, Fondazione Ugo Bordoni (Italy); Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) . . . . . [8655-44]

Face recognition based on logarithmic local binary patterns, Debashree Mandal, Karen A. Panetta, Tufts Univ. (United States); Sos S. Agaian, The Univ. of Texas at San Antonio (United States) . . . . . [8655-45]

Hyperspectral images lossless compression using the 3D binary EZW algorithm, Kai-jen Cheng, Jeffrey Dill, Ohio Univ. (United States) [8655-46]

A new set of wavelet- and fractals-based features for Gleason grading of prostate cancer histopathology images, Clara M. Mosquera Lopez, Sos S. Agaian, The Univ. of Texas at San Antonio (United States). [8655-1]

Method and architecture for quantification of bone structure using microscopic image slices, Sunderam Krishnan, Sos S. Agaian, The Univ. of Texas at San Antonio (United States) . . . . . [8655-19]

Conference 8656

Wednesday–Thursday 6–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8656

Real-Time Image and Video Processing 2013

Conference Chairs: **Nasser Kehtarnavaz,** The Univ. of Texas at Dallas (United States); **Matthias F. Carlsohn,** Computer Vision and Image Communication at Bremen (Germany)

Program Committee: **Mohamed Akil,** École Supérieure d'Ingénieurs en Electronique et Electrotechnique (France); **Ahmed Bouridane,** Northumbria Univ. (United Kingdom); **Emre Celebi,** Louisiana State Univ. (United States); **Chang Y. Choo,** San José State Univ. (United States); **Philip P. Dang,** Intel Corp. (United States); **Barak Fishbain,** Israel Institute of Technology (Israel); **Sergio R. Goma,** Qualcomm Inc. (United States); **Christos Grecos,** Univ. of the West of Scotland (United Kingdom); **Reinhard Koch,** Christian-Albrechts-Univ. zu Kiel (Germany); **Rastislav Lukac,** Foveon, Inc. (United States); **Mehrube Mehrübeoglu,** Texas A&M Univ. Corpus Christi (United States); **Antonio J. Plaza,** Univ. de Extremadura (Spain); **Volodymyr Ponomaryov,** Instituto Politécnico Nacional (Mexico); **Fatih Porikli,** Mitsubishi Electric Research Labs. (United States); **Luis Salgado,** Univ. Politécnica de Madrid (Spain); **Sergio Saponara,** Univ. di Pisa (Italy); **Vinay Sharma,** Texas Instruments Inc. (United States); **Mukul V. Shirvaikar,** The Univ. of Texas at Tyler (United States); **Athanassios N. Skodras,** Hellenic Open Univ. (Greece); **Stephan C. Stilkerich,** EADS Deutschland GmbH (Germany); **Juan P. Wachs,** Purdue Univ. (United States); **Leonid P. Yaroslavsky,** Tel Aviv Univ. (Israel)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images,** Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Achieving real-time capsule endoscopy (CE) video visualization through panoramic imaging, Steven Yi, Jean Xie, Peter Mui, Xyken, LLC (United States); Jonathan Leighton, Mayo Clinic (United States) . [8656-11]

Analysis and characterization of embedded vision systems for taxonomy formulation, Muhammad Imran, Mid Sweden Univ. (Sweden); Khaled Benkrid, The Univ. of Edinburgh (United Kingdom); Khursheed Khursheed, Naeem Ahmad, Mattias O'Nils, Najeem Lawal, Mid Sweden Univ. (Sweden) . . . . . [8656-19]

Design and implementation of a real-time image registration in an infrared search and track system, Fu-yuan Xu, Nanjing Univ. of Science and Technology (China). . . . . [8656-20]

Binary video codec for data reduction in wireless visual sensor networks, Khursheed Khursheed, Naeem Ahmad, Muhammad Imran, Mattias O'Nils, Mid Sweden Univ. (Sweden). . . . . [8656-21]

Determinant of homography-matrix-based multiple-object recognition, Nagachetan Bangalore, Madhu Kiran, Visio Ingenii Ltd. (United Kingdom); Anil Suryaprakash, Visio Ingenii Ltd. (United Kingdom) . . . . . [8656-22]

Investigating the structure preserving encryption of high efficiency video coding (HEVC), Zafar Shahid, William Puech, Univ. Montpellier 2 (France) . . . . . [8656-23]

A computationally efficient approach to 3D point cloud reconstruction, Chih-Hsiang Chang, Nasser Kehtarnavaz, The Univ. of Texas at Dallas (United States). . . . . [8656-24]

TDC-based readout electronics for real-time acquisition of high-resolution PET bio-images, Nahema Marino, Sergio Saponara, Univ. di Pisa (Italy) and INFN sez. Pisa (Italy); G. Ambrosi, Istituto Nazionale di Fisica Nucleare (Italy); Federico Baronti, Univ. di Pisa (Italy); Maria Giuseppina Bisogni, Univ. di Pisa (Italy) and INFN sez. Pisa (Italy); Piergiorgio Cerello, Istituto Nazionale di Fisica Nucleare (Italy); F. Ciciriello, Politecnico di Bari (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Francesco Corsi, Politecnico di Bari (Italy) and INFN sez. Bari (Italy); Luca Fanucci, Univ. di Pisa (Italy) and INFN sez. Pisa (Italy); Maria Ionica, Univ. degli Studi di Perugia (Italy); F. Licciulli, Politecnico di Bari (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Cristoforo Marzocca, Politecnico di Bari (Italy) and INFN sez. Bari (Italy); F. Pennazio, Istituto Nazionale di Fisica Nucleare (Italy) and Univ. di Torino (Italy); Roberto Roncella, Univ. di Pisa (Italy); C. Santoni, R. Wheadon, Istituto Nazionale di Fisica Nucleare (Italy); Alberto Del Guerra, Univ. di Pisa (Italy) and INFN sez. Pisa (Italy). . . . . [8656-25]

A visibility improvement technique for fog images suitable for real-time application, Yoshitaka Toyoda, Daisuke Suzuki, Koichi Yamashita, Takashi Ito, Narihiro Matoba, Tetsuya Kuno, Hiroaki Sugiura, Mitsubishi Electric Corp. (Japan) . . . . . [8656-26]

Fast non-blind deconvolution based on 2D point spread function database for real-time ultrasound imaging, Jooyoung Kang, Sung-Chan Park, Kyuhong Kim, Jung-Ho Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . [8656-27]

Thursday 7 February

Session 1

Room: Sandpebble Room C . . . Thu 8:20 am to 10:20 am

Real-Time Algorithms

Session Chair: **Nasser Kehtarnavaz,** The Univ. of Texas at Dallas (United States)

8:20 am: **Real-time target tracking in videos via graph cuts** *(Invited Paper)*, Barak Fishbain, Israel Institute of Technology (Israel); Dorit S. Hochbaum, Yan T. Yang, Univ. of California, Berkeley (United States) . . . . . [8656-1]

8:50 am: **Tracking yarns in high resolution fabric images: a real-time approach for online fabric flaw detection**, Dorian Schneider, RWTH Aachen (Germany) . . . . . [8656-2]

9:10 am: **Real-time bicycle detection at signalized intersections using thermal imaging**, Robin Collaert, Traficon N.V. (Belgium) . . . . . [8656-3]

9:30 am: **How fast can one scale images?**, Leonid Bilevich, Leonid P. Yaroslavsky, Tel Aviv Univ. (Israel) . . . . . [8656-4]

9:50 am: **Digital ruler: real-time object dimension measurement using stereo cameras** *(Invited Paper)*, James Nash, Kalin Atanassov, Vikas Ramachandra, Sergio R. Goma, Qualcomm Inc. (United States) . . [8656-5]

Coffee Break . . . . . .Thu 10:20 am to 10:50 am

Session 2

Room: Sandpebble Room C . . Thu 10:50 am to 12:20 pm

Real-Time Hardware

Session Chair: **Matthias F. Carlsohn,** Computer Vision and Image Communication at Bremen (Germany)

10:50 am: **FPGA design of a real-time edge enhancing smoothing filter** *(Invited Paper)*, Chang Choo, Nimit Pandya, Bhavika Patel, San José State Univ. (United States) . . . . . [8656-6]

11:20 am: **Large objects extraction for binary image on a GPU**, Gregory C. Huchet, Samsung Information Systems America, Inc. (United States) . . . . . [8656-7]

11:40 am: **Real-time structured light intraoral 3D measurement pipeline**, Radu Gheorghe, Andrei Tchouprakov, Roman Sokolov, D4D Technologies, L.P. (United States) . . . . . [8656-8]

12:00 pm: **Three-dimensional fuzzy filter in color video sequence denoising implemented on DSP**, Volodymyr Ponomaryov, Instituto Politécnico Nacional (Mexico); Hector Montenegro, Instituto Politécnico Nacional (Mexico) and ESIME-CULHUAN (Mexico); Ricardo Peralta-Fabi, Univ. Nacional Autónoma de México (Mexico) . . . . . [8656-9]

Lunch Break . . . . . Thu 12:20 pm to 2:20 pm

Session 3

Room: Sandpebble Room C . . . . Thu 2:20 pm to 3:30 pm

Real-Time Systems

Session Chair: **Chang Y. Choo,** San José State Univ. (United States)

2:20 pm: **Design of a pseudo-log image transform IP in an HLS-based memory management framework**, Shahzad Ahmad Butt, Politecnico di Torino (Italy); Stéphane Mancini, Frédéric Rousseau, TIMA Lab. (France); Luciano Lavagno, Politecnico di Torino (Italy) and Cadence Design Systems, Inc. (United States) . . . . . [8656-12]

2:40 pm: **Real-time color- and shape-based traffic signs acquisition and recognition system**, Sergio Saponara, Univ. di Pisa (Italy) . [8656-13]

3:00 pm: **DSPACE hardware architecture for on-board real-time image/video processing in European space missions** *(Invited Paper)*, Sergio Saponara, Massimiliano Donati, Luca Fanucci, Univ. di Pisa (Italy); Maximilian Odendahl, Reiner Leupers, RWTH Aachen (Germany); Walter Errico, SITAEL S.p.A. (Italy) . . . . . [8656-14]

Coffee Break . . . . . Thu 3:30 pm to 4:00 pm

Session 4

Room: Sandpebble Room C . . . . Thu 4:00 pm to 5:30 pm

Real-Time Video Coding

Session Chair: **Sergio Saponara,** Univ. di Pisa (Italy)

4:00 pm: **Priority-based methods for reducing the impact of packet loss on HEVC encoded video streams** *(Invited Paper)*, James M. Nightingale, Qi Wang, Christos Grecos, Univ. of the West of Scotland (United Kingdom) . . . . . [8656-15]

4:30 pm: **Scalable DCT engine for image and video multistandard compression**, Maher Jridi, Yousri Ouerhani, Ayman Alfalou, ISEN Brest (France) . . . . . [8656-16]

4:50 pm: **A CABAC decoder design of H.264AVC with secure arithmetic coding**, Nihel Neji, Maher Jridi, Ayman Alfalou, ISEN Brest (France); Nouri Masmoudi, Univ. of Sfax (Tunisia) . . . . . [8656-17]

5:10 pm: **A modified interview prediction scheme for multiview video coding**, Ayman M. Hamdan, Hussein A. Aly, Mohamed M. Fouad, Military Technical College (Egypt) . . . . . [8656-18]

Conference 8657

Tuesday–Thursday 5–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8657

Computational Imaging XI

Conference Chairs: **Charles A. Bouman,** Purdue Univ. (United States); **Ilya Pollak,** Purdue Univ. (United States); **Patrick J. Wolfe,** Harvard Univ. (United States)

Program Committee: **Scott T. Acton,** Univ. of Virginia (United States); **Thomas S. Denney Jr.,** Auburn Univ. (United States); **Minh N. Do,** Univ. of Illinois at Urbana-Champaign (United States); **Peter C. Doerschuk,** Cornell Univ. (United States); **Maya R. Gupta,** Univ. of Washington (United States); **William C. Karl,** Boston Univ. (United States); **Eric L. Miller,** Tufts Univ. (United States); **Joseph A. O'Sullivan,** Washington Univ. in St. Louis (United States); **Zygmunt Pizlo,** Purdue Univ. (United States); **Stanley J. Reeves,** Auburn Univ. (United States); **Jeff P. Simmons,** Air Force Research Lab. (United States); **Yongyi Yang,** Illinois Institute of Technology (United States)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 1

Room: Harbour Room A . . . . . Tue 2:00 pm to 3:40 pm

Computational Photography

2:00 pm: **A unifying retinex model based on non-local differential operators**, Dominique Zosso, Giang Tran, Stanley J. Osher, Univ. of California, Los Angeles (United States) . . . . . [8657-1]

2:20 pm: **Subspace methods for computational relighting**, Ha Q. Nguyen, Siying Liu, Minh N. Do, Univ. of Illinois at Urbana-Champaign (United States) . . . . . [8657-2]

2:40 pm: **Bayesian demosaicing using Gaussian scale mixture priors with local adaptivity in the dual tree complex wavelet packet transform domain**, Bart Goossens, Jan Aelterman, Hiep Luong, Aleksandra Pižurica, Wilfried Philips, Univ. Gent (Belgium) . . . . . [8657-3]

3:00 pm: **Demosaicing for RGBZ sensor**, Lilong Shi, Ilia Ovsiannikov, Samsung Semiconductor, Inc. (United States); Dong-Ki Min, Yohwan Noh, SAMSUNG Electronics Semiconductor (Korea, Republic of); Wanghyun Kim, Sunhwa Jung, Joonho Lee, Deokha Shin, Hyekyung Jung, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Gregory Waligorski, Michelle Wang, Wendy Wang, Samsung Semiconductor, Inc. (United States); Yoondong Park, Chilhee Chung, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . [8657-4]

3:20 pm: **Auto zoom crop from face detection and facial features**, Raymond Ptucha, Brian Mittelstaedt, David Rhoda, Eastman Kodak Co. (United States) . . . . . [8657-5]

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

Session 2

Room: Harbour Room A . . . . . Tue 4:00 pm to 4:40 pm

Compressed Sensing and Coded Aperture Imaging

4:00 pm: **Optimal filters for high-speed compressive detection in spectroscopy**, Bradley J. Lucier, Gregery T. Buzzard, Purdue Univ. (United States) . . . . . [8657-6]

4:20 pm: **Neutron imaging with coded sources: new challenges and the implementation of a simultaneous iterative reconstruction technique**, Hector J. Santos-Villalobos, Philip R. Bingham, Oak Ridge National Lab. (United States); Jens Gregor, The Univ. of Tennessee (United States) . . . . . [8657-8]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 3

Room: Harbour Room A . . . . . Wed 9:50 am to 10:30 am

Physics-Based Microscopic Imaging I

9:50 am: **Physics-based regularization**, Jeffrey P. Simmons, Air Force Research Lab. (United States) . . . . . [8657-10]

10:10 am: **Reconstruction of bright field STEM with Bragg diffraction correction**, Charles A. Bouman, Purdue Univ. (United States) . . [8657-11]

Coffee Break . . . . . Wed 10:30 am to 10:45 am

Room: Grand Peninsula Ballroom E . . . . . Wed 10:45 to 11:30 am

Keynote Session I

Please note the room change for this session.

10:45 am: **Petapixel photography and the limits of camera information capacity** *(Keynote Presentation)*, David J. Brady, Duke Univ. (United States) . . . . . [8657-35]

Session 4

Room: Harbour Room A . . . . . Wed 11:50 am to 12:30 pm

Physics-Based Microscopic Imaging II

11:50 am: **Sparse imaging for fast electron microscopy**, Hyrum S. Anderson, Jovana Helms, Brandon Rohrer, Jason Wheeler, Kurt W. Larson, Sandia National Labs. (United States) . . . . . [8657-12]

12:10 pm: **Building and enforcing shape priors for segmentation of alloy micrographs**, Landis M. Huffman, The MITRE Corp. (United States); Jeffrey P. Simmons, Air Force Research Lab. (United States); Marc De Graef, Carnegie Mellon Univ. (United States); Ilya Pollak, Purdue Univ. (United States) . . . . . [8657-13]

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

Session 5

Room: Harbour Room A . . . . . .Wed 2:00 pm to 3:40 pm

Physics-Based Microscopic Imaging III

2:00 pm: **Real-time dynamic range and signal to noise enhancement in beam-scanning microscopy by integration of sensor characteristics, data acquisition hardware, and statistical methods**, Garth J. Simpson, Purdue Univ. (United States) . . . . . [8657-14]

2:20 pm: **Multi-modal electron tomography**, Lawrence F. Drummy, UES, Inc. (United States) . . . . . [8657-15]

2:40 pm: **Segmentation of materials images using 3D electron interaction modeling**, Mary L. Comer, Dae Woo Kim, Purdue Univ. (United States) . . . . . [8657-16]

3:00 pm: **A forward modeling approach to electron back-scatter diffraction patters**, Marc De Graef, Carnegie Mellon Univ. (United States) . . . . . [8657-17]

3:20 pm: **Interactive grain image segmentation using graph cut algorithms**, Jarrell W. Waggoner, Youjie Zhou, Univ. of South Carolina (United States); Jeffrey P. Simmons, Air Force Research Lab. (United States); Ayman Salem, Materials Resources International (United States); Marc De Graef, Carnegie Mellon Univ. (United States); Song Wang, Univ. of South Carolina (United States) . . . . . [8657-18]

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Sub-pixel depth camera registration using gradient circle pattern, Seungkyu Lee, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8657-31]

Efficient synthetic refocusing method from multiple coded aperture images for 3D user interaction, Sungjoo Suh, Changkyu Choi, Dusik Park, Chang-Yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8657-32]

Multiscale based adaptive contrast enhancement, Muhammad I. Abir, Missouri Univ. of Science and Technology (United States) and Idaho National Lab. (United States); Fahima F. Islam, Missouri Univ. of Science and Technology (United States); Daniel M. Wachs, Idaho National Lab. (United States); Hyoung Koo Lee, Missouri Univ. of Science and Technology (United States) . . . . . [8657-33]

Thursday 7 February

Session 6

Room: Harbour Room A . . . . . Thu 8:50 am to 10:10 am

Segmentation and Tracking

8:50 am: **An enhanced grid-based Bayesian array for target tracking**, Qian Sang, Zongli Lin, Scott T. Acton, Univ. of Virginia (United States) . . . . . [8657-19]

9:10 am: **A fourth-order active contour shape prior for multiple-instance object detection in images**, Ikhlef Bechar, INRIA Sophia Antipolis - Méditerranée (France); Ian H. Jermyn, Durham Univ. (United Kingdom); Josiane B. Zerubia, INRIA Sophia Antipolis - Méditerranée (France) . . . . . [8657-20]

9:30 am: **Efficient occlusion reasoning for articulated tracking in monocular views**, Landis M. Huffman, The MITRE Corp. (United States); Ilya Pollak, Purdue Univ. (United States) . . . . . [8657-21]

9:50 am: **An efficient optimizer for simple point process models**, Ahmed Gamal Eldin, INRIA Rhône-Alpes (France); Guillaume Charpiat, Xavier Descombes, Josiane B. Zerubia, INRIA Sophia Antipolis - Méditerranée (France) . . . . . [8657-22]

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

Session 7

Room: Harbour Room A . . . . . Thu 10:50 am to 11:30 am

Image System Modeling and Simulation

10:50 am: **Texture mapping 3D planar models of indoor environments with noisy camera poses**, Peter Cheng, Michael Anderson, Stewart He, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . [8657-23]

11:10 am: **Optical touch sensing: practical bounds for design and performance**, Alexander Blaessle, UBC Okanagan (Canada); Bebart Janbek, Simon Fraser Univ. (Canada); Lifeng Liu, Univ. of Pittsburgh (United States); Kanna Nakamura, Univ. of Maryland, College Park (United States); Kimberly Nolan, Drexel Univ. (United States); Victor Paraschiv, Univ. of Victoria (Canada); Zachi I. Baharav, Corning Incorporated (United States) . . . . . [8657-24]

Session 8

Room: Harbour Room A . . . . . Thu 11:30 am to 12:30 pm

Reconstruction, Inverse Problems, and Noise Reduction I

11:30 am: **Light field image denoising using a linear 4D frequency-hyperfan all-in-focus filter**, Donald G. Dansereau, Daniel L. Bongiorno, Oscar Pizarro, Stefan B. Williams, The Univ. of Sydney (Australia)[8657-25]

11:50 am: **Computational imaging approach for fanbeam x-ray scatter imaging**, Joseph A O'Sullivan, David G. Politte, Washington Univ. in St. Louis (United States); Kenneth MacCabe, Kalyani Krishnamurthy, Duke Univ. (United States); Ikenna Odinaka, Washington Univ. in St. Louis (United States); Anuj Kapadia, David J. Brady, Duke Univ. (United States) . . . . . [8657-26]

12:10 pm: **Robust registration of electron tomography projections without fiducial makers**, Viet Dung Tran, Maxime Moreaud, IFP Energies Nouvelles (France); Éric M. Thiébaut, Ctr. de Recherche Astronomique de Lyon (France); Loïc Dénis, Jean Marie Becker, Lab. Hubert Curien, CNRS (France) . . . . . [8657-27]

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

Session 9

Room: Harbour Room A . . . . . Thu 2:00 pm to 3:00 pm

Reconstruction, Inverse Problems, and Noise Reduction II

2:00 pm: **Low signal noise modeling for statistical CT reconstruction**, Jean-Baptiste Thibault, GE Healthcare (United States); Ken D. Sauer, Univ. of Notre Dame (United States); Charles A. Bouman, Purdue Univ. (United States) . . . . . [8657-28]

2:20 pm: **Sensing aware metric learning**, Zach Sun, Prakash Ishwar, William C. Karl, Venkatesh Saligrama, Boston Univ. (United States) . . . . . [8657-29]

2:40 pm: **Analysis of image color and effective bandwidth as a tool for assessing air pollution at urban spatiotemporal scale**, Yael Etzion-Cohen, David M. Broday, Barak Fishbain, Technion-Israel Institute of Technology (Israel) . . . . . [8657-30]

Conference 8658

Tuesday–Thursday 5–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8658

Document Recognition and Retrieval XX

Conference Chairs: **Richard Zanibbi,** Rochester Institute of Technology (United States); **Bertrand Coüasnon,** Institut National des Sciences Appliquées de Rennes (France)

Program Committee: **Gady Agam,** Illinois Institute of Technology (United States); **Elisa H. Barney Smith,** Boise State Univ. (United States); **William A. Barrett,** Brigham Young Univ. (United States); **Kathrin Berkner,** Ricoh Innovations, Inc. (United States); **Hervé Déjean,** Xerox Research Ctr. Europe Grenoble (France); **Xiaoqing Ding,** Tsinghua Univ. (China); **David Scott Doermann,** Univ. of Maryland, College Park (United States); **Oleg D. Golubitsky,** Google Waterloo (Canada); **Jianying Hu,** IBM Thomas J. Watson Research Ctr. (United States); **Christopher Kermorvant,** A2iA SA (France); **Laurence Likforman-Sulem,** Telecom ParisTech (France); **Xiaofan Lin,** A9.com, Inc. (United States); **Marcus Liwicki,** Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); **Daniel P. Lopresti,** Lehigh Univ. (United States); **Umapada Pal,** India Statistical Institute (India); **Hiroshi Sako,** Hosei Univ. (Japan); **Sargur N. Srihari,** Univ. at Buffalo (United States); **Venkata Subramaniam,** IBM India Research Lab. (India); **Kazem Taghva,** Univ. of Nevada, Las Vegas (United States); **George R. Thoma,** National Library of Medicine (United States); **Christian Viard-Gaudin,** Univ. de Nantes (France); **Berrin Yanikoglu,** Sabanci Univ. (Turkey); **Jie Zou,** National Library of Medicine (United States)

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Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 1

Room: Sandpebble Room D . . . .Tue 9:30 am to 10:30 am

Image-Based Retrieval

9:30 am: **Semi-structured document image matching and recognition**, Olivier Augereau, Nicholas Journet, Jean-Philippe Domenger, LaBRI (France) . . . . . [8658-1]

9:50 am: **Rotation-robust math symbol recognition and retrieval using outer contours and image subsampling**, Siyu Zhu, Lei Hu, Richard Zanibbi, Rochester Institute of Technology (United States) . . . . . [8658-2]

10:10 am: **NESP: Nonlinear enhancement and selection of plane for optimal segmentation and recognition of scene word images**, Deepak Kumar, M. N. Anil Prasad, A. G. Ramakrishnan, Indian Institute of Science (India) . . . . . [8658-3]

Coffee Break . . . . . .Tue 10:30 am to 11:10 am

Session 2

Room: Sandpebble Room D . . Tue 11:10 am to 12:30 pm

Handwriting

11:10 am: **Combining evidence using likelihood ratios in writer verification**, Sargur N. Srihari, Univ. at Buffalo (United States); Dimitry Kovalenko, Yi Tang, Gregory Ball, Univ. at Buffalo, SUNY (United States) . . . . . [8658-4]

11:30 am: **Handwritten word preprocessing for database adaptation**, Cristina A. Oprean, Laurence Likforman-Sulem, Telecom ParisTech (France); Chafic Mokbel, University of Balamand (Lebanon) . . . . . [8658-5]

11:50 am: **Optimal policy for labeling training samples**, Lester Lipsky, Univ. of Connecticut (United States); Daniel Lopresti, Lehigh Univ. (United States); George Nagy, Rensselaer Polytechnic Institute (United States) . . . . . [8658-6]

12:10 pm: **Evaluation of lexicon size variations on a verification and rejection system based on SVM, for accurate and robust recognition of handwritten words**, Yann Ricquebourg, Bertrand Couasnon, IRISA / INSA de Rennes (France); Laurent Guichard, E2I SAS (France) . . . [8658-7]

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

Session 3

Room: Sandpebble Room D . . . . Tue 2:00 pm to 3:20 pm

Layout Analysis

2:00 pm: **Comic image understanding based on polygon detection**, Luyuan Li, Yongtao Wang, Zhi Tang, Dong Liu, Peking Univ. China) . . . . . [8658-8]

2:20 pm: **Context modeling for text/non-text separation in free-form online handwritten documents**, Adrien Delaye, Cheng-Lin Liu, Institute of Automation (China) . . . . . [8658-9]

2:40 pm: **Annotating image ROIs with text descriptions for multimodal biomedical document retrieval**, Daekeun You, National Library of Medicine (United States); Matthew Simpson, National Library of Medicine/ NIH (United States); Sameer K. Antani, Dina Demner-Fushman, George R. Thoma, National Library of Medicine (United States) . . . . . [8658-10]

3:00 pm: **Graphic composite segmentation for PDF documents with complex layouts**, Canhui Xu, Zhi Tang, Xin Tao, Cao Shi, Peking Univ. (China) . . . . . [8658-11]

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

Session 4

Room: Sandpebble Room D . . . . Tue 4:00 pm to 5:00 pm

Word and Symbol Spotting

4:00 pm: **A classification-free word-spotting system**, Nikos Vasilopoulos, Ergina Kavallieratou, Univ. of the Aegean (Greece) [8658-12]

4:20 pm: **Combining geometric matching with SVM to improve symbol spotting**, Nibal Nayef, Thomas M. Breuel, Technische Univ. Kaiserslautern (Germany) . . . . . [8658-13]

4:40 pm: **Segmentation-free keyword spotting framework using dynamic background model**, Gaurav Kumar, Safwan R. Wshah, Venu Govindaraju, Univ. at Buffalo (United States); Ramachandrula Sitaram, Hewlett-Packard Labs. India (India) . . . . . [8658-14]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Room: Grand Peninsula Ballroom E Wed 9:30 to 10:15 am

Keynote Session I

Please note the room change for this session.

9:30 am: **History of the Tesseract OCR engine: what worked and what didn't** *(Keynote Presentation)*, Ray W. Smith, Google (United States) . . . . . [8658-15]

Coffee Break . . . . . Wed 10:15 am to 10:50 am

Session 5

Room: Sandpebble Room D . . Wed 10:50 am to 12:10 pm

Historical Documents

10:50 am: **Data acquisition from cemetery headstones**, Cameron S. Christiansen, William A. Barrett, Brigham Young Univ. (United States) . . . . . [8658-16]

11:10 am: **Automated recognition and extraction of tabular fields for the indexing of census records**, Robert Clawson, Kevin Bauer, Glen Chidester, Milan Tyler-Pohontsch, Douglas J. Kennard, Jongha Ryu, William A. Barrett, Brigham Young Univ. (United States) . . . . . [8658-17]

11:30 am: **Old document image segmentation using the autocorrelation function and multiresolution analysis**, Maroua Mehri, Univ. de La Rochelle (France) and Univ. of Rouen (France); Petra Gomez-Krämer, Univ. de La Rochelle (France); Pierre Héroux, Univ. of Rouen (France); Rémy Mullot, Univ. de La Rochelle (France) . . . . . [8658-18]

11:50 am: **Lexicon-supported OCR of eighteenth century Dutch books: a case study**, Jesse de Does, Katrien Depuydt, Leiden Univ. (Netherlands) . . . . . [8658-19]

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

Session 6

Room: Sandpebble Room D . . . . Wed 2:00 pm to 3:00 pm

Arabic and Chinese Character Recognition

2:00 pm: **Character feature integration of Chinese calligraphy and font**, Cao Shi, Jianguo Xiao, Wenhua Jia, Peking Univ. (China); Canhui Xu, Peking Univ. (China) and Beijing Founder Apabi Technology Ltd. (China) . . . . . [8658-20]

2:20 pm: **A segmentation-free approach to Arabic and Urdu OCR**, Nazly Sabbour, The German Univ. in Cairo (Egypt); Faisal Shafait, DFKI GmbH (Germany) . . . . . [8658-21]

2:40 pm: **Local projection based character segmentation method for historical Chinese documents**, Linjie Yang, Liangrui Peng, Tsinghua Univ. (China) . . . . . [8658-22]

Session 7

Room: Sandpebble Room D . . . . Wed 3:00 pm to 3:30 pm

Interactive Paper Teasers

Authors of interactive papers will each provide a very brief overview of their poster. Each presentation will be at most one minute in duration.

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

A super resolution framework for low resolution document image OCR, Di Ma, Gady Agam, Illinois Institute of Technology (United States) . . . . . [8658-34]

A robust pointer segmentation in biomedical images toward building a visual ontology for biomedical article retrieval, Daekeun You, National Library of Medicine (United States); Matthew Simpson, National Library of Medicine/NIH (United States); Sameer K. Antani, Dina Demner-Fushman, George R. Thoma, National Library of Medicine (United States) . [8658-35]

Combining multiple thresholding binarization values to improve OCR output, William B. Lund, Douglas J. Kennard, Brigham Young Univ. (United States); Eric K. Ringger, Brigham Young Univ. (United States) and Computer Science Dept. (United States) . . . . . [8658-36]

Goal-oriented evaluation of binarization algorithms for historical document images, Tayo Obafemi-Ajayi, Univ. of Missouri-Columbia (United States); Gady Agam, Illinois Institute of Technology (United States) . . . . . [8658-37]

Document segmentation via oblique cuts, Jeremy P. Svendsen, Alexandra Branzan-Albu, Univ. of Victoria (Canada). . . . . [8658-38]

Preprocessing document images by resampling is error prone and unnecessary, George Nagy, Rensselaer Polytechnic Institute (United States) . . . . . [8658-39]

Multilingual artificial text detection and extraction from still images, Ahsen Raza, Ali Abidi, National Univ of Sciences and Technology (Pakistan); Imran A. Siddiqi, Bahria Univ. (Pakistan) . . . . . [8658-40]

A proposal system for historic Arabic manuscript transcription and retrieval, Abdelaziz Labben, Afef K. Echi, Unité de Recherche en Technologies de l'Information et de la Communication (Tunisia); Abdel Belaïd, LORIA (France) . . . . . [8658-41]

Evaluation of document binarization using eigen value decomposition, Deepak Kumar, M. N. Anil Prasad, A. G. Ramakrishnan, Indian Institute of Science (India) . . . . . [8658-42]

Efficient symbol retrieval by building a symbol index from a collection of line drawings, Nibal Nayef, Thomas M. Breuel, Technische Univ. Kaiserslautern (Germany) . . . . . [8658-43]

Thursday 7 February

Session 8

Room: Sandpebble Room D . . . . Thu 8:50 am to 9:30 am

Math Recognition

8:50 am: **Structural analysis of online handwritten mathematical symbols based on support vector machines**, Foteini Simistira, Vassilis M. Papavassiliou, Vassilis Katsouros, Institute for Language and Speech Processing (Greece); George Carayannis, National Technical Univ. of Athens (Greece). . . . . [8658-23]

9:10 am: **Using online handwriting and audio streams for mathematical expressions recognition: a bimodal approach**, Sofiane Medjkoune, Univ. de Nantes (France) and Le Mans Univ, LIUM Lab. (France); Harold Mouchère, Univ. de Nantes (France); Simon Petitrenaud, Univ. du Maine (France); Christian Viard-Gaudin, Univ. de Nantes (France) . . . . . [8658-24]

Room: Grand Peninsula Ballroom E Thu 9:45 to 10:30 am

Keynote Session II

Please note the room change for this session.

9:45 am: **What does the future hold for search user interfaces?** *(Keynote Presentation)*, Marti Hearst, Univ. of California, Berkeley (United States) . . . . . [8658-25]

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

Session 9

Room: Sandpebble Room D . . Thu 10:50 am to 12:30 pm

Information Retrieval

10:50 am: **Using clustering and a modified classification algorithm for automatic text summarization**, Abdelkrime Aries, Houda Oufaida, Ecole Nationale Supérieue d'Informatique (Algeria); Omar Nouali, Ctr. de recherche sur l'Information Scientifique et Technique (Algeria) . . [8658-26]

11:10 am: **Evaluating supervised topic models in the presence of OCR errors**, Daniel D. Walker IV, Eric K. Ringger, Kevin D. Seppi, Brigham Young Univ. (United States) . . . . . [8658-27]

11:30 am: **Rule-based versus training-based extraction of index terms from business documents: how to combine the results**, Daniel Schuster, Marcel Hanke, Klemens Muthmann, Daniel Esser, Technische Univ. Dresden (Germany) . . . . . [8658-28]

11:50 am: **Post processing with first- and second-order hidden Markov models**, Kazem Taghva, Univ. of Nevada, Las Vegas (United States); Srijana Poudel, Univ. of Nevada (United States). . . . . [8658-29]

12:10 pm: **Combining discriminative SVM models for the improved recognition of investigator names in medical articles,** Xiaoli Zhang, Jie Zou, Daniel X. Le, George R. Thoma, National Library of Medicine (United States) . . . . . [8658-30]

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

Session 10

Room: Sandpebble Room D . . . . Thu 2:00 pm to 3:00 pm

Evaluation

2:00 pm: **Adaptive detection of missed text areas in OCR outputs: application to the automatic assessment of OCR quality in mass digitization projects**, Ahmed Ben Salah, Bibliothèque nationale de France (France) and LITIS-Univ. de Rouen (France); Nicolas Ragot, Univ. de Tours (France); Thierry Paquet, Univ. de Rouen (France) . . . . . [8658-31]

2:20 pm: **Evaluating structural pattern recognition for handwritten math via primitive label graphs**, Richard Zanibbi, Rochester Institute of Technology (United States); Harold Mouchère, Christian Viard-Gaudin, Univ. de Nantes (France). . . . . [8658-32]

2:40 pm: **WFST-based ground truth alignment for difficult historical documents with text modification and layout variations**, Mayce Al Azawi, Technische Univ. Kaiserslautern (Germany); Marcus Liwicki, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); Thomas M. Breuel, Technische Univ. Kaiserslautern (Germany) . [8658-33]

PANEL DISCUSSION

Room: Sandpebble Room D . . . .Thu 3:00 to 3:20 pm

Panel Discussion: Evaluation

Conference 8659

Wednesday–Thursday 6–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8659

Sensors, Cameras, and Systems for Industrial/Scientific Applications XIV

Conference Chairs: **Ralf Widenhorn,** Portland State Univ. (United States); **Antoine Dupret,** CEA LETI MINATEC (France)

Program Committee: **Morley M. Blouke,** Portland State Univ. (United States); **Erik Bodegom,** Portland State Univ. (United States); **Glenn H. Chapman,** Simon Fraser Univ. (Canada); **Arnaud Darmont,** Aphesa SPRL (Belgium); **James A. DiBella Sr.,** Truesense Imaging, Inc. (United States); **Boyd A. Fowler,** BAE Systems Imaging Solutions (United States); **Kevin J. Matherson,** Hewlett-Packard Co. (United States); **Valérie Nguyen,** CEA LETI MINATEC (France); **Alice L. Reinheimer,** e2v (United States); **Franz Riedlberger,** TowerJazz (Germany); **Nobukazu Teranishi,** Panasonic Corp. (Japan); **Xinyang Wang,** Chinese Academy of Sciences (China)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Room: Regency Ballroom C . . . . Wed 9:30 am to 9:35 am

Opening Remarks

Room: Regency Ballroom C . . . Wed 9:35 am to 10:35 am

Session 1

Session Chair: **Xinyang Wang,** Chinese Academy of Sciences (China)

9:35 am: **Fundamental performance differences of CMOS and CCD imagers: part V**, James R. Janesick, Sarnoff Corp. (United States)[8659-1]

9:55 am: **Kirana: a solid-state megapixel uCMOS image sensor for ultrahigh speed imaging**, Jamie Crooks, Ben Marsh, Renato A. D. Turchetta, Rutherford Appleton Lab. (United Kingdom); Keith Taylor, Wai Chan, Specialised Imaging Ltd. (United Kingdom) . . . . . [8659-2]

10:15 am: **Back-side-illuminated image sensor with burst capturing speed of 5.2Tpixel per second**, Toshiki Arai, Jun Yonai, Tetsuya Hayashida, Hiroshi Ohtake, Japan Broadcasting Corp. (Japan); Harry van Kuijk, Teledyne DALSA (Netherlands); Takeharu G. Etoh, Ritsumeikan Univ. (Japan) . . . . . [8659-3]

Coffee Break . . . . . Wed 10:35 am to 11:10 am

Session 2

Room: Regency Ballroom C . . Wed 11:10 am to 12:30 pm

Smart Sensors

Session Chair: **Arnaud Darmont,** Aphesa SPRL (Belgium)

11:10 am: **A custom CMOS imager for multi-beam laser scanning confocal microscopy and an improvement of scanning speed**, Min-Woong Seo, Keiichiro Kagawa, Keita Yasutomi, Shoji Kawahito, Shizuoka Univ. (Japan) . . . . . [8659-4]

11:30 am: **An ultrafast ultracompact sensor for diffuse correlation spectroscopy**, Kinia Barjean, Eric Tinet, Dominique Ettori, Univ. Paris 13 (France); Antoine Dupret, Commissariat à l'Énergie Atomique (France); Marius Vasiliu, Univ. Paris-Sud 11 (France); Jean-Michel Tualle, Univ. Paris 13 (France). . . . . [8659-5]

11:50 am: **A 3D image sensor with adaptive subtraction scheme for background light suppression**, Jungsoon Shin, Byong Min Kang, Keechang Lee, James D. K. Kim, Samsung Electronics (Korea, Republic of) . . . . . [8659-6]

12:10 pm: **High performance 7.4 µm interline transfer CCD platform for applied imaging markets**, James A. DiBella Sr., Douglas A. Carpenter, Robert Kaser, Stephen L. Kosman, John P. McCarten, Truesense Imaging, Inc. (United States); Brent J. Kecskemety, Truesense Imaging, Inc. (Andorra); Christopher Parks, Truesense Imaging, Inc. (United States) . . . . . [8659-7]

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

Session 3

Room: Regency Ballroom C . . . . Wed 2:00 pm to 3:00 pm

High-Performance Sensors

Session Chair: **Kevin J. Matherson,** Hewlett-Packard Co. (United States)

2:00 pm: **A 33Mpixel wide color gamut image capturing system using four CMOS image sensors at 120 Hz**, Takuji Soeno, NHK Science & Technology Research Labs. (Japan); Kohei Omura, NHK Engineering Services, Inc. (Japan); Takayuki Yamashita, Ryohei Funatsu, Masayuki Sugawara, Makoto Okui, NHK Science & Technology Research Labs. (Japan). . . . . [8659-8]

2:20 pm: **A 3Mpixel ROIC with 10um pixel pitch and 120 Hz frame rate digital output**, Elad Ilan, Niv Shiloah, Shimon Elkind, Roman Dobromislin, Willie Freiman, Alex Zviagintsev, Itzik Nevo, Oren Cohen, Fanny Khinich, Amnon Adin, Ron Talmor, Yaakov Milstain, SCD Semiconductor Devices (Israel) . . . . . [8659-9]

2:40 pm: **Dynamic capability of sensors with nonlinear pixels utilized by security cameras**, Anders Johannesson, Henrik Eliasson, Sebastian Fors, Axis Communications AB (Sweden). . . . . [8659-11]

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Optical high-altitude balloon tracking and imaging for optical communications, Jeremy Straub, Ronald Fevig, Univ. of North Dakota (United States). . . . . [8659-27]

Characterization of a solid state air corona charging device, Michael Young, Baomin Xu, Steve Buhler, Palo Alto Research Center, Inc. (United States); Karl Littau, Stanford Univ. (United States) . . . . . [8659-28]

Northeast Indian face database: capturing, performance evaluation, and application, Mrinal K. Bhowmik, Kankan Saha, Priya Saha, Tripura Univ. (India); Debotosh Bhattacharjee, Mita Nasipuri, Jadavpur Univ. (India). . . . . [8659-29]

Optical characterization parameters by study and comparison of subwavelength patterns for color filtering and multispectral purpose, Jacques Mantanga, Yvon Lacroute, Pierre Gouton, Eric Bourillot, Le2i (France) . . . . . [8659-30]

Thursday 7 February

Session 4

Room: Regency Ballroom C . . . . Thu 8:30 am to 9:50 am

Noise and Characterization

Session Chair: **Boyd A. Fowler,** BAE Systems Imaging Solutions (United States)

8:30 am: **Empirical formula for rates of hot pixel defects based on pixel size, sensor area, and ISO**, Glenn H. Chapman, Rohit Thomas, Simon Fraser Univ. (Canada); Zahava Koren, Israel Koren, Univ. of Massachusetts, Amherst (United States) . . . . . [8659-13]

8:50 am: **A statistical evaluation of low-frequency noise of in-pixel source follower-equivalent transistors with various channel types and body bias**, Rihito Kuroda, Akihiro Yonezawa, Akinobu Teramoto, Tsung-Ling Li, Yasuhisa Tochigi, Shigetoshi Sugawa, Tohoku Univ. (Japan). . . . . [8659-14]

9:10 am: **New analog readout architecture for low noise CMOS image sensors using column-parallel forward noise canceling circuitry**, Tsung-Ling Li, Yasuyuki Goda, Shunichi Wakashima, Rihito Kuroda, Shigetoshi Sugawa, Tohoku Univ. (Japan) . . . . . [8659-15]

9:30 am: **A novel pixel design with hybrid type isolation scheme for low dark current in CMOS image sensor**, Sung Ho Choi, Sungkyunkwan Univ. (Korea, Republic of) and Samsung Electronics Co., Ltd. (Korea, Republic of); Yi Tae Kim, Min Seok Oh, Samsung Electronics Co., Ltd. (Korea, Republic of); Young Hwan Park, Samsung Advanced Institute of Technology (Korea, Republic of); Jeong Jin Cho, Young Heub Jang, Hyung Jun Han, Jong Won Choi, Ho Woo Park, Sang Il Jung, Hoon Sang Oh, Jung Chak Ahn, Hiroshige Goto, Chi Young Choi, Samsung Electronics Co., Ltd. (Korea, Republic of); Yonghan Roh, Sungkyunkwan Univ. (Korea, Republic of) . . . . . [8659-16]

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

Session 5

Room: Regency Ballroom C . . Thu 10:30 am to 11:50 am

Technological Improvements

Session Chair: **Franz Riedlberger,** Jazz Semiconductor, Inc. (United States)

10:30 am: **Continuous fabrication technology for improving resolution in RGB-stacked organic image sensor**, Toshikatsu Sakai, Hokuto Seo, Satoshi Aihara, Misao Kubota, NHK Science & Technology Research Labs. (Japan); Mamoru Furuta, Kochi Univ. of Technology (Japan) . . . . [8659-17]

10:50 am: **Biological tissue identification using a multispectral imaging system**, Céline Delporte, Univ. Pierre et Marie Curie (France); Sylvie Sautrot, Univ. Denis Diderot (France) and Univ. Pierre et Marie Curie (France); Mohamed Ben Chouikha, Univ. Pierre et Marie Curie (France); Françoise Viénot, Muséum national d'Histoire naturelle (France); Georges Alquié, Univ. Pierre et Marie Curie (France) . . . . . [8659-18]

11:10 am: **A CMOS image sensor using floating capacitor load readout operation**, Shunichi Wakashima, Yasuyuki Goda, Tsung-Ling Li, Rihito Kuroda, Shigetoshi Sugawa, Tohoku Univ. (Japan) . . . . . [8659-19]

11:30 am: **An UV Si-photodiode with almost 100% interal Q.E. and high transmittance on-chip multilayer dielectric stack**, Yasumasa Koda, Rihito Kuroda, Taiki Nakazawa, Yukihisa Nakao, Shigetoshi Sugawa, Tohoku Univ. (Japan). . . . . [8659-20]

Lunch Break . . . . . Thu 11:50 am to 1:30 pm

Session 6

Room: Regency Ballroom C . . . . Thu 1:30 pm to 3:40 pm

Applications

Session Chair: **Alice L. Reinheimer,** e2v (United States)

1:30 pm: **High sensitivity analysis of speckle patterns: a technological challenge for biomedical optics** *(Invited Paper)*, Jean-Michel Tualle, Kinia Barjean, Eric Tinet, Dominique Ettori, Univ. Paris 13 (France) . . . [8659-21]

2:00 pm: **Gesture recognition on smart cameras**, Aziz Dziri, Mehdi Darouich, Stéphane Chevobbe, CEA (France) . . . . . [8659-22]

2:20 pm: **3DS-colorimeter based on a mobile phone camera for industrial applications**, Jari Miettinen, Birgitta Martinkauppi, VTT Electronics (Finland); Pekka Suopajaervi, VTT Technical Research Center of Finland (Finland) . . . . . [8659-23]

2:40 pm: **A single lens with no moving parts for rapid high-resolution 3D image capture,** Daniel C. Gray, Hongquiang Chen, Joseph Czechowski, Frederick Wheeler, Masako Yamada, Juan Pablo Cilia, Russell DeMuth, Esmaeil Heidari, Gil Abramovich, Kevin G. Harding, GE Global Research (United States) . . . . . [8659-24]

3:00 pm: **Measurement and description method for image stabilization performance of digital cameras**, Norihiro Aoki, Nikon Corp. (Japan); Hiroya Kusaka, Panasonic Corp. (Japan); Hiroyuki Otsuka, Canon Inc. (Japan). . . . . [8659-25]

3:20 pm: **Interconnected network of cameras**, Mahdad Hosseini Kamal, Hossein Afshari, Alex Schmid, Yusuf Leblebici, Pierre Vandegheynst, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8659-26]

Conference 8660

Monday–Wednesday 4–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8660

Digital Photography IX

Conference Chairs: **Nitin Sampat,** Rochester Institute of Technology (United States); **Sebastiano Battiato,** Univ. degli Studi di Catania (Italy)

Conference Co-Chairs: **Francisco H. Imai,** Canon U.S.A., Inc. (United States); **Boyd A. Fowler,** BAE Systems Imaging Solutions (United States); **Kevin J. Matherson,** Hewlett-Packard Co. (United States); **Joyce E. Farrell,** Stanford Univ. (United States); **Michael A. Kriss,** MAK Consultants (United States)

Program Committee: **Ajit S. Bopardikar,** Samsung Electronics, India Software Operations Ltd. (India); **Frédéric Cao,** DxO Labs (France); **Peter B. Catrysse,** Stanford Univ. (United States); **Alexandru F. Drimbarean,** Tessera (FotoNation) Ireland Ltd. (Ireland); **Guotong Feng,** Ricoh Innovations, Inc. (United States); **Robert D. Fiete,** ITT Exelis (United States); **Sergio R. Goma,** Qualcomm Inc. (United States); **Mirko Guarnera,** STMicroelectronics (Italy); **Li Hong,** Nikon Research Corp. of America (United States); **Xiaoyun Jiang,** Qualcomm Inc. (United States); **George C. John,** Motorola, Inc. (United States); **Michael A. Kriss,** MAK Consultants (United States); **Jiangtao Kuang,** OmniVision Technologies, Inc. (United States); **Feng Li,** Apple Inc. (United States); **Jingqiang Dylan Li,** Lifesize Communications, Inc. (United States); **Jon S. McElvain,** Dolby Labs., Inc. (United States); **Ricardo J. Motta,** NVIDIA Corp. (United States); **Bo Mu,** BAE Systems Imaging Solutions (United States); **Seishi Ohmori,** Nikon Corp. (Japan); **Manu Parmar,** Qualcomm Inc. (United States); **Gloria G. Putnam,** Truesense Imaging, Inc. (United States); **John R. Reinert-Nash,** Lifetouch, Inc. (United States); **Brian G. Rodricks,** BAE Systems Imaging Solutions (United States); **Filippo D. Stanco,** Univ. degli Studi di Catania (Italy); **Qun Sun,** GalaxyCore, Inc. (United States); **Sabine Süsstrunk,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Touraj Tajbakhsh,** Apple Inc. (United States); **Radka Tezaur,** Nikon Precision Inc. (United States); **Michael Wang,** Cisco Systems, Inc. (United States); **Dietmar Wüller,** Image Engineering GmbH & Co. KG (Germany); **Weihua Xiong,** OmniVision Technologies, Inc. (United States); **Alireza Yasan,** Foveon Inc. (United States); **Lei Zhang,** The Hong Kong Polytechnic Univ. (Hong Kong, China)

Monday 4 February

Session 1

Room: Regency Ballroom A . . . Mon 9:00 am to 10:40 am

Image Acquisition

Session Chairs: **Nitin Sampat,** Rochester Institute of Technology (United States); **Brian G. Rodricks,** BAE Systems Imaging Solutions (United States)

9:00 am: **Multichannel camera calibration**, Wei Li, Julie Klein, RWTH Aachen (Germany) . . . . . [8660-1]

9:20 am: **Direct spatio-spectral datacube reconstruction from raw data using a spatially adaptive spatio-spectral basis**, Yusuke Monno, Masayuki Tanaka, Masatoshi Okutomi, Tokyo Institute of Technology (Japan) . . . . . [8660-2]

9:40 am: **Joint focus stacking and high dynamic range imaging**, Qinchun Qian, Bahadir Gunturk, Louisiana State Univ. (United States); Aziz Umit Batur, Texas Instruments Inc. (United States) . . . . . [8660-3]

10:00 am: **FUJIFILM X10 white orbs and DeOrbIt**, Henry G. Dietz, Univ. of Kentucky (United States) . . . . . [8660-4]

10:20 am: **Automated calibration and optical testing of the AWARE-2 gigapixel multiscale camera**, David S. Kittle, Daniel L. Marks, David J. Brady, Duke Univ. (United States) . . . . . [8660-5]

Coffee Break . . . . . Mon 10:40 am to 11:10 am

Session 2

Room: Regency Ballroom A . . Mon 11:10 am to 12:10 pm

Image Enhancement

Session Chairs: **Sebastiano Battiato,** Univ. degli Studi di Catania (Italy); **Weihua Xiong,** OmniVision Technologies, Inc. (United States)

11:10 am: **Across-resolution adaptive dictionary learning for single-image super-resolution**, Masayuki Tanaka, Ayumu Sakurai, Masatoshi Okutomi, Tokyo Institute of Technology (Japan) . . . . . [8660-6]

11:30 am: **Aesthetic scoring of digital portraits for consumer applications**, Sebastiano Battiato, Marco Moltisanti, Fabrizio Ravì, Univ. degli Studi di Catania (Italy); Arcangelo R Bruna, Filippo Naccari, STMicroelectronics (Italy) . . . . . [8660-7]

11:50 am: **Correcting saturated pixels in images based on human visual characteristics**, Jun Fu, Hui Peng, Xi'an Jiaotong Univ. (China); Xi Chen, Xi'an Jiaotong University (China); Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . [8660-8]

Lunch Break . . . . . Mon 12:10 pm to 1:40 pm

Session 3

Room: Regency Ballroom A . . . . Mon 1:40 pm to 3:00 pm

Sensors and Multispectral

Session Chairs: **Jon S. McElvain,** Dolby Labs., Inc. (United States); **Francisco H. Imai,** Canon U.S.A., Inc. (United States)

1:40 pm: **Spectrally tunable pixel sensors**, Giacomo Langfelder, Cesare Buffa, Antonio F. Longoni, Federico Zaraga, Politecnico di Milano (Italy) . . . . . [8660-9]

2:00 pm: **Design, simulation, and evaluation of imaging oximeters**, Steve Dai, Ye Tian, Joyce E. Farrell, Stanford Univ. (United States) . . . . . [8660-10]

2:20 pm: **A collection of hyperspectral images for imaging systems research**, Torbjorn Skauli, Norwegian Defense Research Establishment (Norway); Joyce E. Farrell, Stanford Univ. (United States) . . . . . [8660-11]

2:40 pm: **Evaluation of multispectral plenoptic camera**, Lingfei Meng, Ting Sun, Rich Kosoglow, Kathrin Berkner, Ricoh Innovations, Inc. (United States) . . . . . [8660-12]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 4

Room: Regency Ballroom A . . . .Tue 9:30 am to 10:30 am

Image Quality

Session Chairs: **Michael A. Kriss,** MAK Consultants (United States); **Boyd A. Fowler,** BAE Systems Imaging Solutions (United States)

9:30 am: **Median filtering in multispectral filter array demosaicking**, Xingbo Wang, Univ. de Bourgogne (France) and Gjøvik Univ. College (Norway); Jean-Baptiste Thomas, Univ. de Bourgogne (France); Jon Y. Hardeberg, Gjøvik Univ. College (Norway); Pierre Gouton, Univ. de Bourgogne (France). . . . . [8660-13]

9:50 am: **A novel blind image quality assessment metric and its feature selection strategy**, Ying Chu, Xi'an Jiaotong Univ. (China) and Shenzhen Univ. (China); Xuanqin Mou, Wei Hong, Xi'an Jiaotong Univ. (China); Zhen Ji, Shenzhen Univ. (China). . . . . [8660-14]

10:10 am: **edge patterns extracted from natural images and their statistics for reduced-reference image quality assessment**, Wenting Shao, Xuanqin Mou, Xi'an Jiaotong Univ. (China). . . . . [8660-15]

Coffee Break . . . . . .Tue 10:30 am to 11:00 am

Session 5

Room: Regency Ballroom A . . Tue 11:00 am to 12:30 pm

New Applications for Digital Photography: Cell Phone Microscopy

Session Chairs: **Joyce E. Farrell,** Stanford Univ. (United States); **Peter B. Catrysse,** Stanford Univ. (United States)

11:00 am: **Mobile-phone-based clinical microscopy** *(Invited Paper)*, Daniel A. Fletcher, Univ. of California, Berkeley (United States) . . [8660-16]

11:30 am: **Computational microscopy, sensing, and diagnostics on a cellphone** *(Invited Paper)*, Aydogan Ozcan, Univ. of California, Los Angeles (United States). . . . . [8660-17]

12:00 pm: **Optics in pathology: from superresolution microscopy to point-of-care devices** *(Invited Paper)*, Sebastian Wachsmann-Hogiu, NSF Ctr. for Biophotonics Science and Technology (United States) . . [8660-18]

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

Session 6

Room: Regency Ballroom A . . . . Tue 2:00 pm to 3:20 pm

Image Quality Evaluation Methods/Standards for Mobile and Digital Photography I: Joint Session with Conferences 8653, 8660, and 8667C

Session Chairs: **Sebastiano Battiato,** Univ. degli Studi di Catania (Italy); **Peter D. Burns,** Burns Digital Imaging (United States)

2:00 pm: **SPCA: a no-reference image quality assessment based on the statistic property of the PCA on nature images**, Yun Zhang, Chao Wang, Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . [8660-19]

2:20 pm: **A no-reference quality assessment algorithm for JPEG2000-compressed images based on local sharpness**, Phong V. Vu, Damon M. Chandler, Oklahoma State Univ. (United States) . . . . . [8653-1]

2:40 pm: **Low-light performance of digital cameras**, Dietmar Wüller, Image Engineering GmbH & Co. KG (Germany) . . . . . [8667-50]

3:00 pm: **Local binary pattern statistic feature for reduced reference image quality assessment**, Min Zhang, Gifu Univ. School of Medicine (Japan); Xuanqin Mou, Xi'an Jiaotong Univ. (China); Hiroshi Fujita, Gifu Univ. School of Medicine (Japan); Lei Zhang, The Hong Kong Polytechnic Univ. (China); Xiangrong Zhou, Gifu Univ. School of Medicine (Japan); Wufeng Xue, Xi'an Jiaotong Univ. (China). . . . . [8660-20]

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

Session 7

Room: Regency Ballroom A . . . . Tue 4:00 pm to 5:00 pm

Image Quality Evaluation Methods/Standards for Mobile and Digital Photography II: Joint Session with Conferences 8653, 8660, and 8667C

Session Chairs: **Dietmar Wüller,** Image Engineering GmbH & Co. KG (Germany); **Nitin Sampat,** Rochester Institute of Technology (United States)

4:00 pm: **Measurement and protocol for evaluating video and still stabilization systems**, Etienne Cormier, Frédéric Cao, Frédéric Guichard, Clément Viard, DxO Labs (France) . . . . . [8653-2]

4:20 pm: **Noise evaluation standard of image sensor using visual spatio-temporal frequency characteristics**, Takeyuki Fujii, Shoichi Suzuki, Shinichiro Saito, Sony Corp. (Japan) . . . . . [8667-51]

4:40 pm: **Evaluation of a high dynamic range video camera with non-regular sensor**, Michael Schöberl, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany) and Fraunhofer-Institut für Integrierte Schaltungen (Germany); Joachim Keinert, Matthias Ziegler, Fraunhofer-Institut für Integrierte Schaltungen (Germany); Jürgen Seiler, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany); Marco Niehaus, Gerald Schuller, Technische Univ. Ilmenau (Germany); André Kaup, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany); Siegfried Fößel, Fraunhofer-Institut für Integrierte Schaltungen (Germany) . . . . . [8660-21]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Spectral characterization of COTS RGB cameras using a linear variable edge filter, Daniel L. Bongiorno, Mitch Bryson, Donald G. Dansereau, Stefan B. Williams, The Univ. of Sydney (Australia) . . [8660-22]

Focus finding using scale invariant patterns, David P. Morgan-Mar, Matthew R. Arnison, Canon Information Systems Research Australia Pty. Ltd. (Australia) . . . . . [8660-23]

Frequency division multiplexed imaging, Bahadir Gunturk, Martin Feldman, Louisiana State Univ. (United States) . . . . . [8660-24]

Bayesian estimation of device spectral sensitivities and its application for improvement of color accuracy using color balancing filter, Yusuke Murayama, Jay Arre O. Toque, Pengchang Zhang, Ari Ide-Ektessabi, Kyoto Univ. (Japan) . . . . . [8660-25]

Achieving equal image quality at lower bit rates using evolved image reconstruction transforms, Brendan J. Babb, Frank W. Moore, Univ. of Alaska Anchorage (United States). . . . . [8660-26]

Computer graphics solutions for pottery colors specification, Filippo D. Stanco, Anna M. Gueli, Univ. degli Studi di Catania (Italy). . . . [8660-27]

Investigating the lateral resolution in a plenoptic capturing system using the SPC model, Mitra Damghanian, Roger Olsson, Mårten Sjöström, Mid Sweden Univ. (Sweden); Hector Navarro, Manuel Martinez-Corral, Univ. de València (Spain). . . . . [8660-28]

Conference 8661

Tuesday–Wednesday 5–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8661

Image Processing: Machine Vision Applications VI

Conference Chairs: **Philip R. Bingham,** Oak Ridge National Lab. (United States); **Edmund Y. Lam,** The Univ. of Hong Kong (Hong Kong, China)

Program Committee: **Pierrick T. Bourgeat,** Australian e-Health Research Ctr. (Australia); **Jun Cheng,** Chinese Academy of Sciences (China); **Michael J. Cree,** The Univ. of Waikato (New Zealand); **Laurent C. Duval,** IFP (France); **Ewald Fauster,** Montan Univ. Leoben (Austria); **Steven P. Floeder,** 3M Co. (United States); **David Fofi,** Univ. de Bourgogne (France); **Luciano F. Fontoura Da Costa,** Univ. de São Paulo (Brazil); **Shaun Gleason,** National Oceanography Ctr. (United Kingdom); **Olivier Laligant,** Univ. de Bourgogne (France); **Fabrice Meriaudeau,** Univ. de Bourgogne (France); **Dinesh Nair,** National Instruments Corp. (United States); **Kurt S. Niel,** Fachhochschule Wels (Austria); **Arnau Oliver,** Univ. de Girona (Spain); **Vincent C. Paquit,** Oak Ridge National Lab. (United States); **Jeffery R. Price,** Aldis, Inc. (United States); **Ravishankar Rao,** IBM Thomas J. Watson Research Ctr. (United States); **Hamed Sari-Sarraf,** Texas Tech Univ. (United States); **Peter Schelkens,** Vrije Univ. Brussel (Belgium); **Ivan W. Selesnick,** Polytechnic Institute of New York Univ. (United States); **Ralph Seulin,** Univ. de Bourgogne (France); **Christophe Stolz,** Univ. de Bourgogne (France); **Yvon Voisin,** Univ. de Bourgogne (France); **Gerald Zauner,** FH OÖ Forschungs & Entwicklungs GmbH (Austria)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 1

Room: Sandpebble Room E . . . .Tue 9:30 am to 10:30 am

Systems I

Session Chair: **Philip R. Bingham,** Oak Ridge National Lab. (United States)

9:30 am: **A polynomial phase-shift algorithm for high-precision three-dimensional profilometry**, Fuqin Deng, The Univ. of Hong Kong (Hong Kong, China); Chang Liu, Wui-Fung Sze, Jiangwen Deng, Shunming K. Fung, ASM Pacific Technology Ltd. (China); Edmund Y. Lam, The Univ. of Hong Kong (China) . . . . . [8661-1]

9:50 am: **High-temperature dual-band thermal imaging by means of high-speed CMOS camera system**, Wolfgang Hauer, Gerald Zauner, FH OÖ Forschungs & Entwicklungs GmbH (Austria) . . . . . [8661-2]

10:10 am: **A state observer for using a slow camera as a sensor for fast control applications**, Reinhard Gahleitner, Martin Schagerl, Univ. of Applied Sciences Upper Austria (Austria) . . . . . [8661-3]

Coffee Break . . . . . .Tue 10:30 am to 11:00 am

Session 2

Room: Sandpebble Room E . . Tue 11:00 am to 12:20 pm

Applications I

Session Chair: **Hamed Sari-Sarraf,** Texas Tech Univ. (United States)

11:00 am: **Multiple-level patch-based object tracking using the MLBP-based integral histogram**, Jirui Yuan, Karen O. Egiazarian, Tampere Univ. of Technology (Finland) . . . . . [8661-4]

11:20 am: **Periodicity estimation of nearly regular textures based on discrepancy norm**, Gernot Stübl, Peter Haslinger, Volkmar Wieser, Software Competence Ctr. Hagenberg (Austria); Josef Scharinger, Johannes Kepler Univ. Linz (Austria); Bernhard Moser, Software Competence Ctr. Hagenberg (Austria) . . . . . [8661-5]

11:40 am: **Gradient feature matching for in-plane rotation invariant face sketch recognition**, Ann Theja Alex, Vijayan K. Asari, Alex Mathew, Univ. of Dayton (United States) . . . . . [8661-6]

12:00 pm: **An iris segmentation algorithm based on edge orientation for off-angle iris recognition**, Mahmut Karakaya, Del Barstow, Hector J. Santos-Villalobos, Christopher Boehnen, Oak Ridge National Lab. (United States) . . . . . [8661-7]

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

Session 3

Room: Sandpebble Room E . . . . Tue 2:00 pm to 3:20 pm

Algorithms I

Session Chair: **Edmund Y. Lam,** The Univ. of Hong Kong (Hong Kong, China)

2:00 pm: **Using information from shape interiors for better shape matching**, Vittal Premachandran, Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore) . . . . . [8661-8]

2:20 pm: **Efficient defect detection with sign information of Walsh Hadamard transform**, Qiang Zhang, Arizona State Univ. (United States); Peter J. L. van Beek, Chang Yuan, Cindy Xu, Hae-jong Seo, Sharp Labs. of America, Inc. (United States); Baoxin Li, Arizona State Univ. (United States) . . . . . [8661-9]

2:40 pm: **Improving the performance of interest point detectors with contrast stretching functions**, Prabakar Gunashekhar, Bahadir Gunturk, Louisiana State Univ. (United States) . . . . . [8661-10]

3:00 pm: **Object detection using feature-based template matching**, Simone Bianco, Marco Buzzelli, Raimondo Schettini, Univ. degli Studi di Milano-Bicocca (Italy) . . . . . [8661-11]

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

Session 4

Room: Sandpebble Room E . . . . Tue 3:50 pm to 5:10 pm

Systems II

3:50 pm: **Touch sensing analysis using multi-modal acquisition system**, Jeffrey S. King, Zachi I. Baharav, Corning Incorporated (United States) . . . . . [8661-12]

4:10 pm: **OrphanpPoint relocation and 3D super-resolution**, Seungkyu Lee, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8661-13]

4:30 pm: **Structural deformation measurement via efficient tensor polynomial calibrated electro-active glass targets**, Christoph Gugg, Matthew J. Harker, Paul L. O'Leary, Montan Univ. Leoben (Austria) . . . . . [8661-14]

4:50 pm: **Machine vision system for the control of tunnel boring machines**, Michael Habacher, Matthew J. Harker, Paul L. O'Leary, Montan Univ. Leoben (Austria) . . . . . [8661-15]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 5

Room: Sandpebble Room E . . . Wed 9:30 am to 10:30 am

Algorithms II

Session Chair: **Edmund Y. Lam,** The Univ. of Hong Kong (Hong Kong, China)

9:30 am: **Eliminating illumination effects by discrete cosine transform (DCT) coefficients' attenuation and accentuation**, Shan Du, Mohamed Shehata, Wael Badawy, Choudhury A. Rahman, Intelliview Technologies Inc. (Canada) . . . . . [8661-16]

9:50 am: **Non-rigid ultrasound image registration using generalized relaxation labeling process**, Jong-Ha Lee, Yeong Kyeong Seong, Moon Ho Park, Kyoung-Gu Woo, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8661-17]

10:10 am: **Mammogram CAD, hybrid registration, and iconic analysis**, Arnaud Boucher, Nicole Vincent, Florence Cloppet, Univ. Paris Descartes (France) . . . . . [8661-18]

Coffee Break . . . . . Wed 10:30 am to 11:00 am

Session 6

Room: Sandpebble Room E . . Wed 11:00 am to 12:20 pm

Applications II

11:00 am: **Neutron imaging for geothermal energy systems**, Philip R. Bingham, Larry Anovitz, Yarom Polsky, Oak Ridge National Lab. (United States); Luc Dessieux, The Univ. of Tennessee (United States); Hassina Bilheux, Oak Ridge National Lab. (United States) . . . . . [8661-19]

11:20 am: **Wave front distortion based fluid flow imaging**, Emishaw D. Iffa, Wolfgang Heidrich, The Univ. of British Columbia (Canada) . [8661-20]

11:40 am: **Autonomous ship classification using synthetic and real color images**, Deniz Kumlu, B. Keith Jenkins, The Univ. of Southern California (United States) . . . . . [8661-21]

12:00 pm: **Fast and flexible 3D object recognition solutions for machine vision applications**, Ira Effenberger, Jens U. Kühnle, Fraunhofer-Institut für Produktionstechnik und Automatisierung (Germany) . [8661-22]

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

Session 7

Room: Sandpebble Room E . . . . Wed 2:00 pm to 3:20 pm

Algorithms III: Pattern Recognition

Session Chair: **Philip R. Bingham,** Oak Ridge National Lab. (United States)

2:00 pm: **Low complexity smile detection technique for mobile devices**, Valeria Tomaselli, Mirko Guarnera, Claudio Marchisio, Simone Moro, STMicroelectronics (Italy) . . . . . [8661-23]

2:20 pm: **Density-induced oversampling for highly imbalanced datasets**, Daniel Fecker, Volker Märgner, Tim Fingscheidt, Technische Univ. Braunschweig (Germany) . . . . . [8661-24]

2:40 pm: **Coherent image layout using an adaptive visual vocabulary**, Scott E. Dillard, Google (United States); Michael J. Henry, Shawn Joel Bohn, Luke J. Gosink, Pacific Northwest National Lab. (United States) . . . . . [8661-25]

3:00 pm: **Shape recognition for capacitive touch display**, Ivana Guarneri, Alessandro Capra, STMicroelectronics (Italy); Giovanni M. Farinella, Sebastiano Battiato, Univ. degli Studi di Catania (Italy) [8661-26]

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

An elliptic phase-shifting algorithm for high-speed three-dimensional profilometry, Fuqin Deng, Univ. of Hong Kong (Hong Kong, China); Zhao Li, Istituto Italiano di Tecnologia (Italy); Jia Chen, Harbin Institute of Technology (China); Jiangwen Deng, Shunming K. Fung, ASM Pacific Technology Ltd. (China); Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China) . . . . . [8661-27]

An incompressible fluid flow model with mutual information for MR image registration, Leo Tsai, Herng-Hua Chang, National Taiwan Univ. (Taiwan) . . . . . [8661-29]

Improved skin detection method by iteratively eliminating pseudo-skin colors through combined skin filter, Ohyeol Kwon, Sung-Il Chien, Kyungpook National Univ. (Korea, Republic of) . . . . . [8661-31]

A modified hierarchical graph cut based video segmentation approach for high frame rate video, Sumit Chakravarty, New York Institute of Technology (United States) . . . . . [8661-32]

Power and performance tradeoffs of GPGPU vs. multicore: a case study for stereo matching, Sarala Arunagiri, Jaime Jaloma, Ricardo Portillo, Patricia J. Teller, The Univ. of Texas at El Paso (United States) . . . . . [8661-33]

An efficient algorithm for food quality control based on multispectral signatures, Juan Carlos Valdiviezo-Navarro, Carina Toxqui-Quitl, José Francisco Solís-Villareal, Alfonso Padilla-Vivanco, Univ. Politécnica de Tulancingo (Mexico) . . . . . [8661-34]

Bottle inspector based on machine vision, Carina Toxqui-Quitl, Juan A. Cardenas-Franco, Alfonso Padilla-Vivanco, Juan Carlos Valdiviezo-Navarro, Univ. Politécnica de Tulancingo (Mexico) . . . . . [8661-35]

Static sign language recognition using neural networks, José Francisco Solís-Villareal, Oscar Morales-Álvarez, Carina Toxqui-Quitl, Juan Carlos Valdiviezo-Navarro, Univ. Politécnica de Tulancingo (Mexico) . . . . . [8661-36]

Defect inspection technology for a gloss-coated surface using patterned illumination, Tsuyoshi Nagato, Takashi Fuse, Tetsuo Koezuka, Fujitsu Labs., Ltd. (Japan) . . . . . [8661-37]

HOG and CS-LBP based detector for surveillance of birds, Mihreteab A. Kidane, Thang Q. Nguyen, Nagaoka Univ. of Technology (Japan) . . . . . [8661-38]

A semi-automatic annotation tool for cooking video, Gianluigi Ciocca, Raimondo Schettini, Simone Bianco, Paolo Napoletano, Univ. degli Studi di Milano-Bicocca (Italy); Roberto Margherita, Gianluca Marini, Giorgio Gianforme, Giuseppe Pantaleo, AlmavivA S.p.A. (Italy) . . . . . [8661-39]

Intensity color contrast descriptors for texture classification, Claudio Cusano, Univ. degli Studi di Milano Bicocca (Italy); Paolo Napoletano, Raimondo Schettini, Univ. degli Studi di Milano-Bicocca (Italy) . . [8661-40]

Conference 8662

Monday–Wednesday 4–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8662

Intelligent Robots and Computer Vision XXX: Algorithms and Techniques

Conference Chairs: **Juha Röning,** Univ. of Oulu (Finland); **David Casasent,** Carnegie Mellon Univ. (United States)

Program Committee: **Norbert Lauinger,** CORRSYS 3D Sensors AG (Germany); **Dah Jye Lee,** Brigham Young Univ. (United States); **Charles A. McPherson,** Draper Lab. (United States); **Kurt S. Niel,** Fachhochschule Wels (Austria); **Yoshihiko Nomura,** Mie Univ. (Japan); **Daniel Raviv,** Florida Atlantic Univ. (United States); **Bernard L. Theisen,** U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States); **Dili Zhang,** Monotype Imaging (United States)

Monday 4 February

Session 1

Room: Bayside Room B . . . . . Mon 9:30 am to 10:30 am

Invited Papers on Intelligent Robotics

Session Chair: **Juha Röning,** Univ. of Oulu (Finland)

9:30 am: **Control issues and recent solutions for voltage controlled piezoelectric elements utilizing artificial neural networks** *(Invited Paper)*, Marko Kauppinen, Juha Röning, Univ. of Oulu (Finland) . . [8662-1]

10:00 am: **The 20th annual intelligent ground vehicle competition: building a generation of robotists** *(Invited Paper)*, Bernard L. Theisen, Andrew D. Kosinski, U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States). . . . . [8662-2]

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

Session 2

Room: Bayside Room B . . . . . Mon 10:50 am to 12:30 pm

Navigation and Visual Path Planning

Session Chairs: **Juha Röning,** Univ. of Oulu (Finland); **Daniel Raviv,** Florida Atlantic Univ. (United States)

10:50 am: **Visual homing with a pan-tilt based stereo camera**, Paramesh Nirmal, Damian Lyons, Fordham Univ. (United States) . [8662-3]

11:10 am: **Motion control for intelligent ground vehicles based on the selection of paths using fuzzy inference**, Shiwei Wang, Taskin Padir, Worcester Polytechnic Institute (United States) . . . . . [8662-4]

11:30 am: **Panoramic stereo sphere vision**, Weijia Feng, Tianjin Univ. (China); Juha Röning, Univ. of Oulu (Finland); Baofeng Zhang, Xiaoning Zong, YI Tian, Tianjin University of Technology (China) . . . . . [8662-5]

11:50 am: **Stabilization and control of a quad-rotor helicopter using a Smartphone device**, Alok Desai, Dah Jye Lee, Jason Moore, Yung-Ping Chang, Brigham Young Univ. (United States). . . . . [8662-6]

12:10 pm: **Loop closure detection using local Zernike moment patterns**, Evangelos Sariyanidi, Istanbul Teknik Üniv. (Turkey); Onur Sencan,Hakan Temeltaş, Istanbul Teknik Üniv. (Turkey). . . . . [8662-7]

Lunch Break . . . . . Mon 12:30 pm to 2:20 pm

Session 3

Room: Bayside Room B . . . . . Mon 2:20 pm to 3:20 pm

Computer Vision Algorithms and Tracking

Session Chair: **Kurt S. Niel,** Fachhochschule Wels (Austria)

2:20 pm: **Optimizing feature selection strategy for adaptive object identification in noisy environment**, Sagar Pandya, The Univ. of Southern California (United States); Thomas T. Lu, Tien-Hsin Chao, Jet Propulsion Lab. (United States). . . . . [8662-8]

2:40 pm: **GPU based real-time trinocular stereo vision**, Yuanbin Yao, RJ Linton, Taskin Padir, Worcester Polytechnic Institute (United States) . . . . . [8662-9]

3:00 pm: **Remotely controlling of mobile robots using gesture captured by the Kinect and recognized by machine learning method**, Roy Chaoming Hsu, Cheng-Ting Liu, Jhih-Wei Jian, Chih-Chuan Lin, Chien-Hung Lai, National Chiayi Univ. (Taiwan) . . . . . [8662-12]

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

Session 4

Room: Bayside Room B . . . . . Mon 4:00 pm to 6:00 pm

Image Understanding and Scene Analysis

Session Chair: **Dah Jye Lee,** Brigham Young Univ. (United States)

4:00 pm: **Relating vanishing points to catadioptric camera calibration**, Wenting Duan, Univ. of Lincoln (United Kingdom); Hui Zhang, United International College (China); Nigel Allinson, Univ. of Lincoln (United Kingdom) . . . . . [8662-13]

4:20 pm: **Natural image understanding using algorithm selection and high-level feedback**, Martin Lukac, Michitaka Kameyama, Kosuke Hiura, Tohoku Univ. (Japan). . . . . [8662-14]

4:40 pm: **Improving shape context using geodesic information and reflection invariance**, Vittal Premachandran, Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore) . . . . . [8662-15]

5:00 pm: **A proposed super-fast scheme for instant-detection-instant-kill of a ground to air missile**, Chialun J. Hu, Southern Illinois Univ. at Carbondale (United States) . . . . . [8662-16]

5:20 pm: **Video surveillance with alerts**, Robert J. Wahlstedt, Whitworth Univ. (United States) . . . . . [8662-17]

5:40 pm: **Finger tracking for hand-held device interface using profile-matching stereo vision**, Yung-Ping Chang, Dah Jye Lee, Jason Moore, Alok Desai, Beau J. Tippetts, Brigham Young Univ. (United States) . . . . . [8662-18]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: Another Look at Signals and Images, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 5

Room: Bayside Room B . . . . . .Tue 9:30 am to 10:30 am

Industrial Robots and Applications

Session Chair: **Terrell Nathan Mundhenk,** HRL Labs., LLC (United States)

9:30 am: **Training industrial robots with gesture recognition techniques**, Jennifer R. Piane, DePaul Univ. (United States) and Yaskawa America, Inc. (United States); Daniela Raicu, Jacob Furst, DePaul Univ. (United States). . . . . [8662-19]

9:50 am: **A restrained-torque-based exoskeleton instructor for inducing forearm flexion motion**, Takuya Nishimura, Yoshihiko Nomura, Ryota Sakamoto, Mie Univ. (Japan) . . . . . [8662-20]

10:10 am: **3D recovery of human gaze in natural environments**, Lucas Paletta, Katrin Santner, Gerald Fritz, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); Heinz Mayer, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Germany) . . . . . [8662-21]

Coffee Break . . . . . .Tue 10:30 am to 11:10 am

Session 6

Room: Bayside Room B . . . . . Tue 11:10 am to 12:50 pm

Outdoor Ground Robotics

Session Chair: **Bernard L. Theisen,** U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States)

11:10 am: **CANINE: results in developing a robotic mine dog**, Parag Batavia, Brian Stancil, Jeff Hyams, Jordan Shelley, Neya Systems LLC (United States); Daniel F. Huber, Hernan Badino, Carnegie Mellon Univ. (United States). . . . . [8662-22]

11:30 am: **Development of dog-like retrieving capability in a ground robot**, Douglas C. MacKenzie, Mobile Intelligence Corp. (United States); Rahul Ashok, James M. Rehg, Georgia Institute of Technology (United States); Gary Witus, Wayne State Univ. (United States) . . . . . [8662-23]

11:50 am: **Multidisciplinary unmanned technology teammate (MUTT)**, Nenad Uzunovic, Anne Schneider, Alberto Lacaze, Karl Murphy, Robotic Research LLC (United States); Mark Del Giorno, Del Services (United States) . . . . . [8662-24]

12:10 pm: **R-MASTIF: Robotic mobile autonomous system for threat interrogation and object fetch**, Aveek K. Das, SRI International Sarnoff (United States); Dinesh Thakur, James F Keller, Univ. of Pennsylvania (United States); Zsolt Kira, Sujit Kuthirummal, SRI International Sarnoff (United States); Mihail Pivtoraiko, Univ. of Pennsylvania (United States) . . . . . [8662-25]

12:30 pm: **LABRADOR: a learning autonomous behavior-based robot for adaptive detection and object retrieval**, Brian M. Yamauchi, Mark Moseley, iRobot Corp. (United States); Jonathan Brookshire, Massachusetts Institute of Technology (United States) . . . . . [8662-26]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Method and application of active visual tracking based on illumination invariants, Jie Su, Harbin Univ. of Science and Technology (China) . . . . . [8662-27]

Supervised linear dimensionality reduction with robust margins for object recognition, Fadi Dornaika, Univ. del País Vasco (Spain); Ammar Assoum, Lebanese Univ. (Lebanon) . . . . . [8662-28]

Using a multi-port architecture of neural-net associative memory based on the equivalency paradigm for parallel cluster image analysis and self-learning, Vladimir G. Krasilenko, Vinnitsa Social Economy Institute (Ukraine); Alexander A. Lazarev, Vinnitsa National Technical Univ. (Ukraine); Sveta K. Grabovlyak, Diana V. Nikitovich, Vinnitsa Social Economy Institute (Ukraine) . . . . . [8662-29]

Conference 8663

Monday–Wednesday 4–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8663

Video Surveillance and Transportation Imaging Applications

Conference Chairs: **Robert Paul Loce,** Xerox Corp. (United States); **Eli Saber,** Rochester Institute of Technology (United States)

Program Committee: **Ghassan Alregib,** Georgia Institute of Technology (United States); **Raja Bala,** Xerox Corp. (United States); **Farhan Baqai,** Apple Inc. (United States); **Alessandro Bevilacqua,** Univ. degli Studi di Bologna (Italy); **Philip Birch,** Univ. of Sussex (United Kingdom); **Alberto Broggi,** Univ. degli Studi di Parma (Italy); **Yang Cai,** Carnegie Mellon Univ. (United States); **Sohail A. Dianat,** Rochester Institute of Technology (United States); **Hassan Foroosh,** Univ. of Central Florida (United States); **Prudhvi Gurram,** U.S. Army Research Lab. (United States); **Mustafa I. Jaber,** IPPLEX Holdings (United States); **Ned Lecky,** Lecky Integration (United States); **Bo Ling,** Migma Systems, Inc. (United States); **Fa-Long Luo,** Element CXI, Inc. (United States); **Sharath Pankanti,** IBM Thomas J. Watson Research Ctr. (United States); **Peter Paul,** Xerox Corp. (United States); **Andreas E. Savakis,** Rochester Institute of Technology (United States); **Dan Schonfeld,** Univ. of Illinois at Chicago (United States); **Oliver Sidla,** SLR Engineering OG (Austria); **Yaowu Xu,** Google (United States)

Monday 4 February

Session 1

Room: Sandpebble Room B . . . Mon 8:30 am to 10:10 am

Video Surveillance I

Session Chair: **Robert Paul Loce,** Xerox Corp. (United States)

8:30 am: **Group localisation and unsupervised detection and classification of basic crowd behaviour events for surveillance applications**, Nadejda S. Roubtsova, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) . . . . . [8663-1]

8:50 am: **Gaussian mixtures for anomaly detection in crowded scenes,** Habib Ullah, Nicola Conci, Lorenza Tenuti, Univ. degli Studi di Trento (Italy) . . . . . [8663-2]

9:10 am: **Space-time correlation filters for human action detection**, Joseph A. Fernandez, B. V. K. Vijaya Kumar, Carnegie Mellon Univ. (United States) . . . . . [8663-3]

9:30 am: **Recognition of two-persons interactions in multi-view surveillance video via proxemics cues and spatio-temporal interest points**, Bo Zhang, Paolo Rota, Nicola Conci, Univ. degli Studi di Trento (Italy) . . . . . [8663-4]

9:50 am: **Weighted symbolic analysis of human behavior for event detection**, Andrea Rosani, Francesco G. B. De Natale, Giulia Boato, Univ. degli Studi di Trento (Italy). . . . . [8663-5]

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

Session 2

Room: Sandpebble Room B . . Mon 10:50 am to 12:30 pm

Video Surveillance II

Session Chair: **Ghassan Alregib,** Georgia Institute of Technology (United States)

10:50 am: **A resource allocation framework for adaptive selection of point matching strategies**, Quentin De Neyer, Li Sun, Christophe De Vleeschouwer, Univ. Catholique de Louvain (Belgium). . . . . [8663-6]

11:10 am: **Human behavior analysis using trajectory data in a PTZ surveillance system**, Sanjeev Kumar, Balasubramanian Raman, Indian Institute of Technology Roorkee (India). . . . . [8663-7]

11:30 am: **Collaborative real-time scheduling of multiple PTZ cameras for multiple objects tracking in video surveillance**, Chung-Lin Huang, National Tsing Hua Univ. (Taiwan). . . . . [8663-8]

11:50 am: **Tracking small targets in wide area motion imagery data**, Alex Mathew, Vijayan K. Asari, Univ. of Dayton (United States) . . . [8663-9]

12:10 pm: **Feature descriptors for object matching in real-time tracking applications**, Gernot Loibner, Oliver Sidla, SLR Engineering OG (Austria) . . . . . [8663-10]

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

Session 3

Room: Sandpebble Room B . . . . Mon 2:00 pm to 3:20 pm

Video Surveillance III

Session Chair: **Mustafa I. Jaber,** IPPLEX Holdings (United States)

2:00 pm: **Identification of overloaded ships based on video surveillance in inland river**, Lei Xie, Wuhan Univ. of Technology (China) . . . . . [8663-11]

2:20 pm: **Ship detection in port surveillance based on context and motion saliency analysis**, Xinfeng Bao, Svitlana Zinger, Technische Univ. Eindhoven (Netherlands); Rob Wijnhoven, ViNotion B.V. (Netherlands); Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) . [8663-12]

2:40 pm: **A CubeSat-size surveillance satellite concept**, Jeremy Straub, Debabrata Ghosh, Naima Kaabouch, Ronald A. Fevig, The Univ. of North Dakota (United States) . . . . . [8663-13]

3:00 pm: **An edge directed super resolution technique for multimedia applications,** Osborn F. de Lima, Sreenath Rao Vantaram, Sankaranarayanan Piramanayagam, Eli Saber, Rochester Institute of Technology (United States); Kurt R. Bengtson, Hewlett-Packard Co. (United States). . . . . [8663-14]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 4

Room: Sandpebble Room B . . . .Tue 9:30 am to 10:30 am

Transportation Imaging I

Session Chair: **Peter Paul,** Xerox Corp. (United States)

9:30 am: **A smart camera based traffic enforcement system: experiences from the field**, Oliver Sidla, Gernot Loibner, SLR Engineering OG (Austria). . . . . [8663-15]

9:50 am: **Algorithm design for automated transportation camera image and video quality check modules**, Ajay Raghavan, Bhaskar Saha, Palo Alto Research Center, Inc. (United States) . . . . . [8663-16]

10:10 am: **Full-body occlusion handling in vision-based traffic density counting**, Evangelos Palinginis, Keitaro Kamiya, Man Woo Park, Ioannis Brilakis, Jorge A. Laval Jr., Randall Guensler, Georgia Institute of Technology (United States) . . . . . [8663-17]

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

Session 5

Room: Sandpebble Room B . . Tue 10:50 am to 12:10 pm

Transportation Imaging II

Session Chair: **Raja Bala,** Xerox Corp. (United States)

10:50 am: **Using visual analytics model for pattern matching in surveillance data**, Mohammad S. Habibi, Tennessee State Univ. (United States) . . . . . [8663-36]

11:10 am: **Situation exploration in a persistent surveillance system with multidimensional data**, Mohammad S. Habibi, Tennessee State Univ. (United States) . . . . . [8663-37]

11:30 am: **Vehicle identification in two non-overlapping views**, Chung-Lin Huang, Asia Univ. (Taiwan) . . . . . [8663-20]

11:50 pm: **Vehicle classification for road tunnel surveillance**, Andrés Frias-Velázquez, Peter Van Hese, Aleksandra Pižurica, Wilfried Philips, Univ. Gent (Belgium) . . . . . [8663-21]

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

Session 6

Room: Sandpebble Room B . . . . Tue 2:00 pm to 3:20 pm

Transportation Imaging III

Session Chair: **Oliver Sidla,** SLR Engineering OG (Austria)

2:00 pm: **Vehicle presence analysis for law enforcement applications and parking lot management**, Yuriy Lipetski, Oliver Sidla, SLR Engineering OG (Austria) . . . . . [8663-22]

2:20 pm: **Video-based parking occupancy detection,** Michael Deruytter, Traficon N.V. (Belgium) . . . . . [8663-23]

2:40 pm: **Motorcycle detection and counting using stereo camera, IR camera, and microphone array**, Bo Ling, Migma Systems, Inc. (United States); David R. P. Gibson, Federal Highway Administration (United States) . . . . . [8663-24]

3:00 pm: **Vehicle-driven video compression/decompression for fast and efficient search in large video databases**, Orhan Bulan, Xerox Research Ctr. (United States); Edgar Bernal, Robert Loce, Xerox Research Center (United States); Wencheng Wu, Xerox Research Ctr. (United States) and Xerox Research Ctr. (United States) . . . . . [8663-25]

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

Session 7

Room: Sandpebble Room B . . . . Tue 4:00 pm to 5:00 pm

Transportation Imaging IV

Session Chair: **Bo Ling,** Migma Systems, Inc. (United States)

4:00 pm: **Vehicle occupancy detection camera position optimization using design of experiments and standard image references**, Peter Paul, Martin Hoover, Mojgan Rabbani, Xerox Corp. (United States) . . . . . [8663-26]

4:20 pm: **HOV/HOT occupancy detection system**, Wayne Daley, Jack W. Wood, John M. Stewart, Colin Usher, Omar Arif, John Turgeson, Erin Hanson, Georgia Tech Research Institute (United States) . . . . . [8663-27]

4:40 pm: **Joint histogram between color and local extrema patterns for object tracking**, Subrahmanyam Murala, Q. M. J. Wu, Univ. of Windsor (Canada); Balasubramanian Raman, R. P. Maheshwari, Indian Institute of Technology Roorkee (India). . . . . [8663-28]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 8

Room: Sandpebble Room B . . . Wed 9:30 am to 10:30 am

Transportation Imaging V

Session Chair: **Eli Saber,** Rochester Institute of Technology (United States)

9:30 am: **Adaptive real-time road detection using VRay and A-MSRG in complex environments**, SunHee Weon, SungIl Joo, HyungIl Choi, Soongsil Univ. (Korea, Republic of). . . . . [8663-29]

9:50 am: **Intensity estimation method of LED array for visible light communication**, Takanori Ito, Tomohiro Yendo, Nagaoka Univ. of Technology (Japan); Arai Shintaro, Kagawa National College of Technology (Japan); Takaya Yamazato, Hiraku Okada, Toshiaki Fujii, Nagoya Univ. (Japan). . . . . [8663-30]

10:10 am: **An improved background segmentation method for ghost removals**, Waqas Hassan, Philip Birch, Rupert Young, Chris Chatwin, Univ. of Sussex (United Kingdom). . . . . [8663-31]

Coffee Break . . . . . Wed 10:30 am to 11:00 am

Session 9

Room: Sandpebble Room B . . Wed 11:00 am to 12:10 pm

Video Analytics for Retail

Session Chair: **Sharathchandra Pankanti,** IBM Thomas J. Watson Research Ctr. (United States)

11:00 am: **Retail video analytics: an overview and survey** *(Invited Paper)*, Jonathan H. Connell, Quanfu Fan, Prasad Gabbur, Norman Haas, Sharathchandra Pankanti, Hoang Trinh, IBM Thomas J. Watson Research Ctr. (United States) . . . . . [8663-32]

11:30 am: **Video-CRM: understanding customer behaviors in stores**, Myron D. Flickner, David Beymer, IBM Almaden Research Ctr. (United States); Ismail Haritaoglu, Anvato, Inc. (United States). . . . . [8663-33]

11:50 am: **Human object articulation for CCTV video forensics**, Iffat Zafar, Muhammad Fraz, Eran Edirisinghe, Loughborough Univ. (United Kingdom) . . . . . [8663-35]

Conference 8664

Monday–Tuesday 4–5 February 2013 • Proceedings of IS&T/SPIE Vol. 8664

Imaging and Printing in a Web 2.0 World IV

Conference Chairs: **Qian Lin,** Hewlett-Packard Labs. (United States); **Jan P. Allebach,** Purdue Univ. (United States); **Zhigang Fan,** Xerox Corp. (United States)

Program Committee: **Patricia Albanese,** Rochester Institute of Technology (United States); **Kathrin Berkner,** Ricoh Innovations, Inc. (United States); **Susanne Christine Johanna Boll,** Carl von Ossietzky Univ. Oldenburg (Germany); **Reiner Fageth,** CeWe Color AG & Co. OHG (Germany); **Yuli Gao,** Google (United States); **Michael J. Gormish,** Ricoh Innovations, Inc. (United States); **Meichun Hsu,** Hewlett-Packard Labs. (United States); **Andrew A. Hunter,** Hewlett-Packard Labs. (United Kingdom); **Xiaofan Lin,** A9.com, Inc. (United States); **Jerry Liu,** Hewlett-Packard Labs. (United States); **Yonghong Tian,** Peking Univ. (China); **Shengjin Wang,** Tsinghua Univ. (China); **Wiley H. Wang,** Shutterfly (United States); **Rong Yan,** Facebook Inc. (United States); **Yonghui Zhao,** Apple Inc. (United States)

Monday 4 February

Session 1

Room: Regency Ballroom C . . . Mon 8:50 am to 10:10 am

Web Publishing and Online Photo Services

8:50 am: **Videos in tangible products**, Reiner Fageth, Ralf Wieting, CeWe Color AG & Co. OHG (Germany) . . . . . [8664-1]

9:10 am: **HP Smart Marketing Suite: the future of dynamic content publishing,** Galo Gimenez, Hewlett-Packard Co. (Spain); Jitendra Kumar, G. K. Tejaswi, Hewlett-Packard Labs. India (India); Eduardo Argollo, Hewlett-Packard Co. (Spain). . . . . [8664-2]

9:30 am: **TopicSelect: a platform for automated publications of Web content**, Yu Zhang, Xiao-Wei Wu, Hewlett-Packard China Co., Ltd. (China); Jerry Liu, Hewlett-Packard Labs. (United States) . . . . . [8664-3]

9:50 am: **The CloudBoard research platform: an interactive whiteboard for corporate users**, John Barrus, Edward L. Schwartz, Ricoh Innovations, Inc. (United States) . . . . . [8664-4]

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

Session 2

Room: Regency Ballroom C . . Mon 10:50 am to 12:10 pm

Page Design, Layout Analysis, and Creation I

10:50 am: **Automatic page composition with nested sub-layouts**, Andrew A. Hunter, Hewlett-Packard Labs. (United Kingdom) . . . . [8664-5]

11:10 am: **Graph-based layout analysis for PDF documents**, Canhui Xu, Zhi Tang, Xin Tao, Yun Li, Cao Shi, Peking Univ. (China) . . . . . [8664-6]

11:30 am: **Learning probabilistic document template models via interaction**, Ildus Ahmadullin, Niranjan Damera-Venkata, Hewlett-Packard Labs. (United States). . . . . [8664-7]

11:50 am: **Interaction paradigms for photo book layout on mobile devices**, Philipp Sandhaus, CeWe Color AG & Co. OHG (Germany) . . . . . [8664-8]

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

Session 3

Room: Regency Ballroom C . . . . Mon 2:00 pm to 3:20 pm

Page Design, Layout Analysis, and Creation II

2:00 pm: **Non-Manhattan layout extraction algorithm**, Aziza Satkhozhina, Purdue Univ. (United States); Ildus Ahmadullin, Hewlett-Packard Labs. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . [8664-9]

2:20 pm: **Automatic design of colors for magazine covers,** Ali Jahanian, Jan P. Allebach, Purdue Univ. (United States); Jerry Liu, Qian Lin, Daniel Tretter, Eamonn O'Brien-Strain, Seungyon C. Lee, Nic Lyons, Hewlett-Packard Labs. (United States). . . . . [8664-10]

2:40 pm: **Content-aware automatic cropping for consumer photos**, Henry Tang, Daniel Tretter, Qian Lin, Hewlett-Packard Labs. (United States) . . . . . [8664-11]

3:00 pm: **Automatic photobook: focusing on image selection and image layout based on content and composition**, Shao-Fu Xue, Purdue Univ. (United States); Henry Tang, Daniel Tretter, Qian Lin, Hewlett-Packard Labs. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . [8664-12]

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

Session 4

Room: Regency Ballroom C . . . . Mon 4:00 pm to 5:40 pm

Analysis of Web Content and Digital Assets

4:00 pm: **Visualization and exploration for recommender systems in enterprise organization**, Zachi Karni, Hewlett-Packard Labs. Israel Ltd. (Israel); Lior Shapira, Microsoft Corp. (United States). . . . . [8664-13]

4:20 pm: **Augmented distinctive features with color and scale invariance**, Yan Liu, Xiaoqing Lu, Zhi Tang, Yeyang Qin, Peking Univ. (China); Jianbo Xu, Peking Univ. Founder Group Corp. (China) . . [8664-14]

4:40 pm: **A research on video text tracking and recognization**, Baokang Wang, Changsong Liu, Xiaoqing Ding, Tsinghua Univ. (China) . . [8664-15]

5:00 pm: **Image vectorization using blue-noise sampling**, Jiaojiao Zhao, Jie Feng, Bingfeng Zhou, Peking Univ. (China). . . . . [8664-16]

5:20 pm: **Non-iterative normalized feature extraction in large viewpoint variances based on PCA of gradient**, Jian Zhang, Song Cao, Di Wen, Tsinghua Univ. (China). . . . . [8664-17]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 5

Room: Regency Ballroom C . . . .Tue 9:30 am to 10:30 am

Mobile Computing, Services, and Applications I

9:30 am: **Geometric enumerated chrominance watermark embed for spot colors**, Alastair M. Reed, Robert Lyons, John Stach, Digimarc Corp. (United States). . . . . [8664-18]

9:50 am: **Dual resolution 2D color barcode**, Zhigang Fan, Xerox Corp. (United States); Yonghui Zhao, Apple Inc. (United States); Hengzhou Ding, Xerox Corp. (United States). . . . . [8664-19]

10:10 am: **HP EOS cross platform mobile solution**, Junhua Fu, Hua Zhang, Hewlett-Packard China Co., Ltd. (China); Jerry Liu, Hewlett-Packard Labs. (United States). . . . . [8664-20]

Coffee Break . . . . . .Tue 10:30 am to 11:00 am

Room: Grand Peninsula Ballroom E . . . . . Tue 11:00 am to 12:00 pm

Keynote Session I

Please note the room change for this session.

11:00 am: **Tangible imaging systems** *(Keynote Presentation)*, James A. Ferwerda, Rochester Institute of Technology (United States). . . . . [8664-21]

Lunch Break . . . . . Tue 12:00 pm to 1:00 pm

Session 6

Room: Regency Ballroom C . . . .Tue 1:00 to 2:30 pm

Conference Demonstration Session

This session will provide an opportunity for the authors of selected papers in this conference to demonstrate in an interactive setting the applications described in their papers.

Session 7

Room: Regency Ballroom C . . . . Tue 2:30 pm to 3:30 pm

Mobile Computing, Services, and Applications II

2:30 pm: **Event detection from the microblog**, Tong Sun, Xerox Corp. (United States); Jingxuan Li, Florida International Univ. (United States); Wei Peng, Xerox Corp. (United States) . . . . . [8664-22]

2:50 pm: **Person-based video summarization and retrieval by tracking and clustering temporal face sequences**, Tong Zhang, Hewlett-Packard Labs. (United States); Di Wen, Tsinghua Univ. (China) . . . . . [8664-23]

3:10 pm: **Building an internet-scale web clipping system**, Eamonn O'Brien-Strain, Hewlett-Packard Labs. (United States) . . . . . [8664-24]

Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

Room: Grand Peninsula Ballroom E . . . . . Tue 4:00 to 5:00 pm

Keynote Session II

Please note the room change for this session.

4:00 pm: **That thing in your pocket is really a computer!: the future of mobile imaging** *(Keynote Presentation)*, Edward J. Delp III, Purdue Univ. (United States). . . . . [8664-25]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Conference 8665

Tuesday–Thursday 5–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8665

Media Watermarking, Security, and Forensics 2013

Conference Chairs: **Adnan M. Alattar,** Digimarc Corp. (United States); **Nasir D. Memon,** Polytechnic Institute of New York Univ. (United States); **Chad D. Heitzenrater,** Air Force Research Lab. (United States)

Program Committee: **Mauro Barni,** Univ. degli Studi di Siena (Italy); **Jeffrey A. Bloom,** Dialogic Media Labs (United States); **Scott A. Craver,** Binghamton Univ. (United States); **Edward J. Delp III,** Purdue Univ. (United States); **Jana Dittmann,** Otto-von-Guericke-Univ. Magdeburg (Germany); **Gwenaël Doërr,** Technicolor S.A. (France); **Tomas Filler,** Digimarc Corp. (United States); **Jessica Fridrich,** Binghamton Univ. (United States); **Catalin Grigoras,** Univ. of Colorado (United States); **Anthony T. S. Ho,** Univ. of Surrey (United Kingdom); **Jiwu Huang,** Sun Yat-Sen Univ. (China); **Ton Kalker,** DTS, Inc. (United States); **Andrew D. Ker,** Univ. of Oxford (United Kingdom); **Alex Chichung Kot,** Nanyang Technological Univ. (Singapore); **Chang-Tsun Li,** The Univ. of Warwick (United Kingdom); **Pierre Moulin,** Univ. of Illinois at Urbana-Champaign (United States); **Regunathan Radhakrishnan,** Dolby Labs., Inc. (United States); **Husrev Taha Sencar,** TOBB Ekonomi ve Teknoloji Üniv. (United States); **Gaurav Sharma,** Univ. of Rochester (United States); **Yun Qing Shi,** New Jersey Institute of Technology (United States); **Claus Vielhauer,** Otto-von-Guericke-Univ. Magdeburg (Germany); **Svyatoslav V. Voloshynovskiy,** Univ. of Geneva (Switzerland); **Min Wu,** Univ. of Maryland, College Park (United States); **Chang Dong Yoo,** KAIST (Korea, Republic of)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Room: Evergreen Room . . . .Tue 9:30 am to 10:30 am

Keynote Session I

Session Chair: **Adnan M. Alattar,** Digimarc Corp. (United States)

9:30 am: **Converting watermark research into a technology startup** *(Keynote Presentation)*, Jaap Haitsma, Civolution (United States) . . . . . [8665-1]

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

Session 1

Room: Evergreen Room . . . . . Tue 10:50 am to 12:30 pm

Watermark

Session Chair: **Svyatoslav V. Voloshynovskiy,** Univ. of Geneva (Switzerland)

10:50 am: **Insertion deletion robust audio watermarking: a set theoretic dynamic time warping approach**, Andrew Nadeau, Gaurav Sharma, Univ. of Rochester (United States) . . . . . [8665-2]

11:15 am: **Impeding forgers at photo inception**, Matthias Kirchner, International Computer Science Institute (United States); Peter Winkler, Hany Farid, Dartmouth College (United States) . . . . . [8665-3]

11:40 am: **Watermark embedding in optimal color direction**, Robert Lyons, Alastair M. Reed, John Stach, Digimarc Corp. (United States) . . . . . [8665-4]

12:05 pm: **Video game watermarking**, Waldemar Berchtold, Marcel Schäfer, Sascha Zmudzinski, Martin Steinebach, Fraunhofer-Institut für Sichere Informations-Technologie (Germany). . . . . [8665-5]

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

Video/Demo I: Digimarc

Room: Evergreen Room . . . . . Tue 2:00 pm to 2:15 pm

Session 2

Room: Evergreen Room . . . . . Tue 2:15 pm to 3:30 pm

Security and Biometric

2:15 pm: **Banknote authentication with mobile devices**, Volker Lohweg, Helene Dörksen, Eugen Gillich, Roland Hildebrand, Jan Leif Hoffmann, Ostwestfalen-Lippe Univ. of Applied Sciences (Germany); Jürg Hofmann, Johannes Schaede, KBA-NotaSys S.A. (Switzerland) . . . . . [8665-6]

2:40 pm: **Visibility enhancement and validation of segmented latent fingerprints in crime scene forensics**, Andrey Makrushin, Otto-von-Guericke-Univ. Magdeburg (Germany); Tobias Kiertscher, Fachhochschule Brandenburg (Germany); Mario Hildebrandt, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany); Claus Vielhauer, Fachhochschule Brandenburg (Germany) . . . . . [8665-7]

3:05 pm: **Printed fingerprints at crime scenes: a faster detection of malicious traces using scans of confocal microscopes**, Mario Hildebrandt, Stefan Kiltz, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8665-8]

Coffee Break . . . . . Tue 3:30 pm to 3:50 pm

PANEL DISCUSSION

Room: Evergreen Room . . . . Tue 3:50 pm to 5:20 pm

Panel Discussion I: The Future of Watermarking

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D . . . . . .Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Room: Evergreen Room . . . Wed 9:30 am to 10:30 am

Keynote Session II

9:30 am: **YouTube content ID: background, challenges, and the roadmap ahead** *(Keynote Presentation)*, Thabet Alfishawi, Google (United States); David Erb, Google Zürich (Switzerland). . . . . [8665-9]

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

Session 3

Room: Evergreen Room . . . . . Wed 10:50 am to 12:30 pm

Camera Identification

Session Chair: **Gwenaël Doërr,** Technicolor S.A. (France)

10:50 am: **Sensor fingerprint digests for fast camera identification from geometrically distorted images**, Miroslav Goljan, Jessica Fridrich, Binghamton Univ. (United States) . . . . . [8665-10]

11:15 am: **Case studies and further improvements on source camera identification**, Kenji Kurosawa, Kenro Kuroki, Ken'ichi Tsuchiya, Naoaki Igarashi, Norimitsu Akiba, National Research Institute of Police Science (Japan). . . . . [8665-11]

11:40 am: **Forensic analysis of interdependencies between vignetting and radial lens distortion**, André Fischer, Thomas Gloe, Technische Univ. Dresden (Germany) . . . . . [8665-12]

12:05 pm: **A sneak peek into the camcorder path**, Cherif Ben Zid, Séverine Baudry, Bertrand Chupeau, Gwenaël Doërr, Technicolor S.A. (France) . . . . . [8665-13]

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

Video/Demo II: Audible Magic

Room: Evergreen Room . . . . . Wed 2:00 pm to 2:15 pm

Session 4

Room: Evergreen Room . . . . . Wed 2:15 pm to 3:30 pm

General Forensics

Session Chair: **Ton Kalker,** DTS, Inc. (United States)

2:15 pm: **Ballistic examinations based on 3D data: a comparative study of Hough-transform and geometrical-shape determination for circle-detection and segmentation of cartridge bottoms**, Robert Fischer, Fachhochschule Brandenburg (Germany); Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany); Claus Vielhauer, Otto-von-Guericke Univ. Magdeburg (Germany); Tobias Kiertscher, Fachhochschule Brandenburg (Germany); Stefan Kiltz, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8665-14]

2:40 pm: **Photocopier forensics based on arbitrary text characters**, Changyou Wang, Xiangwei Kong, Shize Shang, Dalian Univ. of Technology (China); Xin'gang You, Beijing Institute of Electronic Technology and Application (China) . . . . . [8665-15]

3:05 pm: **Accelerating video carving from unallocated space**, Hari Kalva, Florida Atlantic Univ. (United States); Anish Parikh, Nirma Univ. of Science & Technology (India); Avinash Srinivasan, George Mason Univ. (United States). . . . . [8665-16]

Interactive Paper Session

Room: Grand Peninsula Ballroom A. . . . . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

A histogram shifting based RDH scheme for H.264/AVC with controllable drift, Zafar Shahid, William Puech, Univ. Montpellier 2 (France) . . . . . [8665-17]

PANEL DISCUSSION

Room: Evergreen Room . . . . Wed 3:50 pm to 5:20 pm

Panel Discussion II: Content Identification and Copy Fraud

Thursday 7 February

PANEL DISCUSSION

Room: Evergreen Room . . . . .Thu 8:20 am to 9:40 am

Panel Discussion III: Steganography and Steganalysis: Who Is Winning?

Session 5

Room: Evergreen Room . . . . . Thu 9:40 am to 11:15 am

Steganography

Session Chair: **Jessica Fridrich,** Binghamton Univ. (United States)

9:40 am: **On the role of side information in steganography in emperical covers**, Jessica Fridrich, Binghamton Univ. (United States) . . . . [8665-19]

10:05 am: **A study of embedding operations and locations for steganography in H.264 video**, Andreas Neufeld, Andrew D. Ker, Univ. of Oxford (United Kingdom). . . . . [8665-20]

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

10:50 am: **Video steganography with multipath motion estimation**, Yun Cao, Xianfeng Zhao, Fenghua Li, Institute of Information Engineering of Chinese Academy of Sciences (China); Nenghai Yu, Univ. of Science and Technology of China (China) . . . . . [8665-21]

Session 6

Room: Evergreen Room . . . . . Thu 11:15 am to 12:30 pm

Steganalysis I

Session Chair: **Andrew D. Ker,** Univ. of Oxford (United Kingdom)

11:15 am: **Random projections of residuals as an alternative to co-occurrences in steganalysis**, Vojtech Holub, Jessica Fridrich, Tomas Denemark, Binghamton Univ. (United States). . . . . [8665-22]

11:40 am: **The challenges of rich features in universal steganalysis**, Tomas Pevny, Czech Technical Univ. in Prague (Czech Republic); Andrew D. Ker, Univ. of Oxford (United Kingdom) . . . . . [8665-23]

12:05 pm: **Exploring multitask learning for steganalysis**, Julie M. Makelberge, Andrew D. Ker, Univ. of Oxford (United Kingdom). . [8665-24]

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

Video/Demo III: Technicolor

Room: Evergreen Room . . . . . Thu 2:00 pm to 2:15 pm

Session 7

Room: Evergreen Room . . . . . Thu 2:15 pm to 3:05 pm

Steganalysis II

2:15 pm: **Quantitative steganalysis using rich models**, Jan Kodovsky, Jessica Fridrich, Binghamton Univ. (United States) . . . . . [8665-26]

2:40 pm: **A cost-effective decision tree based approach to steganalysis**, Liyun Li, Polytechnic Institute of New York Univ. (United States); Husrev T. Sencar, TOBB Univ. of Economics and Technology (Turkey); Nasir Memon, Polytechnic Institute of New York Univ. (United States) . . . . . [8665-25]

Coffee Break . . . . . Thu 3:05 pm to 3:40 pm

Session 8

Room: Evergreen Room . . . . . Thu 3:40 pm to 4:30 pm

Miscellaneous

Session Chair: **Regunathan Radhakrishnan,** Dolby Labs., Inc. (United States)

3:40 pm: **Stegatone performance characterization**, Yung-Yao Chen, Purdue Univ. (United States); Robert Ulichney, Hewlett-Packard Labs. (United States); Jan P. Allebach, Purdue Univ. (United States); Matthew Gaubatz, Hewlett-Packard Labs. (United States); Stephen Pollard, Hewlett-Packard Labs. (United Kingdom). . . . . [8665-27]

4:05 pm: **Localize tampered region via estimating the non-aligned double JPEG compression**, Lanying Wu, Xiangwei Kong, Bo Wang, Shize Shang, Dalian Univ. of Technology (China). . . . . [8665-28]

Room: Evergreen Room . . . . . Thu 4:30 pm to 4:40 pm

Closing Remarks

Conference 8666

Wednesday–Thursday 6–7 February 2013 • Proceedings of IS&T/SPIE Vol. 8666

Visual Information Processing and Communication IV

Conference Chairs: **Amir Said,** Hewlett-Packard Labs. (United States); **Onur G. Guleryuz,** FutureWei Technologies, Inc. (United States); **Robert L. Stevenson,** Univ. of Notre Dame (United States)

Program Committee: **John G. Apostolopoulos,** Hewlett-Packard Labs. (United States); **Vasudev Bhaskaran,** Qualcomm Inc. (United States); **Mireille Boutin,** Purdue Univ. (United States); **Chang Wen Chen,** Univ. at Buffalo (United States); **Gerard de Haan,** Philips Research Nederland B.V. (Netherlands); **Edward J. Delp III,** Purdue Univ. (United States); **Eric Dubois,** Univ. of Ottawa (Canada); **Frederic Dufaux,** Telecom ParisTech (France); **Touradj Ebrahimi,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Keigo Hirakawa,** Univ. of Dayton (United States); **Marta Karczewicz,** Qualcomm Inc. (United States); **Lisimachos Paul Kondi,** Univ. of Ioannina (Greece); **Janusz Konrad,** Boston Univ. (United States); **C. C. Jay Kuo,** The Univ. of Southern California (United States); **Robert Paul Loce,** Xerox Corp. (United States); **Ligang Lu,** IBM Thomas J. Watson Research Ctr. (United States); **Peyman Milanfar,** Univ. of California, Santa Cruz (United States); **Antonio Ortega,** The Univ. of Southern California (United States); **Thrasyvoulos N. Pappas,** Northwestern Univ. (United States); **William A. Pearlman,** Rensselaer Polytechnic Institute (United States); **Fernando Pereira,** Instituto de Telecomunicações (Portugal); **Béatrice Pesquet-Popescu,** Telecom ParisTech (France); **Majid Rabbani,** Eastman Kodak Co. (United States); **Eli Saber,** Rochester Institute of Technology (United States); **Dan Schonfeld,** Univ. of Illinois at Chicago (United States); **Andrew Segall,** Sharp Labs. of America, Inc. (United States); **Gaurav Sharma,** Univ. of Rochester (United States); **Andrew G. Tescher,** AGT Associates (United States); **Anthony Vetro,** Mitsubishi Electric Research Labs. (United States); **John W. Woods,** Rensselaer Polytechnic Institute (United States); **Xiaolin Wu,** McMaster Univ. (Canada); **Wenwu Zhu,** Tsinghua Univ. (China)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D . . . .Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Session 1

Room: Sandpebble Room B . . . .Wed 2:20 pm to 3:20 pm

Session 1

2:20 pm: **Fairness issues in resource allocation schemes for wireless visual sensor networks**, Katerina Pandremmenou, Lisimachos P. Kondi, Konstantinos E. Parsopoulos, Univ. of Ioannina (Greece). . . . . [8666-1]

2:40 pm: **Discussion on information theoretic and simulation analysis of linear shift-invariant edge detection operators**, Bo Jiang, National Institute of Aerospace (United States). . . . . [8666-2]

3:00 pm: **Analysis of uncoded image communication over noisy channels with unequal protection**, Ruiqin Xiong, Peking Univ. (China); Xiaopeng Fan, Harbin Institute of Technology (China); Feng Wu, Microsoft Research Asia (China); Wen Gao, Peking Univ. (China) . . . . . [8666-3]

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Block-layer bit allocation for quality constrained video encoding based on constant perceptual quality, Chao Wang, Xuanqin Mou, Wei Hong, Xi'an Jiaotong Univ. (China); Lei Zhang, The Hong Kong Polytechnic Univ. (Hong Kong, China) . . . . . [8666-20]

A bilateral hole filling algorithm for time-of-flight depth camera, Seung-Won Jung, Ouk Choi, Keechang Lee, James D. K. Kim, Chang-Yeong Kim, Samsung Advanced Insitute of Technology (Korea, Republic of) . . . . . [8666-21]

Utilization of reverse super-resolution techniques to reduce image size for transmission, Jeremy Straub, The Univ. of North Dakota (United States) . . . . . [8666-22]

Thursday 7 February

Session 2

Room: Sandpebble Room B . . . Thu 9:10 am to 10:10 am

Session 2

9:10 am: **Improved motion prediction for scalable extensions of HEVC** *(Invited Paper)*, Xiaoyu Xiu, InterDigital, Ltée (Canada); Yong He, Yuwen He, Yan Ye, InterDigital, Inc. (United States). . . . . [8666-5]

9:30 am: **An HEVC extension for spatial and SNR scalable video coding** *(Invited Paper)*, Heiko Schwarz, Detlev Marpe, Tobias Hinz, Haricharan Lakshman, Thomas Wiegand, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) . . . . . [8666-6]

9:50 am: **Towards a next generation open-source video codec** *(Invited Paper)*, Jim Bankoski, Ronald Bultje, Adrian Grange, John Koleszar, Debargha Mukherjee, Paul Wilkins, Yaowu Xu, Google (United States) . . . . . [8666-7]

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

Session 3

Room: Sandpebble Room B . . Thu 10:40 am to 12:20 pm

Session 3

10:40 am: **Scalable extensions of HEVC for next generation services** *(Invited Paper)*, Louis J. Kerofsky, Jane Zhao, Kiran Misra, Andrew Segall, Sharp Labs. of America, Inc. (United States) . . . . . [8666-8]

11:00 am: **An improved hypothetical reference decoder for HEVC** *(Invited Paper)*, Sachin G. Deshpande, Sharp Labs. of America, Inc. (United States); Miska Hannuksela, Nokia Research Ctr. (Finland); Kimihiko Kazui, Fujitsu Labs., Ltd. (Japan); Thomas Schierl, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); Gary J. Sullivan, Microsoft Corp. (United States); Ye-Kui Wang, Qualcomm Inc. (United States) . . . . . [8666-9]

11:20 am: **On lossless coding for HEVC** *(Invited Paper)*, Wen Gao, Minqiang Jiang, Haoping Yu, Huawei Technologies Co., Ltd. (United States) . . . . . [8666-10]

11:40 am: **Edge adaptive intra field deinterlacing of video images**, Vladimir Lachine, Gregory Smith, Louie Lee, Qualcomm Inc. (Canada) . . . . . [8666-11]

12:00 pm: **On the efficiency of image completion methods for intra prediction in video coding with large block structures**, Dimitar Doshkov, Oscar Jottrand, Thomas Wiegand, Patrick Ndjiki-Nya, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) . . . . . [8666-12]

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

Session 4

Room: Sandpebble Room B . . . . Thu 2:00 pm to 3:20 pm

Session 4

2:00 pm: **Depth-layer-based multiview image synthesis and coding for interactive Z- and X-dimension view switching**, Yu Mao, The Graduate Univ. for Advanced Studies (Japan); Gene Cheung, Yusheng Ji, National Institute of Informatics (Japan) . . . . . [8666-13]

2:20 pm: **Wyner-Ziv coding of depth maps exploiting color motion information**, Matteo Salmistraro, Marco Zamarin, Søren O. Forchhammer, Technical Univ. of Denmark (Denmark) . . . . . [8666-14]

2:40 pm: **Multimodal image registration by iteratively searching keypoint correspondences**, Yong Li, Robert L. Stevenson, Univ. of Notre Dame (United States) . . . . . [8666-15]

3:00 pm: **A spatially varying PSF model for Seidel aberrations and defocus**, Jonathan D. Simpkins, Robert L. Stevenson, Univ. of Notre Dame (United States) . . . . . [8666-16]

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

Session 5

Room: Sandpebble Room B . . . . Thu 4:00 pm to 5:00 pm

Session 5

4:00 pm: **Efficient determination of intra predictability in H.264/AVC and similar codecs**, Seyfullah H. Oguz, Qualcomm Inc. (United States) . . . . . [8666-17]

4:20 pm: **Cubic-panorama image dataset analysis for storage and transmission**, Saeed Salehi, Eric Dubois, Univ. of Ottawa (Canada) . . . . . [8666-18]

4:40 pm: **Efficient streaming of stereoscopic depth-based 3D videos**, Dogancan Temel, Mohammed Aabed, Georgia Institute of Technology (United States); Mashhour Solh, Texas Instruments Inc. (United States); Ghaassan Alregib, Georgia Institute of Technology (United States) . . . . . [8666-19]

Conference 8667A

Monday–Wednesday 4–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8667A

Multimedia Content Access: Algorithms and Systems VII

Conference Chairs: **Cees G. M. Snoek,** Univ. van Amsterdam (Netherlands); **Nicu Sebe,** Univ. degli Studi di Trento (Italy); **Lyndon S. Kennedy,** Yahoo! Inc. (United States)

Program Committee: **John Adcock,** FX Palo Alto Lab. (United States); **Noboru Babaguchi,** Osaka Univ. (Japan); **Tat-Seng Chua,** National Univ. of Singapore (Singapore); **Matthew L. Cooper,** FX Palo Alto Lab. (United States); **Francesco G. B. De Natale,** Univ. degli Studi di Trento (Italy); **Alberto Del Bimbo,** Univ. degli Studi di Firenze (Italy); **Jianping Fan,** The Univ. of North Carolina at Charlotte (United States); **Yuli Gao,** Google (United States); **Alan Hanjalic,** Technische Univ. Delft (Netherlands); **Alexander G. Hauptmann,** Carnegie Mellon Univ. (United States); **Winston H. Hsu,** National Taiwan Univ. (Taiwan); **Gang Hua,** Stevens Institute of Technology (United States); **Xian-Sheng Hua,** Microsoft Research Asia (China); **Yu-Gang Jiang,** Fudan Univ. (China); **Paul H. Lewis,** Univ. of Southampton (United Kingdom); **Xirong Li,** Univ. van Amsterdam (Netherlands); **Rainer W. Lienhart,** Univ. Augsburg (Germany); **Qian Lin,** Hewlett-Packard Labs. (United States); **Vasileios Mezaris,** Informatics and Telematics Institute (Greece); **Chong-Wah Ngo,** City Univ. of Hong Kong (Hong Kong, China); **Yong Rui,** Microsoft Corp. (China); **Alan F. Smeaton,** Dublin City Univ. (Ireland); **John R. Smith,** IBM Thomas J. Watson Research Ctr. (United States); **Hari Sundaram,** Arizona State Univ. (United States); **Qi Tian,** The Univ. of Texas at San Antonio (United States); **Dong Wang,** Hulu (United States); **Meng Wang,** National Univ. of Singapore (Singapore); **Changsheng Xu,** Institute of Automation (China); **Rong Yan,** Facebook Inc. (United States); **Jun Yang,** Facebook Inc. (United States)

Monday 4 February

Welcome Remarks

Room: Sandpebble Room E . . . . Mon 9:00 am to 9:10 am

Room: Sandpebble Room E . . Mon 9:10 am to 10:10 am

Keynote Session

9:10 am: **The three Rs of computer vision: recognition, reconstruction and reorganization** *(Keynote Presentation),* Jitendra Malik, Univ. of California, Berkeley (United States) . . . . . .[8667-1]

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

Session 1

Room: Sandpebble Room E . . Mon 10:40 am to 12:20 pm

Special Session on Multimedia Event Detection

Session Chair: **Cees G. M. Snoek,** Univ. van Amsterdam (Netherlands)

10:40 am: **Video structure extraction** *(Invited Paper)*, Remi Trichet, Ram Nevatia, The Univ. of Southern California (United States). . . . . [8667-2]

11:00 am: **Taming the wild: acoustic segmentation on consumer-produced videos**, Gerald Friedland, Benjamin Elizalde, International Computer Science Institute (United States) . . . . . [8667-3]

11:20 am: **Sparse conditional mixture model: late fusion with missing scores for multimedia event detection**, Ramesh M. Nallapati, Eric Yeh, SRI International (United States) . . . . . [8667-4]

11:40 am: **Can object detectors aid Internet video event retrieval?**, Davide Modolo, Cees Snoek, Univ. van Amsterdam (Netherlands) [8667-5]

12:00 pm: **Multimedia event detection using visual concept signatures**, Ehsan Younessian, Michael Quinn, Teruko Mitamura, Alex Hauptmann, Carnegie Mellon Univ. (United States) . . . . . [8667-6]

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

Session 2

Room: Sandpebble Room E . . . . Mon 2:00 pm to 3:20 pm

Semantic Multimedia Content Analysis

Session Chair: **Nicu Sebe,** Univ. degli Studi di Trento (Italy)

2:00 pm: **A fast approach for integrating ORB descriptors in the bag of words model**, Costantino Grana, Daniele Borghesani, Rita Cucchiara, Univ. degli Studi di Modena e Reggio Emilia (Italy). . . . . [8667-7]

2:20 pm: **Video-based analysis of motion skills in simulation-based surgical training**, Qiang Zhang, Lin Chen, Qiongjie Tian, Baoxin Li, Arizona State Univ. (United States) . . . . . [8667-8]

2:40 pm: **Adaptive segmentation grids for human action recognition in videos**, Nicolas Ballas, Bertran Delezoide, Commissariat à l'Énergie Atomique (France) . . . . . [8667-9]

3:00 pm: **Exploiting visual search theory to infer social interactions**, Paolo Rota, Duc-Tien Dang-Nguyen, Nicola Conci, Nicu Sebe, Univ. degli Studi di Trento (Italy) . . . . . [8667-10]

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

Session 3

Room: Sandpebble Room E . . . . Mon 3:50 pm to 5:30 pm

Bay Area Multimedia and Beyond

Session Chair: **Lyndon S. Kennedy,** Yahoo! Inc. (United States)

3:50 pm: **Machine perception for content discovery at YouTube** *(Keynote Presentation)*, Paul Natsev, Google (United States). . . . [8667-11]

4:50 pm: **Presentation video retrieval using automatically recovered slide and spoken text**, Matthew L. Cooper, FX Palo Alto Lab. (United States) . . . . . [8667-12]

5:10 pm: **VidCat: an image and video analysis service for personal media management**, Lee Begeja, Eric Zavesky, Zhu Liu, David Gibbon, Raghuraman Gopalan, Behzad Shahraray, AT&T Labs. Research (United States) . . . . . [8667-13]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Room: Grand Peninsula Ballroom A Tue 5:30 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 8667A

Wednesday 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Audio stream classification for multimedia database search, Francesca Gasparini, Simone Bianco, Univ. degli Studi di Milano-Bicocca (Italy); Isabella Gagliardi, Maria Teresa Artese, Consiglio Nazionale delle Ricerche (Italy) . . . . . [8667-14]

Structuring a sharded image retrieval database, Eric Liang, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . [8667-15]

Diversification of visual media retrieval results using saliency detection, Oleg Muratov, Giulia Boato, Francesco G. B. De Natale, Univ. degli Studi di Trento (Italy). . . . . [8667-16]

Reconstruction of the image on the Cartesian lattice from a finite number of projections in computed-tomographic imaging, Nan Du, Artyom M. Grigoryan, The Univ. of Texas at San Antonio (United States) . . . . . [8667-74]

Method of field transformation of G-particles for image reconstruction from a finite number of projections, Artyom M. Grigoryan, Nan Du, The Univ. of Texas at San Antonio (United States) . . . . . [8667-75]

Conference 8667B

Monday–Wednesday 4–6 February 2013 • Proceedings of IS&T/SPIE Vol. 8667B

Multimedia on Mobile Devices 2013

Conference Chairs: **Reiner Creutzburg,** Fachhochschule Brandenburg (Germany); **David Akopian,** The Univ. of Texas at San Antonio (United States)

Program Committee: **Sos S. Agaian,** The Univ. of Texas at San Antonio (United States); **Faouzi Alaya Cheikh,** Gjøvik Univ. College (Norway); **Nina T. Bhatti,** Hewlett-Packard Labs. (United States); **Linda Breitlauch,** Mediadesign Hochschule fuer Design und Informatik (Germany); **Chang Wen Chen,** Univ. at Buffalo (United States); **Philip C. L. Chen,** Univ. of Macau (Macao, China); **David Cook,** The British Institute of Technology & E-commerce (United Kingdom); **Kenneth J. Crisler,** Motorola, Inc. (United States); **Stefan Edlich,** Technische Fachhochschule Berlin (Germany); **Atanas P. Gotchev,** Tampere Univ. of Technology (Finland); **Lajos Hanzo,** Univ. of Southampton (United Kingdom); **Zhihai He,** Univ. of Missouri-Columbia (United States); **Louis J. Kerofsky,** Sharp Labs. of America, Inc. (United States); **Hendrik O. Knoche,** Univ. College London (United Kingdom); **Ramanujan Venkata Krishnan,** The Univ. of Texas Health Science Ctr. at San Antonio (United States); **Catalin Lacatus,** Qualcomm, Inc. (United States); **Xin Li,** West Virginia Univ. (United States); **Gabriel G. Marcu,** Apple Inc. (United States); **Manzur M. Murshed,** Monash Univ. (Australia); **Sethuraman A. Panchanathan,** Arizona State Univ. (United States); **Kari A. Pulli,** NVIDIA Corp. (United States); **Matthias Rauterberg,** Technische Univ. Eindhoven (Netherlands); **Phillip A. Regalia,** TELECOM & Management SudParis (France); **René Rosenbaum,** Univ. of California, Davis (United States); **Phanikrishna K. Sagiraju,** The Univ. of Texas at San Antonio (United States); **Abhay Samant,** NI Systems (India) Pvt. Ltd. (India); **Olli Silvén,** Univ. of Oulu (Finland); **Jarmo Henrik Takala,** Tampere Univ. of Technology (Finland); **Marius Tico,** Apple, Inc. (United States); **Haitao Zheng,** Univ. of California, Santa Barbara (United States)

Monday 4 February

Session 4

Room: Sandpebble Room D . . . Mon 9:10 am to 10:10 am

Session 4

9:10 am: **Enabling customer self-service through augmented reality on mobile devices,** Joern Kreutel, Fachhochschule Brandenburg (Germany) . . . . . [8667-17]

9:30 am: **Cognitive styles and visual quality**, Satu Jumisko-Pyykkö, Tampere Univ. of Technology (Finland). . . . . [8667-18]

9:50 am: **Subjective evaluation of HEVC in mobile devices**, Ray Garcia, General Dynamics Itronix Corp. (United States); Hari Kalva, Florida Atlantic Univ. (United States) . . . . . [8667-19]

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

Session 5

Room: Sandpebble Room D . . Mon 10:40 am to 12:30 pm

Session 5

10:40 am: **Location-based tracking using long-range passive RFID and ultrawideband (UWB) communications** *(Invited Paper)*, Faranak Nekoogar, Lawrence Livermore National Lab. (United States) . . . [8667-20]

11:10 am: **Real-time content-aware video retargeting for tunnel vision assistance**, Thomas A. Knack, Andreas E. Savakis, Rochester Institute of Technology (United States) . . . . . [8667-21]

11:30 am: **Human movement activity classification approaches that use wearable sensors and mobile devices**, Sahak I. Kaghyan, Yerevan State Univ. (Armenia); Hakob G. Sarukhanyan, Institute for Informatics and Automation Problems (Armenia); David Akopian, The Univ. of Texas at San Antonio (United States) . . . . . [8667-22]

11:50 am: **Concept for practical exercises for studying autonomous flying robots in a university environment**, Arno Fischer, Reiner Creutzburg, Fachhochschule Brandenburg (Germany). . . . . [8667-23]

12:10 pm: **Applications of multimedia technology on autonomous flying robots for university technology transfer projects**, Reiner Creutzburg, Arno Fischer, Fachhochschule Brandenburg (Germany) . . . . . [8667-24]

Lunch Break . . . . . Mon 12:30 pm to 1:30 pm

Session 6

Room: Sandpebble Room D . . . . Mon 1:30 pm to 3:30 pm

Session 6

1:30 pm: **Mobile variable data pages: from apps to Cloud printing**, Nathan Moroney, Kok-Wei Koh, Hewlett-Packard Labs. (United States) . . . . . [8667-25]

1:50 pm: **Digitized forensics: retaining a link between physical and digital crime scene traces using QR-codes**, Mario Hildebrandt, Stefan Kiltz, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8667-26]

2:10 pm: **Smart apps for applied machine learning on mobile devices: the MOMO project**, Stefan Edlich, Mathias Vogler, Beuth Hochschule für Technik Berlin (Germany) . . . . . [8667-27]

2:30 pm: **Real-time volume rendering of digital medical images on an iOS device**, Eliot Winer, Iowa State Univ. (United States); Christian Noon, Dreamworks Animation SKG, Inc. (United States) . . . . . [8667-28]

2:50 pm: **MessageSpace: a messaging system for health research**, Rodrigo D. Escobar, Anuvrath Joshi, David Akopian, The Univ. of Texas at San Antonio (United States); Deborah Parra-Medina, Laura A. Esparza, The Univ. of Texas Health Science Ctr. at San Antonio (United States)[8667-29]

3:10 pm: **Multi-resolution edge detection with edge pattern analysis**, Bo Jiang, National Institute of Aerospace (United States) . . . . . [8667-30]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Room: Grand Peninsula Ballroom A Tue 5:30 to 7:30 pm

Symposium Demonstration Session

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Conference 8667B

Wednesday 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Interactive Paper Session

Room: Grand Peninsula Ballroom A . Wed 3:30 to 5:30 pm

Interactive papers will be placed on display after 12:30 pm on Wednesday. An interactive paper session, with authors present at their papers, will be held Wednesday afternoon, 3:30 to 5:30 pm. Refreshments will be served.

Clientside Skype forensics: an overview, Tina Meißner, Knut Kröger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany) . . . [8667-31]

Real-time human activity classification using tri-axial accelerometer of mobile device and SQLite database engine, Sahak I. Kaghyan, Armenian-Russian (Slavonic) Univ. (Armenia); David Akopian, The Univ. of Texas at San Antonio (United States); Hakob G. Sarukhanyan, Institute for Informatics and Automation Problems (Armenia) . . . . . [8667-32]

Gradient based fusion of infrared and visual face images using support vector machine for human face identification, Mrinal K. Bhowmik, Priya Saha, Tripura Univ. (India); Debotosh Bhattacharjee, Jadavpur Univ. (India); Barin K. De, Tripura Univ. (India); Mita Nasipuri, Jadavpur Univ. (India) . . . . . [8667-33]

Future mobile access for open-data platforms and the BBC-DaaS system, Ingo Pfennigstorf, Stefan Edlich, Sonam Singh, Beuth Hochschule für Technik Berlin (Germany) . . . . . [8667-34]

HIPAA compliance for messaging systems: MessageSpace case study, Anuvrath Joshi, Rodrigo D. Escobar, David Akopian, The Univ. of Texas at San Antonio (United States); Deborah Parra-Medina, Laura A. Esparza, The Univ. of Texas Health Science Ctr. at San Antonio (United States) . . . . . [8667-35]

Location tracking forensics on GPS handhelds, mobile navigation devices, and smartphones, Stefan Sack, Knut Kröger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany). . . . . [8667-36]

Implementation of professional training in the field of Android forensics by using current software, Knut Kröger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany). . . . . [8667-37]

Possibilities and modification of the forensic investigation process of solid state drives, Frank Irmler, Knut Kröger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany). . . . . [8667-38]

Mobile learning in medicine, Sabri Serkan Gulluoglu, Istanbul Arel Univ. (Turkey) . . . . . [8667-40]

Overview and possibilities of forensic investigation of the Sony Playstation Portable (PSP), Ralph Schön, Stephan Schön, Knut Kröger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany) . . . [8667-41]

An efficient and fast iris location algorithm, Guangyuan Jiang, Changchun Normal Univ. (China) . . . . . [8667-42]

Mobile Imaging System Design and Image Quality

Conference Chairs: **Dietmar Wüller,** Image Engineering GmbH & Co. KG (Germany); **Kevin J. Matherson,** Hewlett-Packard Co. (United States)

Program Committee: **Donald J. Baxter,** STMicroelectronics Ltd. (United Kingdom); **Sergio R. Goma,** Qualcomm Inc. (United States); **Paul M. Hubel,** Apple Inc. (United States); **George John,** Microsoft Corp. (United States); **Jon S. McElvain,** Dolby Labs., Inc. (United States); **Ricardo J. Motta,** NVIDIA Corp. (United States); **Joni Oja,** Nokia Research Ctr. (Finland)

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 7

Room: Pine Room . . . . . .Tue 9:30 am to 10:10 am

Object Classification and Remote Sensing I

Session Chair: **Kevin J. Matherson,** Hewlett-Packard Co. (United States)

9:30 am: **Mobile-based text detection and recognition for visually impaired persons**, Mustafa I. Jaber, Jeremi Sudol, Bing Song, Ipplex Holdings Corp. (United States) . . . . . [8667-43]

9:50 am: **Determination of sensor oversize for stereo-pair mismatch compensation and image stabilization**, Prajit Kulkarni, Aptina Imaging LLC (United States) . . . . . [8667-45]

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

Session 8

Room: Pine Room . . . . . Tue 10:40 am to 12:30 pm

Object Classification and Remote Sensing II

Session Chair: **Paul M. Hubel,** Apple Inc. (United States)

10:40 am: **Nokia PureView oversampling technology** *(Invited Paper)*, Tero Vuori, Nokia Corp. (Finland) . . . . . [8667-77]

11:10 am: **Image quality evaluation using moving targets**, Uwe Artmann, Image Engineering GmbH & Co. KG (Germany) . . . . . [8667-46]

11:30 am: **Multiple-field approach for aberration correction in miniature imaging systems based on wafer-level production**, Eric Logean, Toralf Scharf, Hans Peter Herzig, Ecole Polytechnique Federale de Lausanne (Switzerland); Markus Rossi, Heptagon (Switzerland) . [8667-47]

11:50 am: **Color correction using multi-cycle feedback system for adaptive color image quality in mobile phone camera**, Setaek Oh, Jaemin Joo, Jin Wook Kwon, Chang Chun Goh, Sang Jo Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . [8667-48]

12:10 pm: **Auto-focus algorithm based on statistical blur estimation**, Prajit Kulkarni, Aptina Imaging LLC (United States) . . . . . [8667-49]

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

Session 9

Room: Regency Ballroom A . . . . Tue 2:00 pm to 3:20 pm

Image Quality Evaluation Methods/Standards for Mobile and Digital Photography I: Joint Session with Conferences 8653, 8660, and 8667C

Session Chairs: **Sebastiano Battiato,** Univ. degli Studi di Catania (Italy); **Peter D. Burns,** Burns Digital Imaging (United States)

2:00 pm: **SPCA: a no-reference image quality assessment based on the statistic property of the PCA on nature images**, Yun Zhang, Chao Wang, Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . [8660-19]

2:20 pm: **A no-reference quality assessment algorithm for JPEG2000-compressed images based on local sharpness**, Phong V. Vu, Damon M. Chandler, Oklahoma State Univ. (United States) . . . . . [8653-1]

2:40 pm: **Low-light performance of digital cameras**, Dietmar Wüller, Image Engineering GmbH & Co. KG (Germany) . . . . . [8667-50]

3:00 pm: **Local binary pattern statistic feature for reduced reference image quality assessment**, Min Zhang, Gifu Univ. School of Medicine (Japan); Xuanqin Mou, Xi'an Jiaotong Univ. (China); Hiroshi Fujita, Gifu Univ. School of Medicine (Japan); Lei Zhang, The Hong Kong Polytechnic Univ. (China); Xiangrong Zhou, Gifu Univ. School of Medicine (Japan); Wufeng Xue, Xi'an Jiaotong Univ. (China). . . . . [8660-20]

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

Session 10

Room: Regency Ballroom A . . . . Tue 4:00 pm to 5:00 pm

Image Quality Evaluation Methods/Standards for Mobile and Digital Photography II: Joint Session with Conferences 8653, 8660, and 8667C

Session Chairs: **Dietmar Wüller,** Image Engineering GmbH & Co. KG (Germany); **Nitin Sampat,** Rochester Institute of Technology (United States)

4:00 pm: **Measurement and protocol for evaluating video and still stabilization systems**, Etienne Cormier, Frédéric Cao, Frédéric Guichard, Clément Viard, DxO Labs (France) . . . . . [8653-2]

4:20 pm: **Noise evaluation standard of image sensor using visual spatio-temporal frequency characteristics**, Takeyuki Fujii, Shoichi Suzuki, Shinichiro Saito, Sony Corp. (Japan) . . . . . [8667-51]

4:40 pm: **Evaluation of a high dynamic range video camera with non-regular sensor**, Michael Schöberl, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany) and Fraunhofer-Institut für Integrierte Schaltungen (Germany); Joachim Keinert, Matthias Ziegler, Fraunhofer-Institut für Integrierte Schaltungen (Germany); Jürgen Seiler, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany); Marco Niehaus, Gerald Schuller, Technische Univ. Ilmenau (Germany); André Kaup, Friedrich-Alexander Univ. Erlangen-Nürnberg (Germany); Siegfried Fößel, Fraunhofer-Institut für Integrierte Schaltungen (Germany) . . . . . [8660-21]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

Conference 8667D

Monday–Tuesday 4–5 February 2013 • Proceedings of IS&T/SPIE Vol. 8667D

Mobile Computational Photography

Conference Chairs: **Todor G. Georgiev,** Qualcomm Inc. (United States); **Andrew Lumsdaine,** Indiana Univ. (United States)

Program Committee: **Raja Bala,** Xerox Corp. (United States); **Erhardt Barth,** Univ. zu Lübeck (Germany); **Kathrin Berkner,** Ricoh Innovations, Inc. (United States); **Charles A. Bouman,** Purdue Univ. (United States); **David J. Brady,** Duke Univ. (United States); **Paolo Favaro,** Heriot-Watt Univ. (United Kingdom); **Sergio R. Goma,** Qualcomm Inc. (United States); **Sylvain Paris,** Adobe Systems Inc. (United States); **Shmuel Peleg,** The Hebrew Univ. of Jerusalem (Israel); **Kari A. Pulli,** NVIDIA Corp. (United States); **Amnon Shashua,** The Hebrew Univ. of Jerusalem (Israel); **Sabine Süsstrunk,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Ashok Veeraraghavan,** Rice Univ. (United States); **Edwin Wolterink,** Anteryon B.V. (Netherlands); **Jingyi Yu,** Univ. of Delaware (United States)

Monday 4 February

Session 11

Room: Grand Peninsula Ballroom E . Mon 8:30 to 9:30 am

JEI Focal Track I

8:30 am: **Image deblurring in smartphone devices using built-in inertial measurement sensors**, Ondrej Sindelar, Charles Univ. in Prague (Czech Republic); Filip Sroubek, Institute of Information Theory and Automation (Czech Republic) . . . . . [8667-52]

9:00 am: **Compensating specular highlights for non-Lambertian projection surfaces**, Chen-Tai Kao, Tai-Hsiang Huang, Homer H. Chen, Hua Lee, National Taiwan Univ. (Taiwan) . . . . . [8667-53]

Session 12

Room: Sandpebble Room A . . . Mon 9:30 am to 10:30 am

Plenoptic Cameras: Theory

9:30 am: **On plenoptic camera resolution**, Andrew Lumsdaine, Indiana Univ. (United States); Todor G. Georgiev, Qualcomm Inc. (United States); Lilie Lin, Indiana Univ. (United States). . . . . [8667-54]

9:50 am: **Wave analysis of a plenoptic system and its applications**, Sapna A. Shroff, Kathrin Berkner, Ricoh Innovations, Inc. (United States) . . . . . [8667-55]

10:10 am: **Fourier analysis of the focused plenoptic camera**, Andrew Lumsdaine, Lilie Lin, Indiana Univ. (United States); Todor G. Georgiev, Qualcomm Inc. (United States) . . . . . [8667-56]

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

Session 13

Room: Sandpebble Room A . . Mon 10:50 am to 12:10 pm

Image Processing

10:50 am: **Design of user interfaces for selective editing of digital photos on touchscreen devices**, Thomas Binder, Meikel Steiding, Manuel Wille, Nils Kokemohr, Nik Software GmbH (Germany). . . [8667-57]

11:10 am: **Touch HDR: photograph enhancement by user controlled wide dynamic range adaptation**, Steve M. Verrall, Kalin Atanassov, Vikas Ramachandra, James Nash, Sergio R. Goma, Qualcomm Inc. (United States) . . . . . [8667-58]

11:30 am: **Image and video denoising and enhancement through frame stacking and alignment**, Kalin Atanassov, James Nash, Vikas Ramachandra, Sergio R. Goma, Qualcomm Inc. (United States) . [8667-59]

11:50 am: **Accelerating defocus blur magnification**, Florian Kriener, Thomas Binder, Manuel Wille, Nik Software GmbH (Germany) . . [8667-60]

Lunch Break . . . . . Mon 12:10 pm to 1:30 pm

Session 14

Room: Sandpebble Room A . . . . Mon 1:30 pm to 2:50 pm

Plenoptic Cameras: Depth of Field

1:30 pm: **Adaptive DOF for plenoptic cameras**, Alexander Oberdörster, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Hendrik P. A. Lensch, Eberhard Karls Univ. Tübingen (Germany) [8667-62]

1:50 pm: **Plenoptic depth map in the case of occlusions**, Zhan Yu, Jingyi Yu, Univ. of Delaware (United States); Andrew Lumsdaine, Indiana Univ. (United States); Todor G. Georgiev, Qualcomm Inc. (United States) . . . . . [8667-63]

2:10 pm: **Reduced depth of field using multi-image fusion**, Boris Ajdin, Univ. of Ulm (Germany); Timo Ahonen, Nokia Research Ctr. (United States) . . . . . [8667-64]

2:30 pm: **Optimizing depth of field based on a range map and a wavelet transform**, Mike Wellner, Pattern Recognition Lab. (Germany); Thomas Käster, Pattern Recognition Co. GmbH (Germany); Thomas Martinetz, Erhardt Barth, Univ. zu Lübeck (Germany). . . . . [8667-65]

Break . . . . . Mon 2:50 pm to 3:20 pm

Session 15

Room: Grand Peninsula Ballroom E . Mon 3:20 to 5:20 pm

JEI Focal Track II

3:20 pm: **Resolution and sensitivity of wafer-level multi-aperture cameras**, Alexander Oberdörster, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Hendrik P. A. Lensch, Eberhard Karls Univ. Tübingen (Germany). . . . . [8667-66]

3:50 pm: **Refinement of depth maps by fusion of multiple estimates**, Anubha Rastogi, Balaji Krishnamurthy, ADOBE Systems India Private Ltd. (India). . . . . [8667-67]

4:20 pm: **On the application of the plenoptic camera to mobile phones**, Iciar Montilla Garcia, Instituto de Astrofísica de Canarias (Spain); Marta Puga, Jose G. Marichal-Hernandez, Jonas Philipp Lüke, José Manuel Rodríguez-Ramos, Univ. de La Laguna (Spain) . . . . . [8667-68]

4:50 pm: **A novel 3D model for rotation/zoom motion deblur**, Zhihui Li, Silong Peng, XiYuan Hu, Institute of Automation (China); Xiaojing Xu, Institute of Forensic Science (China). . . . . [8667-69]

Tuesday 5 February

Room: Grand Peninsula Ballroom D Tue 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Another Look at Signals and Images**, Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Session 16

Room: Grand Peninsula Ballroom E .Tue 9:30 to 10:00 am

JEI Focal Track III

9:30 am: **Lytro camera technology: theory, algorithms, performance analysis** *(Keynote Presentation)*, Sergio R. Goma, Todor G. Georgiev, Qualcomm Inc. (United States); Andrew Lumsdaine, Indiana Univ. (United States) . . . . . [8667-70]

Coffee Break . . . . . .Tue 10:00 am to 10:30 am

Session 17

Room: Sandpebble Room A . . .Tue 10:30 am to 11:10 am

Image Tracking and Stabilization

10:30 am: **A new fusion-based low light still-shot stabilization**, Young-Su Moon, Samsung Advanced Institute of Technology (Korea, Republic of) and SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Shi-Hwa Lee, GyeongJa Jang, Yong-Min Tai, JungUk Cho, Samsung Advanced Institute of Technology (Korea, Republic of) and SAMSUNG Electronics, Ltd. (Korea, Republic of). . . . . [8667-71]

10:50 am: **Real-time skeleton tracking for embedded systems**, Foti Coleca, Univ. zu Lübeck (Germany) and gestigon GmbH (Germany); Sascha Klement, gestigon GmbH (Germany); Thomas Martinetz, Erhardt Barth, Univ. zu Lübeck (Germany). . . . . [8667-72]

Room: Grand Peninsula Ballroom A Tue 5:30 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 6 February

Room: Grand Peninsula Ballroom D Wed 8:20 to 9:30 am

Plenary Session and Conference Award Presentations

8:25 am: **A Trillion Photos,** Steven Seitz, Univ. of Washington (United States)

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