

2012 Electronic Imaging

SCIENCE AND TECHNOLOGY
22–26 January 2012

—
Technical Program

Conferences and Courses

22–26 January 2012

Hyatt Regency

San Francisco Airport Hotel

Burlingame, California, USA

electronicimaging.org



SPIE

Connecting minds. Advancing light.

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 24th annual Symposium on Electronic Imaging. Imaging is pervasive in the human experience, be it photographs that we take in our everyday lives to those that are used in space exploration, medical imaging, entertainment, science, or national security.

This week at Electronic Imaging 2012, 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 2012 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.

IS&T/SPIE Electronic Imaging

SCIENCE AND TECHNOLOGY
22–26 January 2012

Technical Program

Hyatt Regency San Francisco Airport Hotel
Burlingame, California, USA



Symposium Chair

Majid Rabbani
Eastman Kodak Company



Symposium Cochair

Gaurav Sharma
University of Rochester

Symposium Steering Committee:

Majid Rabbani, Symposium Chair, Eastman Kodak Co.

Gaurav Sharma, Symposium Cochair, Univ. of Rochester

Sabine Süsstrunk, Past Symposium Chair, École Polytechnique Fédérale de Lausanne

Geoff Wolfe, Short Course Chair, Canon Information Systems Research Australia Pty. Ltd.

Nitin Sampat, Technical Advisory Chair, Rochester Institute of Technology

Ron Scotti, SPIE Science and Technology Advisor

Suzanne E. Grinnan, IS&T Executive Director

Rob Whitner, SPIE Event Manager

IS&T and SPIE would like to express deep appreciation to the symposium chairs, conference chairs, program committees, and session chairs who have so generously given of their time and advice to make this symposium possible. The symposium, like our other conferences and activities, would not be possible without the dedicated contribution of our participants and members.

This program is based on commitments received up to the time of publication and is subject to change without notice.



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Conferences

3D Imaging, Interaction, and Measurement

8288	Stereoscopic Displays and Applications XXIII (Woods, Holliman, Favalora)	10-16
8289	The Engineering Reality of Virtual Reality 2012 (McDowall, Dolinsky)	17-18
8290	3D Image Processing (3DIP) and Applications 2012 (Baskurt, Sitnik)	19-21

Imaging, Visualization, and Perception

8291	Human Vision and Electronic Imaging XVII (Rogowitz, Pappas, de Ridder)	22-26
8292	Color Imaging XVII: Displaying, Processing, Hardcopy, and Applications (Eschbach, Marcu, Rizzi)	27-29
8293	Image Quality and System Performance IX (Gaykema, Burns)	30-32
8294	Visualization and Data Analysis 2012 (Wong, Kao, Hao, Chen)	33-35

Image Processing

8295A	Image Processing: Algorithms and Systems X (Egiazarian, Agaian, Gotchev)	36-38
8295B	Parallel Processing for Imaging Applications II (Recker, Wang)	39
8296	Computational Imaging X (Bouman, Pollak, Wolfe)	40-41
8297	Document Recognition and Retrieval XIX (Viard-Gaudin, Zaniibbi)	42-43

Digital Imaging Sensors and Applications

8298	Sensors, Cameras, and Systems for Industrial/Scientific Applications XIII (Widenhorn, Nguyen, Dupret)	44-45
8299	Digital Photography VIII (Battiato, Rodricks, Sampat)	46-47
8300	Image Processing: Machine Vision Applications V (Bingham, Lam)	48-49
8301	Intelligent Robots and Computer Vision XXIX: Algorithms and Techniques (Röning, Casasent)	50-52

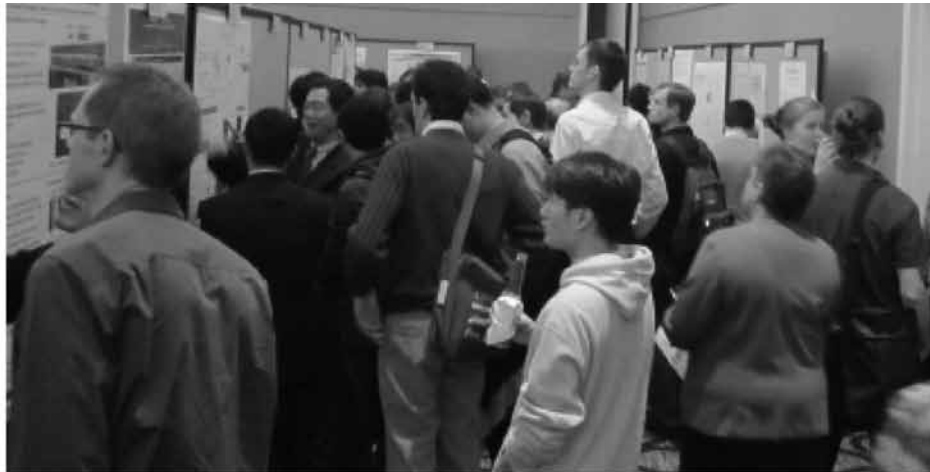
Multimedia Processing and Applications

8302	Imaging and Printing in a Web 2.0 World III (Lin, Allebach, Fan)	53-54
8303	Media Watermarking, Security, and Forensics 2012 (Memon, Alattar, Delp)	55-56
8304A	Multimedia on Mobile Devices 2012 (Creutzburg, Akopian)	57-58
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Visual Information Processing and Communication

8305	Visual Information Processing and Communication III (Said, Guleryuz, Stevenson)	61-63
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Special Events



Interactive Paper and Symposium Demonstration Session

Grand Peninsula Ballroom E

Interactive Paper Set-up, Viewing, and Presentations

Author Set-up:

Tuesday 24 January 7:30 to 10:30 am

General Viewing:

Tuesday 24 January 10:30 am to 3:00 pm

Interactive Paper Session:

Tuesday 24 January 5:30 to 7:00 pm

Conference attendees are encouraged to attend the Interactive Paper and Symposium Demonstration Session where Interactive Paper authors display their posters and are available to answer questions and engage in in-depth discussions about their papers. Light refreshments are provided. Please note that conference registration badges are required for entrance and that posters may be previewed by all attendees on Tuesday from 10:30 am to 3:00 pm.

Authors are asked to set up their poster papers between 7:30 and 10:30 am on Tuesday. Pushpins are provided; other supplies can be obtained at the Conference Registration Desk. Posters will be on display Tuesday.

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

Symposium Demonstration Session

Grand Peninsula Ballroom E

Demonstration Set-up:

Tuesday 24 January 3:00 to 5:30 pm

Demonstration:

Tuesday 24 January 5:30 to 8:00 pm

The highly-successful, interactive, hands-on demonstration of hardware, software, display, and research products related to all the topics covered by the Electronic Imaging Symposium will again take place in conjunction with the Interactive Papers session.

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.

Special JEI booth open for attendees

Grand Peninsula Foyer

Tuesday 24 January 5:30 to 7:00 pm

Be sure to check out the *Journal of Electronic Imaging* booth during the poster demonstration session to learn more about the *Journal of Electronic Imaging*. This peer-reviewed journal, co-published by IS&T and SPIE, covers the latest research in electronic imaging technology. JEI representatives will have displays of previous issues and can provide information about how to submit your work for publication.

All-Conference Reception

Grand Peninsula Ballroom E

Wednesday 25 January 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.

3D Theatre

Grand Peninsula Ballroom A

Monday 23 January 5:30 to 7:30 pm

Hosted by **Andrew J. Woods**, Curtin Univ. (Australia); **Chris Ward**, Lightspeed Design, Inc. (United States)

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.



Plenary Session and Society Award Presentations

Grand Peninsula Ballroom A

Tuesday 24 January 8:20 to 9:30 am

Welcome 8:20 to 8:25 am

Plenary Presentation 8:25 to 9:10 am

Society Award Announcements 9:10 to 9:20 am

Plenary Session and Conference Award Presentations

Grand Peninsula Ballroom A

Wednesday 25 January 8:20 to 9:30 am

Welcome 8:20 to 8:25 am

Plenary Presentation 8:25 to 9:10 am

Conference Award Announcements 9:10 to 9:20 am

Computational Photography



William T. Freeman, Massachusetts Institute of Technology

Abstract: Computational Photography explores the design space at the interaction of optics, sensing, and computation. I'll review my favorite research projects within this area, most of them by other people, and a few that I was involved

with. These projects involve modifications to the camera lens, aperture, shutter, light source or image sensor. By designing algorithms appropriate for each camera modification, novel image capture or manipulation capabilities can be achieved.

Biography: **William T. Freeman** is Professor and Associate Department Head of the Electrical Engineering and Computer Science Department at the Computer Science and Artificial Intelligence Laboratory (CSAIL) at MIT, joining the faculty in 2001.



David Forsyth, Univ. of Illinois at Urbana-Champaign

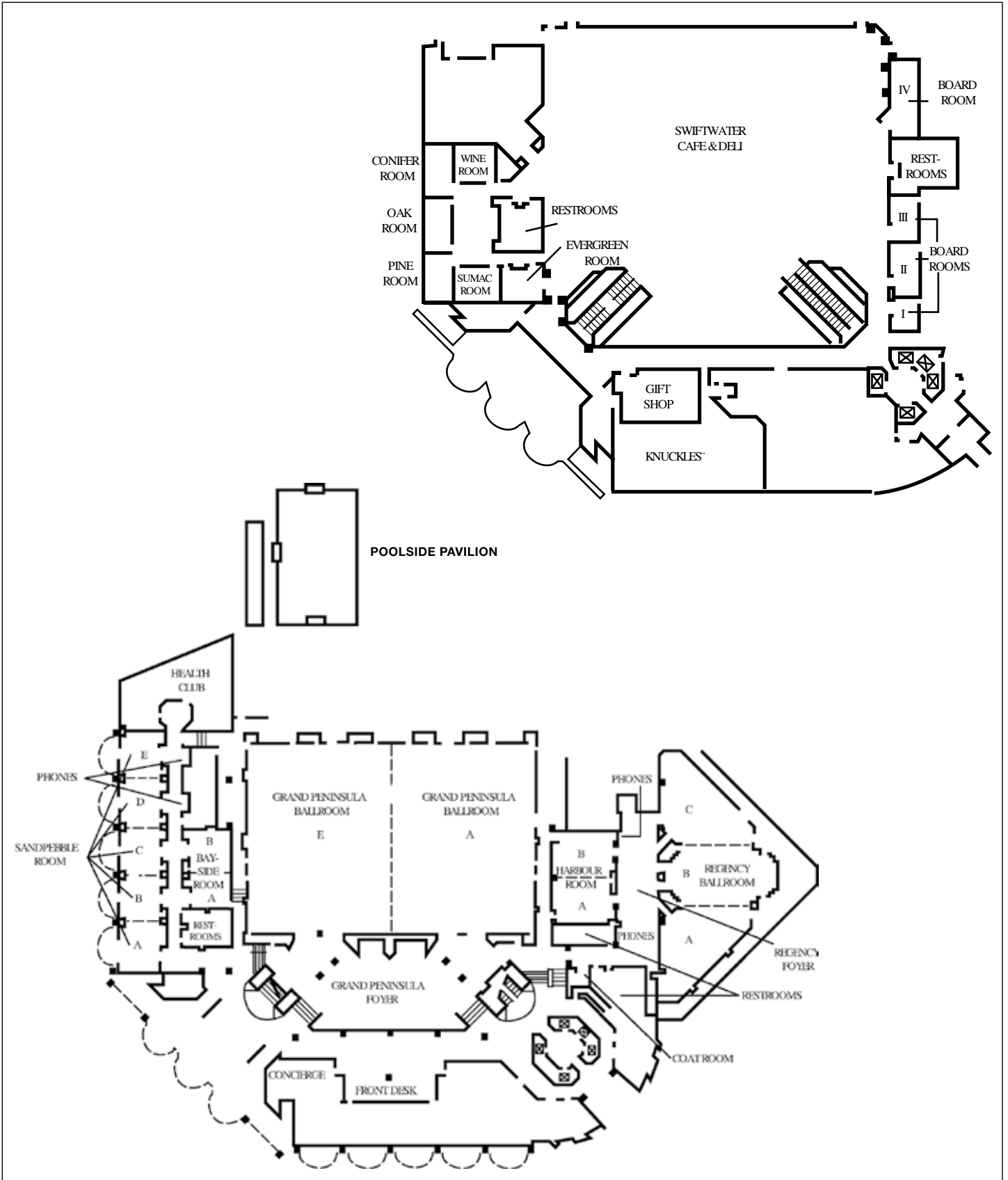
Abstract: I will sketch the current state of the art in object recognition, with a particular emphasis on methods that try to tag images with words, phrases or sentences. Methods are built on two strong ideas: local image descriptors, and classification. Using these tools, the field has

built rich technologies for classifying images of objects, detecting objects in images, and describing unfamiliar objects in images. Current methods are moderately accurate. Future methods will have higher accuracy, will produce richer and more conceptual descriptions, and will exploit geometric context to understand spatial relations between objects.

Biography: **David Forsyth** is currently a full professor at Univ. of Illinois at Urbana-Champaign, where he moved from UC Berkeley and was also full professor. He has published over 130 papers on computer vision, computer graphics and machine learning. Mr. Forsyth has served as program co-chair for IEEE Computer Vision and Pattern Recognition in 2000 and in 2011, general co-chair for CVPR 2006, and program co-chair for the European Conference on Computer Vision 2008. He is a regular member of the program committee of all major international conferences on computer vision. He has served five years on the SIGGRAPH program committee and continues to be a regular reviewer. Mr. Forsyth has received best paper awards at the International Conference on Computer Vision and at the European Conference on Computer Vision. He received an IEEE technical achievement award for 2005 for his research and became an IEEE fellow in 2009. His recent textbook, "Computer Vision: A Modern Approach" (joint with J. Ponce and published by Prentice Hall) is now widely adopted as a course text. A second edition is in press.

Meeting Room Locations

Hyatt Regency San Francisco Airport Hotel



Electronic Imaging 2012

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

Short Course Registration and Course Notes

Course-only registration

Sunday 22 January 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 22 January 10:00 am to 4:00 pm

Monday 23 January 7:00 am to 4:00 pm

Tuesday 24 January 7:30 am to 4:00 pm

Wednesday 25 January 7:30 am to 4:00 pm

Thursday 26 January 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 7:30 and 10:30 am Tuesday. Pushpins are provided; other supplies can be obtained at the Conference Registration Desk. Posters will be on display Tuesday. 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.

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.

IS&T/SPIE Electronic Imaging

22–26 January 2012

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Technical Organizing Committee

- Sos S. Again**, The Univ. of Texas at San Antonio (United States)
- David Akopian**, The Univ. of Texas at San Antonio (United States)
- Adnan M. Alattar**, Digimarc Corp. (United States)
- Jan P. Allebach**, Purdue Univ. (United States)
- Atilla M. Baskurt**, Univ. of Lyon (France)
- Sebastiano Battiato**, Univ. degli Studi di Catania (Italy)
- Philip R. Bingham**, Oak Ridge National Lab. (United States)
- Charles A. Bouman**, Purdue Univ. (United States)
- Peter D. Burns**, Consultant (United States)
- David P. Casasent**, Carnegie Mellon Univ. (United States)
- Chaomei Chen**, Drexel Univ. (United States)
- Reiner Creutzburg**, Fachhochschule Brandenburg (Germany)
- Huib de Ridder**, Technische Univ. Delft (Netherlands)
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- Jeffrey M. DiCarlo**, Intuitive Surgical, Inc. (United States)
- Margaret Dolinsky**, Indiana Univ. (United States)
- Antoine Dupret**, École Supérieure d'Ingénieurs en Electronique et Electrotechnique (France)
- Karen O. Egiazarian**, Tampere Univ. of Technology (Finland)
- Reiner Eschbach**, Xerox Corp. (United States)
- Zhigang Fan**, Xerox Corp. (United States)
- Gregg E. Favalora**, Optics for Hire (United States)
- Frans Gaykema**, Océ Technologies B.V. (Netherlands)
- Atanas P. Gotchev**, Tampere Univ. of Technology (Finland)
- Onur G. Guleryuz**, DoCoMo Communications Labs. USA, Inc. (United States)
- Ming C. Hao**, Hewlett-Packard Labs. (United States)
- Nicolas S. Holliman**, Durham Univ. (United Kingdom)
- Francisco H Imai**, Canon Development Americas Inc. (United States)
- David L. Kao**, NASA Ames Research Ctr. (United States)
- Lyndon Kennedy**, Yahoo! Research (United States)
- Edmund Y. Lam**, The Univ. of Hong Kong (China)
- Qian Lin**, Hewlett-Packard Labs. (United States)
- Gabriel G. Marcu**, Apple Inc. (United States)
- Ian E. McDowall**, Fakespace Labs, Inc. (United States)
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- Valérie Nguyen**, CEA Leti MINATEC (France)
- Thrasyvoulos N. Pappas**, Northwestern Univ. (United States)
- Ilya Pollak**, Purdue Univ. (United States)
- John Recker**, Hewlett-Packard Labs. (United States)
- Alessandro Rizzi**, Univ. degli Studi di Milano (Italy)
- Brian Rodricks**, Fairchild Imaging (United States)
- Bernice E. Rogowitz**, Visual Perspectives Consulting (United States)
- Juha Röning**, Univ. of Oulu (Finland)
- 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)
- Christian Viard-Gaudin**, Univ. of Nantes (France)
- Guijin Wang**, Tsinghua Univ. (China)
- Ralf Widenhorn**, Portland State Univ. (United States)
- Patrick J. Wolfe**, Harvard Univ. (United States)
- Pak C. Wong**, Pacific Northwest National Lab. (United States)
- Andrew J. Woods**, Curtin Univ. (Australia)
- Feng Xiao**, Fairchild Imaging (United States)
- Richard Zanibbi**, Rochester Institute of Technology (United States)

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
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3D Imaging, Interaction, and Measurement

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| 8288 Stereoscopic Displays and Applications XXIII (<i>Woods, Holliman, Favalora</i>) p. 10-16 |
| 8289 The Engineering Reality of Virtual Reality 2012 (<i>McDowall, Dolinsky</i>) p. 17-18 |
| 8290 3D Image Processing (3DIP) and Applications 2012 (<i>Baskurt, Sitnik</i>) p. 19-21 |

Imaging, Visualization, and Perception

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|---|
| 8291 Human Vision and Electronic Imaging XVII (<i>Rogowitz, Pappas, de Ridder</i>) p. 22-26 |
| 8292 Color Imaging XVII: Displaying, Processing, Hardcopy, and Applications (<i>Eschbach, Marcu, Rizzi</i>) p. 27-29 |
| 8293 Image Quality and System Performance IX (<i>Gaykema, Burns</i>) p. 30-32 |
| 8294 Visualization and Data Analysis 2012 (<i>Wong, Kao, Hao, Chen</i>) p. 33-35 |

Image Processing

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|---|
| 8295A Image Processing: Algorithms and Systems X (<i>Egiazarian, Agaian, Gotchev</i>) p. 36-38 |
| 8295B Parallel Processing for Imaging Applications II (<i>Recker, Wang</i>) p. 39 |
| 8296 Computational Imaging X (<i>Bouman, Pollak, Wolfe</i>) p. 40-41 |
| 8297 Document Recognition and Retrieval XIX (<i>Viard-Gaudin, Zanibbi</i>) p. 42-43 |

Digital Imaging Sensors and Applications

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|---|
| 8298 Sensors, Cameras, and Systems for Industrial/Scientific Applications XIII (<i>Widenhorn, Nguyen, Dupret</i>) p. 44-45 |
| 8299 Digital Photography VIII (<i>Battiato, Rodricks, Sampat</i>) p. 46-47 |
| 8300 Image Processing: Machine Vision Applications V (<i>Bingham, Lam</i>) p. 48-49 |
| 8301 Intelligent Robots and Computer Vision XXIX: Algorithms and Techniques (<i>Röning, Casasent</i>) p. 50-52 |

Multimedia Processing and Applications

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|--|
| 8302 Imaging and Printing in a Web 2.0 World III (<i>Lin, Allebach, Fan</i>) p. 53-54 |
| 8303 Media Watermarking, Security, and Forensics 2012 (<i>Memon, Alattar, Delp</i>) p. 55-56 |
| 8304A Multimedia on Mobile Devices 2012 (<i>Creutzburg, Akopian</i>) p. 57-58 |
| 8304B Multimedia Content Access: Algorithms and Systems VI (<i>Snoek, Sebe, Kennedy</i>) p. 59-60 |

Visual Information Processing and Communication

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| 8305 Visual Information Processing and Communication III (<i>Said, Guleryuz, Stevenson</i>) p. 61-63 |
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Course Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
3D Imaging, Interaction, and Measurement				
SC060 Stereoscopic Display Application Issues (<i>Merritt, Woods</i>) 8:30 am to 5:30 pm, \$575 / \$685		SC927 3D Imaging (<i>Agam</i>) 8:30 am to 12:30 pm, \$350 / \$405		
SC1047 Autostereoscopic and Holographic Display Technologies (<i>Lee</i>) 8:30 am to 12:30 pm, \$350 / \$405				
SC1046 Video Processing Techniques for 3D Television (<i>Ho</i>) 1:30 to 5:30 pm, \$350 / \$405				
SC1045 Evaluation Methodology for 2D and 3D Displays (<i>de Ridder, Heynderickx</i>) 1:30 to 5:30 pm, \$350 / \$405				
SC1029 DLP Projection Technology (<i>Ramanath</i>) 8:30 am to 12:30 pm, \$350 / \$405				
SC837 Multivariate Analysis of Imaging and Sensor Data (<i>Bajorski</i>) 8:30 am to 5:30 pm, \$575 / \$685				
Digital Imaging Sensors and Applications				
SC967 High Dynamic Range Imaging: Sensors and Architectures (<i>Darmont</i>) 8:30 am to 5:30 pm, \$575 / \$685	SC504 Introduction to CCD and CMOS Imaging Sensors and Applications (<i>Janesick</i>) 8:30 am to 5:30 pm, \$715 / \$825	SC916 Digital Camera and Sensor Evaluation Using Photon Transfer (<i>Janesick</i>) 8:30 am to 5:30 pm, \$630 / \$740	SC1048 Image Processing for Single-Sensor Imaging Devices (<i>Battiato</i>) 8:30 am to 12:30 pm, \$350 / \$405	
SC1058 Image Quality and Evaluation of Cameras In Mobile Devices (<i>Wüller, Matherson</i>) 8:30 am to 5:30 pm, \$575 / \$685	SC1049 Objective and Subjective Image Quality Camera Benchmarking (<i>Hornung, Eliasson, Phillips</i>) 8:30 am to 5:30 pm, \$575 / \$685			
SC1021 Mobile Computational Photography (<i>Pulli, Ahonen, Troccoli</i>) 8:30 am to 5:30 pm, \$575 / \$685				
SC837 Multivariate Analysis of Imaging and Sensor Data (<i>Bajorski</i>) 8:30 am to 5:30 pm, \$575 / \$685				
SC965 Joint Design of Optics and Image Processing for Imaging Systems (<i>Stork</i>) 1:30 to 5:30 pm, \$350 / \$405				
Image Processing				
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SC1058 Image Quality and Evaluation of Cameras In Mobile Devices (<i>Wüller, Matherson</i>) 8:30 am to 5:30 pm, \$575 / \$685		SC1015 Understanding and Interpreting Images (<i>Rabbani</i>) 1:30 to 5:30 pm, \$350 / \$405		
SC468 Image Enhancement, Deblurring and Super-Resolution (<i>Rabbani</i>) 8:30 am to 5:30 pm, \$575 / \$685				
SC965 Joint Design of Optics and Image Processing for Imaging Systems (<i>Stork</i>) 1:30 to 5:30 pm, \$350 / \$405				
SC967 High Dynamic Range Imaging: Sensors and Architectures (<i>Darmont</i>) 8:30 am to 5:30 pm, \$575 / \$685				
SC1021 Mobile Computational Photography (<i>Pulli, Ahonen, Troccoli</i>) 8:30 am to 5:30 pm, \$575 / \$685				
SC060 Stereoscopic Display Application Issues (<i>Merritt, Woods</i>) 8:30 am to 5:30 pm, \$575 / \$685				
SC1050 Perception and Cognition for Emerging Imaging Technologies (<i>Rogowitz</i>) 8:30 am to 12:30 pm, \$350 / \$405				

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Get Course descriptions and register for these courses onsite at the registration desk.

Conference 8288

Monday-Wednesday 23-25 January 2012 • Proceedings of SPIE Vol. 8288

Stereoscopic Displays and Applications XXIII

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: **Florian Ciurea**, Pelican Imaging Corp. (United States); **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)

Cosponsors



Monday 23 January

SESSION 1

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

3D Applications

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

8:30 am: **Matching stereo 3D reconstructions of CT/MRI data and intraoperative stereo video for medical education and treatment planning**, Justus F. Ilgner M.D., Martin Westhofen M.D., Univ. Hospital Aachen (Germany) [8288-01]

8:50 am: **Stereoscopic desktop VR system for tele-maintenance**, Michael Kleiber, Fraunhofer FKIE (Germany) [8288-02]

Room: Grand Peninsula

Ballroom A Mon. 9:10 to 9:20 am

Welcome and Opening Remarks

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

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

Keynote Presentation I

9:20 am: **Panasonic's stereoscopic 3D technologies, standardization, and business strategy (Presentation Only)**, Masayuki Kozuka, Panasonic Corp. (Japan) [8288-99]

Coffee Break 10:20 to 10:50 am

Sessions 2 and 5 run concurrently

SESSION 2

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

3D Cameras and Mobile 3D

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

- 10:50 am: **Angle-sensitive pixels: a new paradigm for low-power, low-cost 2D and 3D sensing**, Albert Wang, Sheila S. Hemami, Alyosha Molnar, Cornell Univ. (United States) [8288-03]
- 11:10 am: **Polarizing aperture stereoscopic cinema camera**, Lenny Lipton, Leonardo IP (United States) [8288-04]
- 11:30 am: **Hardware-efficient, real-time 3D image processing for single lens color/depth-unified sensor: from depth noise reduction, depth super-resolution, to stereoscopic image synthesis**, Hwasup Lim, Yong Sun Kim, Ouk Choi, Byongmin Kang, Seong-Jin Kim, Keechang Lee, James D.K. Kim, Changyeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) [8288-05]
- 11:50 am: **Unassisted 3D camera calibration**, Kalin Atanassov, Vikas Ramachandra, Sergio Goma, Qualcomm Inc. (United States) . . [8288-06]
- 12:10 pm: **Auto convergence for stereoscopic 3D mobile cameras**, Buyue Zhang, Sreeni Kothandaraman, Aziz Umit Batur, Texas Instruments Inc. (United States) [8288-07]
- Lunch Break 12:30 to 2:00 pm

SESSION 5

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

3D Developments

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

- 10:50 am: **Stereoscopic-3D display design: a new paradigm with Intel adaptive stable image technology [IA-SIT]**, Sunil K. Jain, Intel Corp. (United States). [8288-16]
- 11:10 am: **A real-time misalignment correction algorithm for stereoscopic 3D cameras**, Ibrahim E. Pekkucuksen, Buyue Zhang, Aziz Umit Batur, Texas Instruments Inc. (United States) [8288-17]
- 11:30 am: **Full-color stereoscopic with little flicker at low-refresh rate by time-division multiplexing anaglyph**, Hideki Kakeya, Hiroaki Kodaira, Univ. of Tsukuba (Japan). [8288-18]
- 11:50 am: **Supervised disparity estimation**, Patrick Vandewalle, Chris Varekamp, Philips Research Nederland B.V. (Netherlands) [8288-19]
- 12:10 pm: **Analysis of brain activity and response during monoscopic and stereoscopic visualization**, Enrico Calore, Raffaella Folgieri, Davide Gadia, Daniele Marini, Univ. degli Studi di Milano (Italy). [8288-20]
- Lunch Break 12:30 to 2:00 pm

Sessions 3 and 6 run concurrently

SESSION 3

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

Autostereoscopic Displays: Multi-Layer and Multi-Projector

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

- 2:00 pm: **Beyond parallax barriers: applying formal optimization methods to multi-layer automultiscopic displays**, Douglas Lanman, Massachusetts Institute of Technology (United States) [8288-08]
- 2:20 pm: **3D image quality of 200-inch glasses-free 3D display system**, Masahiro Kawakita, NHK Science & Technical Research Labs. (Japan); Shoichiro Iwasawa, National Institute of Information and Communications Technology (Japan); Masahisa Sakai, Yasuyuki Haino, Masahito Sato, JVC KENWOOD Holdings, Inc. (Japan); Naomi Inoue, National Institute of Information and Communications Technology (Japan). [8288-09]
- 2:40 pm: **Implementation and analysis of an autostereoscopic display using multiple liquid crystal layers**, Hironobu Gotoda, National Institute of Informatics (Japan) [8288-10]
- 3:00 pm: **360-degree, three-dimensional table-screen display using small array of high-speed projectors**, Shigeki Uchida, Yasuhiro Takaki, Tokyo Univ. of Agriculture and Technology (Japan) [8288-11]
- Coffee Break 3:20 to 3:50 pm

SESSION 6

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

Perception, Quality, and Comfort

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

- 2:00 pm: **Motion in-depth constancy in stereoscopic displays**, Sidrah Laldin, Laurie Wilcox, Carly Hylton, Robert S. Allison, York Univ. (Canada) [8288-21]
- 2:20 pm: **Quality evaluation of depth image-based rendering methods for stereoscopic video content**, Mattias Eisenbarth, Technische Univ. Wien (Austria) and emotion3D (Austria); Florian H. Seitner, emotion3D (Austria) and Technische Univ. Wien (Austria); Margrit Gelautz, Technische Univ. Wien (Austria) [8288-22]
- 2:40 pm: **Disparity profiles in 3DV applications: overcoming the issue of heterogeneous viewing conditions in stereoscopic delivery**, Guillaume Boisson, Technicolor S.A. (France) [8288-23]
- 3:00 pm: **Investigation of object thickness for visual discomfort prediction in stereoscopic images**, Hosik Sohn, Yong Ju Jung, Seong-il Lee, Hyun Wook Park, Yong Man Ro, KAIST (Korea, Republic of) [8288-24]
- Coffee Break 3:20 to 3:50 pm

Sessions 4 and 7 run concurrently

SESSION 4

Room: Grand Peninsula Ballroom A . . . Mon. 3:50 to 5:10 pm

3D Image Processing and Content Adaptation

- Session Chair: Nicolas S. Holliman, Durham Univ. (United Kingdom)*
- 3:50 pm: **Focus mis-match detection in stereoscopic content**, Frederic Devernay, Sergi Pujades, Vijay Ch.A.V., INRIA Rhône-Alpes (France)[8288-12]
- 4:10 pm: **2D-to-3D image conversion: leveraging 3D data on the net**, Janusz Konrad, Geoffrey Brown, Meng Wang, Prakash Ishwar, Boston Univ. (United States)[8288-13]
- 4:30 pm: **3D cinema to 3DTV content adaptation**, Didier Doyen, Lasith Yasakethu, Laurent Blondé, Quan Huynh-Thu, Technicolor S.A. (France)[8288-14]
- 4:50 pm: **Video retargeting for stereoscopic content under 3D viewing constraints**, Christel Chamaret, Technicolor S.A. (France)[8288-83]
- Session Break 5:10 to 5:30 pm

SESSION 7

Room: Grand Peninsula Ballroom E . . . Mon. 3:50 to 5:10 pm

Autostereoscopy

- Session Chair: Gregg E. Favalora, Optics for Hire (United States)*
- 3:50 pm: **History of autostereoscopic cinema**, Walter Funk, Hologlyphics (United States)[8288-25]
- 4:10 pm: **Full optical characterization of auto-stereoscopic 3D displays using local viewing angle and imaging measurements**, Pierre M. Boher, Thierry Leroux, Thibault Bignon, ELDIM (France)[8288-26]
- 4:30 pm: **Analysis on monocular accommodation in horizontal-parallax-only super-multiview display**, Jisoo Hong, Youngmin Kim, Seoul National Univ. (Korea, Republic of); Jae-Hyeung Park, Chungbuk National Univ. (Korea, Republic of); ByoungHo Lee, Seoul National Univ. (Korea, Republic of)[8288-27]
- 4:50 pm: **A novel time-multiplexed, autostereoscopic, multi-view, full-resolution 3D display**, Jian-Chiun Liou, Industrial Technology Research Institute (Taiwan)[8288-28]
- Session Break 5:10 to 5:30 pm

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

3D Theatre

Session Chairs: Andrew J. Woods, Curtin Univ. (Australia);
Chris Ward, Lightspeed Design, 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 to 10:00 pm

The annual informal dinner for SD&A 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 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Room: Grand Peninsula Ballroom A Tues. 9:30 to 10:30 am

Keynote Presentation II

9:30 am: **The past, present, and future of YouTube3D**, Pete Bradshaw, Debargha Mukherjee, Google Inc. (United States)[8288-100]

Coffee Break 10:30 to 11:00 am

SESSION 8

Room: Grand Peninsula Ballroom A Tues. 11:00 am to 12:40 pm

3D Image Quality: Crosstalk

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

11:00 am: **Crosstalk reduces the amount of depth seen in 3D images of natural scenes**, Inna Tsirlin, Robert S. Allison, Laurie M. Wilcox, York Univ. (Canada) [8288-29]

11:20 am: **Method and simulation to study 3D crosstalk perception**, Darya Aleksandrovna Khaustova, Laurent Blondé, Didier Doyen, Quan Huynh-Thu, Technicolor S.A. (France) [8288-30]

11:40 am: **Reproducibility of crosstalk measurements on active glasses 3D LCD displays based on temporal characterization**, Sylvain Tourancheau, Mid Sweden Univ. (Sweden); Kun Wang, Acreo AB (Sweden) and Mid Sweden Univ. (Sweden); Lucjan Janowski, Jaroslaw Bulat, AGH Univ. of Science and Technology (Poland); Kjell Brunnström, Acreo AB (Sweden); Marcus Barkowsky, Polytech' Nantes (France) [8288-31]

12:00 pm: **Crosstalk and brightness in projection-based, multi-view systems**, Roland Blach, Achim Pross, Fraunhofer-Institut für Arbeitswirtschaft und Organisation (Germany); Alexander Kulik, Bauhaus Univ. Weimar (Germany); Oliver Stefani, Fraunhofer-Institut für Arbeitswirtschaft und Organisation (Germany) [8288-32]

12:20 pm: **How much crosstalk can be allowed in a stereoscopic system at various grey levels?**, Sergey A. Shestak, Dae-Sik Kim, Samsung Electronics Co., Ltd. (Korea, Republic of) [8288-33]

Lunch Break 12:40 to 2:00 pm

SESSION 9A

Room: Grand Peninsula Ballroom A Tues. 2:00 to 3:20 pm

Stereoscopic 3D Image Quality: Quantifying Perception and Comfort: Joint Session with Conference 8291

Session Chairs: Sergio R. Goma, Qualcomm Inc. (United States); John O. Merritt, The Merritt Group (United States); Christopher W. Tyler, The Smith-Kettlewell Eye Research Institute (United States); Lora T. Likova, The Smith-Kettlewell Eye Research Institute (United States)

2:00 pm: **Apparent stereo: the Cornsweet illusion can enhance perceived depth**, Piotr Didyk, Max-Planck-Institut für Informatik (Germany); Tobias Ritschel, Elmar Eisemann, Telecom ParisTech (France); Karol Myszkowski, Hans-Peter Seidel, Max-Planck-Institut für Informatik (Germany) [8291-19]

2:20 pm: **Perceived depth of multi parallel, overlapping, transparent, stereoscopic surfaces**, Saori Aida, Koichi Shimono, Tokyo Univ. of Marine Science and Technology (Japan); Wa James Tam, Communications Research Ctr. Canada (Canada) [8291-20]

2:40 pm: **Diagnosing perceptual distortion present in group stereoscope viewing**, Melissa M. Burton, Brice B. Pollock, Jonathan W. Kelly, Stephen B. Gilbert, Eliot Winer, Iowa State Univ. (United States); Julio de la Cruz, U.S. Army RDECOM/STTC (United States) [8291-21]

3:00 pm: **Visual discomfort and the timing of vergence-accommodation conflicts**, Joohwan Kim, David Kane, Martin S. Banks, Univ. of California, Berkeley (United States) [8288-34]

Coffee Break 3:20 to 3:50 pm

SESSION 9B

Room: Grand Peninsula Ballroom A Tues. 3:50 to 5:10 pm

Stereoscopic 3D Image Quality: Quantifying Perception and Comfort: Joint Session with Conference 8291

Session Chairs: Sergio R. Goma, Qualcomm Inc. (United States); John O. Merritt, The Merritt Group (United States); Christopher W. Tyler, The Smith-Kettlewell Eye Research Institute (United States); Lora T. Likova, The Smith-Kettlewell Eye Research Institute (United States)

3:50 pm: **Measuring 3D discomfort from vertical and torsional disparities in natural images**, Christopher W. Tyler, Lora T. Likova, The Smith-Kettlewell Eye Research Institute (United States); Kalin Atanassov, Vikas Ramachandra, Sergio Goma, Qualcomm (United States) . . [8291-22]

4:10 pm: **Visual fatigue versus eye-movements**, Cyril Vienne, Laurent Blondé, Didier Doyen, Technicolor S.A. (France) [8288-35]

4:30 pm: **Visual comfort: stereoscopic objects moving in the horizontal and mid-sagittal planes**, Wa James Tam, Filippo Speranza, Carlos Vázquez, Ron Renaud, Communications Research Ctr. Canada (Canada); Namho Hur, Electronics and Telecommunications Research Institute (Korea, Republic of) [8288-36]

4:50 pm: **Visual discomfort with stereo 3D displays when the head is not upright**, David Kane, Robin Held, Martin Banks, Univ. of California, Berkeley (United States) [8288-37]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

The session will have a focused "Stereoscopic Displays and Applications" area. The demonstration session hosts a vast collection of stereoscopic products providing a perfect opportunity to witness a wide array of stereoscopic displays with your own two eyes.

Posters 5:30 to 7:00 pm

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

Stereoscopic Perception and Quality

Correlation between a perspective distortion in a S3D content and the visual discomfort perceived, Didier Doyen, Laurent Blondé, Jean-Jacques Sacré, Technicolor S.A. (France) [8288-54]

Evaluation of quality of experience in interactive 3D visualization: methodology and results, Sylvain Tourancheau, Mårten Sjöström, Roger Olsson, Mid Sweden Univ. (Sweden); Anders Persson, Ctr. for Medical Image Science and Visualization (Sweden); Thomas Ericson, Setred AB (Sweden) [8288-55]

Objective view synthesis quality assessment, Pierre-Henri Conze, Technicolor S.A. (France) and Institut National des Sciences Appliquées de Rennes (France); Robert Philippe, Technicolor S.A. (France); Luce Morin, Institut National des Sciences Appliquées de Rennes (France) . . [8288-56]

Depth enhancement of S3D content and the psychological effects, Masahiro Hirahara, Saki Shiraiishi, Takashi Kawai, Waseda Univ. (Japan) [8288-57]

Perception of size and shape in stereoscopic 3D imagery, Michael D. Smith, MDS Consulting (United States); Bradley T. Collar, Warner Bros. Entertainment Inc. (United States) [8288-58]

Quality of experience model for 3DTV, Wei Chen, France Telecom R&D (France) and Polytech' Nantes (France); Jérôme Fournier, France Telecom R&D (France); Marcus Barkowsky, Patrick Le Callet, Polytech' Nantes (France) [8288-59]

New approach on calculating multi-view 3D crosstalk for auto-stereoscopic displays, Sung-Min Jung, Kyeong-Jin Lee, Ji-Na Kang, Seung-Chul Lee, Kyoung-Moon Lim, LG Display (Korea, Republic of) [8288-60]

Towards adapting current 3DTV for an improved 3D experience, Laurent Blondé, Didier Doyen, Cédric Thébault, Quan Huynh-Thu, Technicolor S.A. (France); Daniel Stoenescu, Emmanuel Daniel, Jean-Louis de Bougrenet de la Tocnaye, TELECOM Bretagne (France); Samir Bentahar, EyesTripleShut (France) [8288-61]

3D Displays

Integral volumetric imaging with high-resolution and smooth-motion parallax, Shimpei Sawada, Hideki Kakeya, Univ. of Tsukuba (Japan) [8288-62]

Enlargement of viewing freedom of reduced-view SMV display, Junya Nakamura, Taichi Takahashi, Yasuhiro Takaki, Tokyo Univ. of Agriculture and Technology (Japan) [8288-63]

Development of high-speed, phase-modulating spatial light modulators for 3D-holographic displays, Hiroyuki Takagi, Taichi Goto, Alexander Baryshev, Mitsuteru Inoue, Toyohashi Univ. of Technology (Japan) [8288-64]

Color hologram generation using depth map of real objects with viewing-zone-angle expansion, Kosuke Nomura, Tokyo Univ. of Science (Japan) and National Institute of Information and Communications Technology (Japan); Ryutaro Oi, Taiichi Kurita, National Institute of Information and Communications Technology (Japan); Takayuki Hamamoto, Tokyo Univ. of Science (Japan) [8288-65]

Stereoscopic surround displays using interference filters, Silvio Peikert, Jérémie Gerhardt, Fraunhofer FIRST (Germany) [8288-66]

Design of extended viewing zone at autostereoscopic 3D display based on diffusing optical element, Min-Chang Kim, Yong Seok Hwang, Eun-Soo Kim, Kwangwoon Univ. (Korea, Republic of) [8288-67]

Floating image device with auto-stereoscopic display and viewer-tracking technology, Chang-Ying Chen, Kun-Lung Tseng, Chy-Lin Wang, Chao-Hsu Tsai, Industrial Technology Research Institute (Taiwan) [8288-68]

A time-sequential, multi-view, autostereoscopic display without resolution loss using a multi-directional backlight unit and an LCD panel, Hyunkyung Kwon, Hee-Jin Choi, Sejong Univ. (Korea, Republic of) [8288-69]

Full-resolution autostereoscopic display with all-electronic tracking system, Jean-Etienne Gaudreau, PolarScreens, Inc. (Canada) . . [8288-70]

Design of crossed-mirror array to form floating 3D LED signs, Hirotsugu Yamamoto, Univ. of Tokushima (Japan) and JST CREST (Japan); Hiroki Bando, Shiro Suyama, Univ. of Tokushima (Japan) [8288-98]

Multiview Image Methods

Novel multi-view generation framework for 3D displays, Kyuyoung Hwang, Yangho Cho, Hoyoung Lee, Dusik Park, ChangYeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) [8288-71]

Calibration of multiview camera with parallel and decentered image sensors, Mohamed Ali-Bey, Saïd Moughamir, Noureddine Manamanni, Univ. de Reims Champagne-Ardenne (France) [8288-72]

Inversion-free multiview subpixel rendering for natural 3D presentation, Yun-Tae Kim, Gee-Young Sung, Ju-Yong Park, Dong-Kyung Nam, Du-Sik Park, Samsung Advanced Institute of Technology (Korea, Republic of) [8288-73]

Wide-viewing angle three-dimensional display based on the ray reconstruction method using multiple micro-projectors, Hideya Takahashi, Kenta Hirooka, Osaka City Univ. (Japan); Kenji Yamada, Osaka Univ. (Japan) [8288-74]

Multi-layered, see-through movie in diminished reality, Yuko Uematsu, Takanori Hashimoto, Takuya Inoue, Naoki Shimizu, Hideo Saito, Keio Univ. (Japan) [8288-75]

An independent motion and disparity vector prediction method for multiview video coding, Seungchul Ryu, Jungdong Seo, Yonsei Univ. (Korea, Republic of); Jin Young Lee, Samsung Advanced Institute of Technology (Korea, Republic of); Dong Hyun Kim, Yonsei Univ. (Korea, Republic of); Ho-Cheon Wey, Samsung Advanced Institute of Technology (Korea, Republic of); Kwanghoon Sohn, Yonsei Univ. (Korea, Republic of) [8288-76]

Geometry compensation using depth and camera parameters for three-dimensional video coding, Dong-Hyun Kim, Jungdong Seo, Seungchul Ryu, Yonsei Univ. (Korea, Republic of); Jin Young Lee, Hocheon Wey, Samsung Advanced Institute of Technology (Korea, Republic of); Kwanghoon Sohn, Yonsei Univ. (Korea, Republic of) [8288-77]

Converting conventional stereo pairs to multi-view sequences using morphing, Roger Olsson, Vamsi Kiran Adhikarla, Sebastian Schwarz, Mårten Sjöström, Mid Sweden Univ. (Sweden) [8288-78]

Multiview video and depth compression for free-view navigations, Yuta Higuchi, Mehrdad Panahpour Tehrani, Tomohiro Yendo, Toshiaki Fujii, Masayuki Tanimoto, Nagoya Univ. (Japan) [8288-79]

A layered inpainting method for virtual view synthesis, Seona Kim, Kyoung Joon Lee, Seoul National Univ. (Korea, Republic of); Il Dong Yun, Hankuk Univ. of Foreign Studies (Korea, Republic of); Sang Uk Lee, Seoul National Univ. (Korea, Republic of) [8288-80]

Analysis on ray reconstruction characteristics of multi-view and integral imaging display, Hee-Seung Kim, Hyun-Eui Kim, Kyeong-Min Jeong, Jae-Hyeong Park, Chungbuk National Univ. (Korea, Republic of) [8288-81]

A content-based method for perceptually driven joint color/depth compression, Emilie Bosc, Luce Morin, Muriel Pressigout, Institut National des Sciences Appliquées de Rennes (France) [8288-82]

Stereoscopic Image Methods

- Efficient panoramic sampling of real-world environments for image-based stereoscopic telepresence**, Luis E. Gurrieri, Eric Dubois, Univ. of Ottawa (Canada)[8288-84]
- Partial 2D-to-S3D conversion and the cognitive characteristics**, Yoshihisa Koido, Takashi Kawai, Waseda Univ. (Japan)[8288-85]
- Disparity-compensated view synthesis for S3D content correction**, Robert Philippe, Cédric Thébault, Valter Drazic, Pierre-Henri Conze, Technicolor S.A. (France)[8288-86]
- Virtual view interpolation at arbitrary view points for mixed-resolution 3D videos**, Seungsin Lee, Seok Lee, Ho-Cheon Wey, Du-Sik Park, Samsung Advanced Institute of Technology (Korea, Republic of)[8288-87]
- Efficient dense blur map estimation for automatic 2D-to-3D conversion**, Luc Vosters, Technische Univ. Eindhoven (Netherlands) and Axon Digital Design (Netherlands); Gerard de Haan, Philips Research Nederland B.V. (Netherlands) and Technische Univ. Eindhoven (Netherlands)[8288-88]
- ROI-based transmission method for stereoscopic video to maximize rendered 3D video quality**, Chaminda T. E. R. Hewage, Maria G. Martini, Kingston Univ. (United Kingdom)[8288-89]
- Stereoscopic image-inpainting-based, view-synthesis algorithm for glasses-based and glasses-free 3D displays**, Chang Yuan, Sharp Labs. of America, Inc. (United States); Chris Huei Hung Liao, The Univ. of Southern California (United States); Hao Pan, Sharp Labs. of America, Inc. (United States)[8288-90]
- Towards a real-time, high-definition depth sensor with hardware-efficient stereo matching**, Ke Zhang, IMEC (Belgium) and Katholieke Univ. Leuven (Belgium); Guanyu Yi, Chao-Kang Liao, Christine Lin, Hsiu-Chi Yeh, IMEC (Belgium); Rudy Lauwereins, IMEC (Belgium) and Katholieke Univ. Leuven (Belgium); Luc J. Van Gool, Katholieke Univ. Leuven (Belgium) and ETH Zurich (Switzerland); Gauthier Lafruit, IMEC (Belgium)[8288-91]
- Interactive floating windows: a new technique for stereoscopic video games**, Andrew Hogue, Bill Kapralos, Chris Zerebecki, Mina Tawadrous, Brodie Stanfield, Univ. of Ontario Institute of Technology (Canada)[8288-92]
- Stereoscopic reconfiguration for 3D displays**, Jean-Christophe Houde, Pierre-Marc Jodoin, Univ. de Sherbrooke (Canada); François Deschênes, Univ. du Québec à Rimouski (Canada)[8288-93]
- Single lens dual-aperature 3D imaging system: color modeling to reduce the difference between two viewpoints**, Sam Youngsam Bae, Jet Propulsion Lab. (United States) and The Univ. of Southern California (United States); Allen Ream, Montana State Univ. (United States); Ronald Korniski, Michael Shearn, Jet Propulsion Lab. (United States); Hrayr Shahinian, Skull Base Institute (United States); Harish Manohara, Jet Propulsion Lab. (United States)[8288-94]

Stereoscopic Applications

- A simultaneous 2D/3D autostereo workstation**, Dennis Chau, Bradley McGinnis, Jonas Talandis, Jason Leigh, Univ. of Illinois at Chicago (United States); Tom Peterka, Aaron Knoll, Aslihan Sumer, Michael Papka, Julius Jellinek, Argonne National Lab. (United States)[8288-95]
- Interactive stereoscopic visualization of large-scale astrophysical simulations**, Ralf Kaehler, SLAC National Accelerator Lab. (United States)[8288-96]
- Designing stereoscopic information visualization for 3D-TV: what can we can learn from S3D gaming?**, Jonas Schild, Maic Masuch, Univ. Duisburg-Essen (Germany)[8288-97]
- A stereoscopic movie player with real-time content adaptation to the display geometry**, Sylvain Duchene, INRIA Rhône-Alpes (France); Martin Lambers, Univ. Siegen (Germany); Frederic Devernay, INRIA Rhône-Alpes (France)[8288-15]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 10

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

3D Games

- Session Chair:* **Chris Ward**, Lightspeed Design, Inc. (United States)
- 9:30 am: **Case study: the introduction of stereoscopic games on the Sony PlayStation 3**, Ian H. Bickerstaff, Sony Computer Entertainment Europe Ltd. (United Kingdom)[8288-38]
- 9:50 am: **Stereoscopic 3D video games and their effects on engagement**, Andrew Hogue, Bill Kapralos, Chris Zerebecki, Mina Tawadrous, Brodie Stanfield, Univ. of Ontario Institute Of Technology (Canada)[8288-39]
- 10:10 am: **Stereoscopic display in a slot machine**, Mikko Laakso, Finland’s Slot Machine Association (RAY) (Finland)[8288-40]
- Coffee Break 10:30 to 11:10 am

Sessions 11 and 12 run concurrently

SESSION 11

Room: Grand Peninsula

Ballroom A Wed. 11:10 am to 12:20 pm

3D Cinema

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

- 11:10 am: **YouDash3D: exploring stereoscopic 3D gaming for 3D movie theaters**, Jonas Schild, Univ. Duisburg-Essen (Germany); Sven Seele, Hochschule Bonn-Rhein-Sieg (Germany); Maic Masuch, Univ. Duisburg-Essen (Germany) [8288-42]
- 11:30 am: **3D storytelling: a case study** (*Invited Paper*), Kasimir Lehto, 4th Wall Productions (Finland) [8288-43]
- 11:50 pm: **Thinking in z-space: flatness and spatial narrativity**, Ray Zone, The 3-D Zone (United States) [8288-44]
- Lunch Break 12:20 to 2:00 pm

SESSION 13

Room: Grand Peninsula Ballroom A... Wed. 2:00 to 4:20 pm

Stereoscopic Displays

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

- 2:00 pm: **Investigating the cross-compatibility of IR-controlled active shutter glasses**, Andrew J. Woods, Jesse Helliwell, Curtin Univ. (Australia) [8288-49]
- 2:20 pm: **New high-brightness interference filter developments**, Helmut Jorke, Arnold Simon, Infitec GmbH (Germany) [8288-50]
- 2:40 pm: **Real-world stereoscopic performance in multiple-focal-planes displays: how far apart should the image planes be?**, Simon J. Watt, Kevin J. MacKenzie, Louise C. Ryan, Bangor Univ. (United Kingdom) [8288-51]
- 3:00 pm: **An eyeglass-like, eye-tracked, optical see-through, head-mounted display using freeform optics**, Hong Hua, College of Optical Sciences, The Univ. of Arizona (United States) [8288-52]
- Coffee Break 3:20 to 4:00 pm
- 4:00 pm: **Optimization of a multi-view system based on pulsed LED-LCD projectors**, Achim Pross, Roland Blach, Matthias Bues, Roman Reichel, Oliver Stefani, Fraunhofer-Institut für Arbeitswirtschaft und Organisation (Germany) [8288-53]

SESSION 12

Room: Grand Peninsula

Ballroom E Wed. 11:10 am to 12:30 pm

Autostereoscopic Displays: Advances and Analysis

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

- 11:10 am: **Floating three-dimensional display with 360-degree viewing angle**, Daisuke Miyazaki, Kenta Okoda, Yuki Maeda, Takaaki Mukai, Osaka City Univ. (Japan) [8288-45]
- 11:30 am: **A novel 3D display system using combined integral imaging and Fresnel hologram**, Jhen-Si Chen, Neil Collings, Daping Chu, Univ. of Cambridge (United Kingdom) [8288-46]
- 11:50 am: **Analysis and management of geometric distortions on multi-view displays with only horizontal parallax**, Amir Said, Bruce Culbertson, Hewlett-Packard Labs. (United States) [8288-47]
- 12:10 pm: **Mixed-resolution view synthesis using non-local means refined image merging**, Thomas Richter, Michael Schöberl, Jürgen Seiler, Tobias Tröger, André Kaup, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) [8288-48]
- Lunch Break 12:30 to 2:00 pm

Room: Grand Peninsula

Ballroom A Wed. 4:20 to 5:20 pm

Discussion Forum: 3D Moving Images: Will They Become Ubiquitous?

Advances in technology have enabled filmmakers to create a new stereoscopic cinema that has established itself with several dozen films in release each year that are shown on tens of thousands of theater screens all over the world. Millions of TV sets are now 3D capable and there promises to be an onslaught of eyewear-free single-user devices in the coming year or two. Will all films and video become stereoscopic, in the way that color became a standard modality? Our panel will discuss the technological, aesthetic, and business aspects of the question.

Room: Grand Peninsula Ballroom A... Wed. 5:20 to 5:30 pm

SD&A Closing Remarks

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

Please visit www.stereoscopic.org for more information about the Stereoscopic Displays and Applications conference.

Room: Grand Peninsula

Ballroom E 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.

The Engineering Reality of Virtual Reality 2012

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

Tuesday 24 January

**Room: Grand Peninsula
Ballroom A Tues. 8:20 to 9:30 am**
Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman,
Massachusetts Institute of Technology (United States)

SESSION 1

Room: Sumac Room Tues. 9:30 to 10:30 am

Context Awareness and Immersion

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

9:30 am: **Foreign language learning in immersive virtual environments**, Benjamin Chang, Lee Sheldon, Mei Si, Rensselaer Polytechnic Institute (United States). [8289-01]

9:50 am: **Virtual reality technology prevents accidents in extreme situations**, Yehuda Badihi, Jerusalem College of Technology (Israel); Motti Reiff, Jerusalem College of Technology (Korea, Republic of). . . [8289-02]

10:10 am: **Motion parallax in immersive cylindrical display systems**, Nicolas Filliard, Gilles Reymond, Renault Technocentre (France); Andras Kemeny, Renault Technocentre (France) and Arts et Métiers ParisTech (France); Alain Berthoz, Collège de France (France). [8289-03]

Coffee Break 10:30 to 11:10 am

SESSION 2

Room: Sumac Room Tues. 11:10 am to 12:30 pm

Communicating Perspective through VR

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

11:10 am: **Meta!Blast computer game: a pipeline from science to 3D art to education**, Eve Syrkin Wurtele, P. J. Campbell, William Schneller, Diane Bassham, Iowa State Univ. (United States) [8289-04]

11:30 am: **Learning immersion without getting wet**, Julieta C. Aguilera, Adler Planetarium & Astronomy Museum (United States). [8289-05]

11:50 am: **Byte me**, Diane Gromala, Meehae Song, Andrea Zeffiro, Simon Fraser Univ. (Canada) [8289-06]

12:10 pm: **Female artists and the VR crucible: expanding the aesthetic vocabulary**, Jacquelyn F. Morie, The Univ. of Southern California (United States) [8289-07]

Lunch Break 12:30 to 2:00 pm

SESSION 3

Room: Sumac Room Tues. 2:00 to 3:20 pm

Refacing VR

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

2:00 pm: **Markerless 3D facial motion capture system**, Youngkyoo Hwang, Jung-Bae Kim, Won-Chul Bang, James D.K. Kim, Chang-Yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) [8289-08]

2:20 pm: **Capturing geometry in real-time using a tracked Microsoft Kinect**, Daniel Tenedorio, Marlena Fecho, Jorge Schwartzaupt, Robert Partridge, James Lue, Jurgen P. Schulze, Univ. of California, San Diego (United States). [8289-09]

2:40 pm: **An example-based face relighting**, Hyunjung Shim, Samsung Advanced Institute of Technology (Korea, Republic of) [8289-10]

3:00 pm: **Heteronyms and avatars: a self-reflective system for artistic activity**, Elif E. Ayiter, Sabanci Univ. (Turkey) [8289-11]

Coffee Break 3:20 to 4:00 pm

SESSION 4

Room: Sumac Room Tues. 4:00 to 5:20 pm

VR Hybrids: Augmented Reality

Session Chair: Todd Margolis, Univ. of California, San Diego (United States)

4:00 pm: **ManifestAR: an augmented reality manifesto**, John Craig Freeman, Emerson College (United States) [8289-12]

4:20 pm: **Invisible waves and hidden realms: augmented reality and experimental art**, Silvia P. Ruzanka, Rensselaer Polytechnic Institute (United States). [8289-13]

4:40 pm: **Immersive realities: articulating the shift from VR to AR through artistic practice**, Tracy Cornish, Todd Margolis, Univ. of California, San Diego (United States) [8289-14]

5:00 pm: **MetaTree: augmented reality narrative explorations of urban forests**, Ruth G. West, Todd Margolis, Univ. of California, San Diego (United States); Jarlath O'Neil-Dunne, The Univ. of Vermont (United States); Eitan Mendelowitz, Smith College (United States). [8289-15]

Room: Grand Peninsula Ballroom E . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Demonstrations. 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

Prediction of visually perceived location using reaching action and effect of reaching distance on it, Masahiro Suzuki, Keigo Takazawa, Kazutake Uehira, Kanagawa Institute of Technology (Japan). . . [8289-23]

An innovative multimodal virtual platform for communication with devices in a natural way, Chhayarani R. Kinkar, Richa Golash, Akhilesh R. Upadhyay, Sagar Institute of Research, Technology & Science (India). [8289-24]

Composite lay-up process with application of elements of augmented reality, Jozef Novak-Marcincin, Jozef Barna, Miroslav Janak, Ludmila Novakova-Marcincinova, Veronika Fecova, Technical Univ. of Kosice (Slovakia). [8289-25]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 5

Room: Sumac Room Wed. 9:30 to 10:10 am

Viewing Virtual Experiences

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

9:30 am: **Reordering virtual reality: recording and recreating real-time experiences**, Margaret Dolinsky, William R. Sherman, Chris Eller, Eric A. Wernert, Yi-Chen Chi, Indiana Univ. (United States). [8289-16]

9:50 am: **The cognitive implications of virtual locomotion with a restricted field of view**, William E. Marsh, Jonathan W. Kelly, Veronica J. Dark, James H. Oliver, Iowa State Univ. (United States). [8289-18]

Coffee Break 10:10 to 10:50 am

SESSION 6

Room: Sumac Room Wed. 10:50 am to 12:10 pm

Educational Pathways in VR

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

10:50 am: **Use of a simulator based on virtual reality to assess the application of economic driving techniques by truck drivers**, Tales N. Bogoni, Univ. Estadual do Mato Grosso Sul (Brazil); Márcio Sarroglia Pinho, PUCRS-IPCT (Brazil) [8289-19]

11:10 am: **LVC interaction within a mixed-reality training system**, Brice B. Pollock, Iowa State Univ. (United States) and Virtual Reality Application Ctr. (United States); Eliot Winer, Stephen Gilbert, Iowa State Univ. (United States); Julio de la Cruz, U.S. Army RDECOM/STTC (United States). [8289-20]

11:30 am: **Immersive volume rendering of blood vessels**, Gregory Long, Han Suk Kim, Alison Marsden, Yuri Bazilevs, Jurgen Schulze, Univ. of California, San Diego (United States) [8289-21]

11:50 am: **A virtual reality interface for pre-planning of surgical operations based on a customized model of the patient**, Marcin Witkowski, Robert Sitnik, Janusz Lenar, Warsaw Univ. of Technology (Poland) [8289-22]

3D Image Processing (3DIP) and Applications 2012

Conference Chairs: **Atila 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**, INSERM (France); **Adrian G. Bors**, The Univ. of York (United Kingdom); **Saida Bouakaz**, Univ. of Lyon (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. of Lyon (France); **Afzal Godil**, National Institute of Standards and Technology (United States); **Benoît M. Macq**, Univ. Catholique de Louvain (Belgium); **Serge Miguet**, Univ. of Lyon (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 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am
Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

SESSION 1

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

Stereo and Multiview Imaging I

Session Chair: **Afzal Godil**, National Institute of Standards and Technology (United States)

2:00 pm: **Edge-aware stereo matching with O(1) complexity**, Cevahir Cigla, Middle East Technical Univ. (Turkey) and Vestek (Turkey); A. Aydin Alatan, Middle East Technical Univ. (Turkey) [8290-01]

2:20 pm: **Establishing eye contact for home video communication using stereo analysis and free viewpoint synthesis**, Christian Weigel, Technische Univ. Ilmenau (Germany); Niklas Treutner, Humboldt-Universität zu Berlin (Germany) [8290-02]

2:40 pm: **Depth adaptive hierarchical hole filling for DIBR-based 3D videos**, Mashhour Solh, Ghassan Al-Regib, Georgia Institute of Technology (United States) [8290-03]

3:00 pm: **Space carving MVD sequences for modelling natural 3D scenes**, Youssef Alj, Technicolor S.A. (France) and Institut National des Sciences Appliquées de Rennes (France); Guillaume Boisson, Technicolor S.A. (France); Luce Morin, Muriel Pressigout, Institut National des Sciences Appliquées de Rennes (France); Philippe Bordes, Technicolor S.A. (France) [8290-04]

Coffee Break 3:20 to 4:00 pm

SESSION 2

Room: Sandpebble Room A Tues. 4:00 to 4:40 pm

Poster Pops

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

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

SESSION 3

Room: Sandpebble Room A Tues. 4:40 to 5:20 pm

Stereo and Multiview Imaging II

Session Chair: **Afzal Godil**, National Institute of Standards and Technology (United States)

4:40 pm: **A locally content-dependent filter for inter-perspective anti-aliasing**, Mårten Sjöström, Sylvain Tourancheau, Xusheng Wang, Roger Olsson, Mid Sweden Univ. (Sweden) [8290-05]

5:00 pm: **Photometric and geometric rectification for stereoscopic images**, Seung-Ryong Han, Jongsul Min, Taesung Park, Yongje Kim, Samsung Electronics Co., Ltd. (Korea, Republic of) [8290-06]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging

Posters 5:30 to 7:00 pm

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

Novel time- and depth-stamped imaging for 3D-PIV (particle image velocimetry) using correlation image sensor, Kenji Komiya, Toru Kurihara, Shigeru Ando, The Univ. of Tokyo (Japan) [8290-40]

3D imaging for ballistics analysis using chromatic white-light sensor, Andrey Makrushin, Mario Hildebrandt, Jana Dittmann, Eric Clausing, Otto-von-Guericke-Universität Magdeburg (Germany); Robert Fischer, Claus Vielhauer, Univ. of Applied Sciences Brandenburg (Germany) . . . [8290-41]

Computer-aided 3D-shape construction of hearts from CT images for rapid prototyping, Yutaro Kato, Masayuki Fukuzawa, Nobuyuki Nakamori, Kyoto Institute of Technology (Japan); Seiichiro Ozawa, Kyoto Prefectural Univ. of Medicine (Japan); Isao Shiraishi, National Cardiovascular Ctr. Research Institute (Japan) [8290-42]

Operation-free 3D visualization of pulsatile tissues in freehand ultrasonic diagnosis, Kazumasa Kawata, Masayuki Fukuzawa, Nobuyuki Nakamori, Kyoto Institute of Technology (Japan); Yoshiki Kitsunezuka, Saiseikai Hyogo-ken Hospital (Japan) [8290-43]

Conference 8290

Semiautomatic generation of semantic building models from image series, Stefan Wirtz, Peter Decker, Denes Weiß, Dietrich W. Paulus, Univ. Koblenz-Landau (Germany) [8290-44]

Complex virtual urban environment modeling from CityGML data and OGC web services: application to the SIMFOR project, Jean-Christophe Chambealland, Gilles Gesquière, Lab. des Sciences de l'Information et des Systèmes (France) [8290-45]

Liquid crystal materials and structures for image processing and 3D shape acquisition, Katarzyna Garbat, Military Univ. of Technology (Poland); Piotr Garbat, Warsaw Univ. of Technology (Poland) . . . [8290-46]

Piece-wise linear function estimation for platelet-based depth maps coding using edge detection, Dorsaf Sebali, The Univ. of Manouba (Tunisia) [8290-47]

Source modeling for effective 3D video delivery, Chaminda T.E.R. Hewage, Maria G. Martini, Kingston Univ. (United Kingdom) . . . [8290-48]

New technique for capturing images containing invisible depth information on object using brightness modulated light, Sae Isaka, Kazutake Uehira, Kanagawa Institute of Technology (Japan) . . . [8290-49]

Interactive 3D segmentation by tubular envelope model for thoracic aorta treatment, Pawel J. Lubniewski, Univ. d'Auvergne Clermont-Ferrand I (France) and Univ. Kardynala Stefana Wyszyńskiego w Warszawie (Poland); Bruno Miguel M.D., Vincent Sauvage, Christophe Lohou, Univ. d'Auvergne Clermont-Ferrand I (France) [8290-50]

A parallel stereo reconstruction algorithm with applications in entomology (APSRA), Rajesh Bhasin, Univ. of Illinois at Urbana Champaign (United States); Won Jun Jang, John C. Hart, Univ. of Illinois at Urbana-Champaign (United States) [8290-51]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 4

Room: Sandpebble Room A Wed. 9:30 am to 12:30 pm

Time-Of-Flight Data, Depth Maps Analysis

Session Chair: Eric Paquet, National Research Council Canada (Canada)

9:30 am: **Depth map upscaling through edge-weighted optimization**, Sebastian Schwarz, Mårten Sjöström, Roger Olsson, Mid Sweden Univ. (Sweden) [8290-07]

9:50 am: **Adaptive switching filter for noise removal in highly corrupted depth maps from time-of-flight image sensors**, Seunghee Lee, Kwanghyuk Bae, Kyu-Min Kyung, Tae-Chan Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) [8290-08]

10:10 am: **Parametric model-based noise reduction for ToF depth sensors**, Yong Sun Kim, Byongmin Kang, Hwasup Lim, Ouk Choi, Keechang Lee, James D. K. Kim, Chang-Yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) [8290-09]

Coffee Break 10:30 to 11:10 am

11:10 am: **Silhouette extraction using color and depth information**, Ekaterina V. Tolstaya, Victor Bucha, Samsung Electronics Co., Ltd. (Russian Federation) [8290-10]

11:30 am: **Discrete and continuous optimizations for depth image super-resolution**, Ouk Choi, Hwasup Lim, Yong Sun Kim, Byongmin Kang, Keechang Lee, James D. K. Kim, Chang-Yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) [8290-11]

11:50 am: **A line-based approach for depth superresolution**, Yongseok Soh, Seoul National Univ. (Korea, Republic of); Jae-Young Sim, Ulsan National Institute of Science and Technology (Korea, Republic of); Chang-Su Kim, Korea Univ. (Korea, Republic of); Sang Uk Lee, Seoul National Univ. (Korea, Republic of) [8290-12]

12:10 pm: **Efficient spatio-temporal hole filling strategy for Kinect depth maps**, Massimo Camplani, Luis Salgado, Univ. Politécnic de Madrid (Spain) [8290-13]

Lunch Break 12:30 to 2:00 pm

SESSION 5

Room: Sandpebble Room A Wed. 2:00 to 5:40 pm

3D Shape Modeling, Retrieval

Session Chair: Mohamed Daoudi, TELECOM Lille 1 (France)

2:00 pm: **Experimental results of bispectral invariants discriminative power**, Karol Kubicki, Jagiellonian Univ. (Poland); Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore) [8290-14]

2:20 pm: **Evaluation of surface reconstruction from point clouds by shape parameters**, Lu Cao, Fons J. Verbeek, Leiden Univ. (Netherlands) [8290-15]

2:40 pm: **3D mesh Reeb graph computation using commute-time and diffusion distances**, Rachid EL Khoury, Jean Philippe Vandeborre, Mohamed Daoudi, Institut TELECOM (France) and TELECOM Lille 1 (France) [8290-16]

3:00 pm: **Geometric modeling of pelvic organs with thickness**, Thierry Bay, Lab. des Sciences de l'Information et des Systèmes (France); Zhuo Wei Chen, Univ. d'Evry-Val d'Essonne (France); Romain Raffin, Marc Daniel, Lab. des Sciences de l'Information et des Systèmes (France); Pierre Joli, Univ. d'Evry-Val d'Essonne (France); Zhi Qiang Feng, Marc-Emmanuel Bellemare, Lab. des Sciences de l'Information et des Systèmes (France) [8290-17]

Coffee Break 3:20 to 4:00 pm

4:00 pm: **Refined facial disparity maps for automatic creation of 3D avatars**, Rafael Pagés, Francisco Morán, Luis Salgado, Daniel Berjón, Univ. Politécnic de Madrid (Spain) [8290-18]

4:20 pm: **Fast human pose estimation using 3D Zernike descriptors**, Daniel Berjón, Francisco Morán, Univ. Politécnic de Madrid (Spain) [8290-19]

4:40 pm: **Analysis of binning of normals for spherical harmonic cross-correlation**, Robert Larkins, Michael J. Cree, Adrian A. Dorrington, The Univ. of Waikato (New Zealand) [8290-20]

5:00 pm: **Topology reconstruction for B-Rep modeling from 3D mesh in reverse engineering applications**, Roseline Bénéière, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France) and C4W (France); Gérard Subsol, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France); Gilles Gesquière, Lab. des Sciences de l'Information et des Systèmes (France); François Le Breton, C4W (France); William Puech, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France) [8290-21]

5:20 pm: **An evaluation of local shape descriptors for 3D shape retrieval**, Sarah Y. Tang, Princeton Univ. (United States); Afzal Godil, National Institute of Standards and Technology (United States) . [8290-22]

Thursday 26 January

SESSION 6

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

3D Analysis, Feature Extraction, Segmentation

Session Chair: Atilla M. Baskurt, Univ. of Lyon (France)

8:30 am: **Fractal geometry and multimedia retrieval: a theoretical framework**, Eric Paquet, National Research Council Canada (Canada); Herna L. Viktor, Univ. of Ottawa (Canada) [8290-23]

8:50 am: **Spatial modeling of bone microarchitecture**, Hui Li, Kang Li, Taehyong Kim, Aidong Zhang, Murali Ramanathan, Univ. at Buffalo (United States) [8290-24]

9:10 am: **A new affine invariant method for image matching**, Philippe Montesinos, Ecole des Mines d'Alès (France) [8290-25]

9:30 am: **2D-3D feature association via projective transform invariants for model-based 3D pose estimation**, Osman S. Gedik, A. Aydin Alatan, Middle East Technical Univ. (Turkey) [8290-26]

9:50 am: **Reprocessing anaglyph images**, Henry G. Dietz, Univ. of Kentucky (United States) [8290-27]

Coffee Break 10:10 to 10:50 am

SESSION 7

Room: Sandpebble Room A Thurs. 10:50 am to 12:10 pm

3D Metrology

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

10:50 am: **X-ray stereo imaging for micro 3D motions within non-transparent objects**, Wasil H. M. Salih, Jan A. N. Buytaert, Joris J. J. Dirckx, Univ. Antwerpen (Belgium) [8290-28]

11:10 am: **A stereoscopic imaging system for laser back scatter-based trajectory measurement in ballistics: part 2**, Uwe Chalupka, Hendrik Rothe, Helmut-Schmidt-Univ. (Germany) [8290-29]

11:30 am: **Single frame coaxial 3D measurement using depth from defocus of projection system**, Toru Kurihara, Shigeru Ando, The Univ. of Tokyo (Japan) [8290-30]

11:50 am: **Multidirectional four-dimensional shape measurement system**, Janusz Lenar, Robert Sitnik, Marcin Witkowski, Warsaw Univ. of Technology (Poland) [8290-31]

Lunch Break 12:10 to 1:50 pm

SESSION 8

Room: Sandpebble Room A Thurs. 1:50 to 3:30 pm

3D Imaging Systems

Session Chair: Frédéric Truchetet, Univ. de Bourgogne (France)

1:50 pm: **Estimation of surface normal vectors based on 3D scanning from heating approach**, Olivier Aubreton, Univ. de Bourgogne (France); Gonen Eren, Galatasaray Univ. (Turkey); Frederic Truchetet, Univ. de Bourgogne (France) [8290-32]

2:10 pm: **First topographical features for the age determination of latent biometric fingerprint traces using a 3D optical and contact-less chromatic white light (CWL) sensor**, Ronny Merkel, Otto-von-Guericke-Univ. Magdeburg (Germany); Stefan Gruhn, Fachhochschule Brandenburg (Germany); Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany); Claus Vielhauer, Fachhochschule Brandenburg (Germany) [8290-33]

2:30 pm: **A single-imager, single-lens video camera prototype for 3D imaging**, Lauren Christopher, Weixu Li, Indiana Univ.-Purdue Univ. Indianapolis (United States) [8290-34]

2:50 pm: **3D multimodal data fusion system**, Piotr Garbat, Warsaw Univ. of Technology (Poland) [8290-35]

3:10 pm: **Fully automatic 3D digitization of unknown objects using progressive data bounding box**, Antoine Aigueperse, Souhaïel Khalfaoui, Lab. d'Electronique, Informatique et Image (France); Ralph Seulin, Yohan Fougerolle, David Fofi, Univ. de Bourgogne (France) [8290-36]

Coffee Break 3:30 to 4:00 pm

SESSION 9

Room: Sandpebble Room A Thurs. 4:00 to 5:00 pm

3D Compression and Watermarking

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

4:00 pm: **3D video compression with the H.264 codec**, Nikolaus L. Karpinsky, Song Zhang, Iowa State Univ. (United States) [8290-37]

4:20 pm: **3D multiresolutions synchronization scheme based on feature point selection**, Nicolas Tournier, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France) and Stratégies S.A. (France); William Puech, Gérard Subsol, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France); Jean-Pierre Pedeboy, Stratégies S.A. (France) [8290-38]

4:40 pm: **A content-adaptive scheme for reduced-complexity, multiview video coding**, Aykut Avci, Jan De Cock, Roel Beernaert, Jelle De Smet, Univ. Gent (Belgium); Youri Meuret, Vrije Univ. Brussel (Belgium); Peter Lambert, Herbert De Smet, Univ. Gent (Belgium) [8290-39]

Human Vision and Electronic Imaging XVII

Conference Chairs: **Bernice E. Rogowitz**, Visual Perspectives Consulting (United States); **Thrasylvoulos 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); **Tiarna Doherty**, Smithsonian American Art Museum (United States); **Elena A. Fedorovskaya**, Eastman Kodak Co. (United States); **James Fewerda**, Rochester Institute of Technology (United States); **Jennifer Gille**, 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); **Sylvia C. Pont**, Technische Univ. Delft (Netherlands); **Hawley K. Rising III**, Consultant (United States); **David M. Stone**, Univ. of Delaware (United States); **Sabine Süsstrunk**, Ecole 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)

Cosponsored by:



Monday 23 January

Room: Regency Ballroom B Mon. 9:30 to 9:40 am

Conference Welcome

Session Chair: **Bernice E. Rogowitz**, Visual Perspectives Consulting (United States)

Room: Regency Ballroom B Mon. 9:40 am to 12:10 pm

Keynote Session

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

9:40 am: **The general solution to HDR rendering**, John J. McCann, McCann Imaging (United States) [8291-60]

Coffee Break 10:20 to 10:50 am

10:50 am: **Measuring material perception**, Laurence T. Maloney, New York Univ. (United States) [8291-61]

11:30 am: **Computational photography and the Stanford Frankencamera (Presentation Only)**, Marc S. Levoy, Stanford Univ. (United States) [8291-62]

Lunch Break 12:10 to 2:00 pm

SESSION 1

Room: Regency Ballroom B Mon. 2:00 to 3:40 pm

Computational Photography

Session Chair: **Erhardt Barth**, Univ. zu Lübeck (Germany)

2:00 pm: **Image representations learned for natural images and a non-linear maximum synthesis rule with applications in computational photography**, Jens Hocke, Erhardt Barth, Thomas Martinetz, Univ. zu Lübeck (Germany) [8291-01]

2:20 pm: **How to make a small phone camera shoot like a big DSLR: creating and fusing multi-modal exposure series**, Thomas Binder, Florian Kriener, Christian Wichner, Manuel Wille, Nik Software GmbH (Germany); Mike Wellner, Thomas Kaester, Erhardt Barth, Pattern Recognition Lab. (Germany) [8291-02]

2:40 pm: **Metric image mosaics with bounded error**, Dev Ghosh, John Tumblin, Northwestern Univ. (United States) [8291-03]

3:00 pm: **Single-lens 3D camera with extended depth-of-field**, Christian Perwass, Lennart Wietzke, Raytrix GmbH (Germany) [8291-04]

3:20 pm: **3D holoscopic video imaging system**, Johannes H. Steurer, Arri Cine Technik (Germany) [8291-05]

Coffee Break 3:40 to 4:10 pm

SESSION 2

Room: Regency Ballroom B Mon. 4:10 to 5:50 pm

Material Perception

Session Chairs: **Sylvia C. Pont**, Technische Univ. Delft (Netherlands); **James A. Ferwerda**, Rochester Institute of Technology (United States)

4:10 pm: **Predictive rendering for accurate material perception**, Kavita Bala, Cornell Univ. (United States) [8291-06]

4:30 pm: **From color to appearance in the real world**, Francis Lamy, X-Rite, Inc. (United States) [8291-07]

4:50 pm: **Towards material literacy: making perception and knowledge of materials explicit through visual and verbal documentation of material engagement**, Ann-Sophie Lehmann, Utrecht Univ. (Netherlands) [8291-08]

5:10 pm: **Mixing material modes**, Sylvia C. Pont, Technische Univ. Delft (Netherlands) [8291-09]

5:30 pm: **Tangible display systems: bringing virtual objects into the real world**, James A. Ferwerda, Rochester Institute of Technology (United States) [8291-10]

Room: Regency Ballroom B Mon. 7:00 to 10:30 pm

Human Vision and Electronic Imaging Banquet

Banquet Speaker: Carol O’Sullivan, Trinity College Dublin

Style over substance?: What biological motion perception tells us about animating virtual characters

Abstract: What is it about a person’s motion that is distinctive, to the point that their friends can recognise them from a distance, or even from a simple cloud of moving points? What kinds of moves are attractive and appealing, and others not so much? How is it that body language can instantly signal a person’s emotional state, and what brain areas are involved in this processing?

Biological motion and emotional body language are important topics in perception and cognitive neuroscience, and many researchers are actively trying to answer these questions. In the field of computer animation, a major goal is to create virtual humans with emotion, personality and individual style using a variety of methods. What insights can we use about biological motion perception to help with this task? And in return, how can realistic virtual humans be used to study the perception of real humans in motion?

Tuesday 24 January

Room: Grand Peninsula

Ballroom A Tues. 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

SESSION 3

Room: Regency Ballroom B Tues. 9:30 to 10:50 am

Perceptual Image Quality

Session Chair: Thrasvoulos N. Pappas, Northwestern Univ. (United States)

9:30 am: **Quality estimation for images and video with different spatial resolutions**, A. Murat Demirtas, Univ. of California, Irvine (United States); Amy R. Reibman, AT&T Labs. Research (United States) [8291-11]

9:50 am: **Automatic parameter prediction for image denoising algorithms using perceptual quality features**, Anish Mittal, Anush Krishna Moorthy, Alan Conrad Bovik, The Univ. of Texas at Austin (United States) [8291-12]

10:10 am: **Viewer preferences for classes of noise removal algorithms for high-definition content**, Sachin G. Deshpande, Sharp Labs. of America, Inc. (United States) [8291-13]

10:30 am: **Image quality assessment in the low-quality regime**, Guilherme O. Pinto, Sheila S. Hemami, Cornell Univ. (United States) [8291-14]

Coffee Break 10:50 to 11:10 am

SESSION 4

Room: Regency Ballroom B Tues. 11:10 am to 12:30 pm

Multisensory Integration and Brain Plasticity

Session Chair: Lora T. Likova, The Smith-Kettlewell Eye Research Institute (United States)

11:10 am: **The question of simultaneity in multisensory integration**, Mark E. McCourt, Lynnette Leone, North Dakota State Univ. (United States) [8291-15]

11:30 am: **Multisensory integration deficits in children with autism spectrum disorders: a behavioral and ERP investigation**, Clifford D. Saron, Yukari Takarae, Margarita Beransky, David M. Horton, Ashley Stark, Andrea Schneider, Fernanda Vieira, Susan M. Rivera, Univ. of California, Davis (United States) [8291-16]

11:50 am: **The spatiotopic ‘visual’ cortex of the blind**, Lora T. Likova, The Smith-Kettlewell Eye Research Institute (United States) . . . [8291-17]

12:10 pm: **Acoustic-tactile rendering of visual information**, Pubudu Madhawa Silva, Thrasvoulos N. Pappas, Northwestern Univ. (United States); Joshua Atkins, James E. West, The Johns Hopkins Univ. (United States) [8291-18]

Lunch Break 12:30 to 2:00 pm

SESSION 5A

Room: Grand Peninsula Ballroom A . . . Tues. 2:00 to 3:20 pm

Stereoscopic 3D Image Quality: Quantifying Perception and Comfort: Joint Session with Conference 8288

Session Chairs: Sergio R. Goma, Qualcomm Inc. (United States); **John O. Merritt**, The Merritt Group (United States); **Christopher W. Tyler**, The Smith-Kettlewell Eye Research Institute (United States); **Lora T. Likova**, The Smith-Kettlewell Eye Research Institute (United States)

2:00 pm: **Apparent stereo: the Cornsweet illusion can enhance perceived depth**, Piotr Didyk, Max-Planck-Institut für Informatik (Germany); Tobias Ritschel, Elmar Eisemann, Telecom ParisTech (France); Karol Myszkowski, Hans-Peter Seidel, Max-Planck-Institut für Informatik (Germany) [8291-19]

2:20 pm: **Perceived depth of multi parallel, overlapping, transparent, stereoscopic surfaces**, Saori Aida, Koichi Shimono, Tokyo Univ. of Marine Science and Technology (Japan); Wa James Tam, Communications Research Ctr. Canada (Canada) [8291-20]

2:40 pm: **Diagnosing perceptual distortion present in group stereoscope viewing**, Melissa M. Burton, Brice B. Pollock, Jonathan W. Kelly, Stephen B. Gilbert, Eliot Winer, Iowa State Univ. (United States); Julio de la Cruz, U.S. Army RDECOM/STTC (United States) . . . [8291-21]

3:00 pm: **Visual discomfort and the timing of vergence-accommodation conflicts**, Joohwan Kim, David Kane, Martin S. Banks, Univ. of California, Berkeley (United States) [8288-34]

Coffee Break 3:20 to 3:50 pm

SESSION 5B

Room: Grand Peninsula Ballroom A . . . Tues. 3:50 to 5:10 pm

Stereoscopic 3D Image Quality: Quantifying Perception and Comfort: Joint Session with Conference 8288

Session Chairs: **Sergio R. Goma**, Qualcomm Inc. (United States); **John O. Merritt**, The Merritt Group (United States); **Christopher W. Tyler**, The Smith-Kettlewell Eye Research Institute (United States); **Lora T. Likova**, The Smith-Kettlewell Eye Research Institute (United States)

3:50 pm: **Measuring 3D discomfort from vertical and torsional disparities in natural images**, Christopher W. Tyler, Lora T. Likova, The Smith-Kettlewell Eye Research Institute (United States); Kalin Atanassov, Vikas Ramachandra, Sergio Goma, Qualcomm (United States) . . . [8291-22]

4:10 pm: **Visual fatigue versus eye-movements**, Cyril Vienne, Laurent Blondé, Didier Doyen, Technicolor S.A. (France) [8288-35]

4:30 pm: **Visual comfort: stereoscopic objects moving in the horizontal and mid-sagittal planes**, Wa James Tam, Filippo Speranza, Carlos Vázquez, Ron Renaud, Communications Research Ctr. Canada (Canada); Namho Hur, Electronics and Telecommunications Research Institute (Korea, Republic of) [8288-36]

4:50 pm: **Visual discomfort with stereo 3D displays when the head is not upright**, David Kane, Robin Held, Martin Banks, Univ. of California, Berkeley (United States) [8288-37]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

Art and Perception

5:30 pm: **Structural analysis of digital sculptures and artefacts to guide heritage conservation**, J. C. Podany, J. Paul Getty Museum (United States); V. Shapiro, Univ. of Wisconsin-Madison (United States) [8291-49]

Tracking of aging process by multiple 3D scans analysis, Eryk Bunsch, The Wilanów Palace Museum (Poland); Robert Sitnik, Warsaw Univ. of Technology (Poland) [8291-50]

Aesthetics and entropy: optimization of brightness distribution, Melville R. V. Sahyun, Consultant (United States) [8291-51]

A novel visualization tool for art history: a method for automated colorization of black and white archival photographs of works of art, Sotirios Tsafaris, Institute for Advanced Studies Lucca (Italy) and Northwestern Univ. (United States); Francesca Casadio, Kristin Lister, Inge Fiedler, Gwénaëlle Gautier, The Art Institute of Chicago (United States); Jean-Louis Andral, Musée Picasso (France); Stephanie D'Alessandro, The Art Institute of Chicago (United States); Aggelos Katsaggelos, Northwestern Univ. (United States) [8291-52]

PHOG analysis of self-similarity in aesthetic images, Seyed Ali Amirshahi, Michael Koch, Joachim Denzler, Christoph Redies, Friedrich-Schiller-Univ. Jena (Germany) [8291-53]

Perception and Image Quality

Influence of the source contact and encoding configuration on the perceived quality for scalable video coding, Yohann Pitrey, Univ. de Nantes (France); Marcus Barkowsky, Polytech' Nantes (France); Romuald Pepion, Univ. de Nantes (France); Patrick Le Callet, Polytech' Nantes (France) [8291-54]

Evaluation of desktop interface displays for 360-degree video, Stephen B. Gilbert, Wutthigrai Boonsuk, Jonathan W. Kelly, Iowa State Univ. (United States) [8291-55]

An evaluation of different setups for simulating lighting characteristics, Bart A. Salters, Michael J. Murdoch, Dragan Sekulovski, Pieter Seuntjens, Shih-Han Chen, Philips Research Nederland B.V. (Netherlands) [8291-56]

Biological visual attention guided automatic image segmentation with application in satellite imaging, Md I. Sina, Ana-Maria Cretu, Pierre Payeur, Univ. of Ottawa (Canada) [8291-57]

A neurobiologically-based, two-stage model for human color vision, Charles Q. Wu, Stanford Univ. (United States) [8291-58]

The oscillatory activities and its synchronization in auditory-visual integration as revealed by event-related potentials to bimodal stimuli, Jia Guo, Beijing Normal Univ. (China); Peng Xu, General Hospital Armed Police Forces (China); Xiaojie Zhao, Beijing Normal Univ. (China) [8291-59]

Quality assessment of images illuminated by dim LCD backlight, Tai-Hsiang Huang, Homer H. Chen, National Taiwan Univ. (Taiwan) . [8291-63]

Parallax scanning methods for stereoscopic three-dimensional imaging, Christopher A. Mayhew, Craig M. Mayhew, Vision III Imaging, Inc. (United States) [8291-64]

Reduced reference image quality assessment via sub-image similarity-based redundancy measurement, Xuanqin Mou, Wufeng Xue, Xi'an Jiaotong Univ. (China); Lei Zhang, The Hong Kong Polytechnic Univ. (Hong Kong, China) [8291-65]

Color impact in visual attention deployment considering emotional images, Christel Chamaret, Technicolor S.A. (France) [8291-66]

Wednesday 25 January

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

**Plenary Session and Conference Award
Presentations**

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 6

Room: Regency Ballroom B Wed. 9:30 am to 12:10 pm

**Medical Image Quality: Features, Tasks and
Semantics**

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

9:30 am: **On the development of expertise in interpreting medical images** (*Invited Paper*), Elizabeth Krupinsky, The Univ. of Arizona (United States) [8291-23]

10:00 am: **Modeling observer performance for optimizing image acquisition and processing**, Craig K. Abbey, Miguel Eckstein, Univ. of California, Santa Barbara (United States) [8291-24]

10:20 am: **Evaluation of HVS models in the application of medical image quality assessment**, Lu Zhang, Christine Cavaró-Ménard, Univ. of Angers (France); Patrick Le Callet, Polytech' Nantes (France) . . . [8291-25]

Coffee Break 10:40 to 11:10 am

11:10 am: **Perceptual challenges to computer-aided diagnosis**, Yulei Jang, The Univ. of Chicago (United States) [8291-26]

11:30 am: **Satisfaction of search experiments in advanced imaging**, Kevin S. Berbaum, The Univ. of Iowa Hospitals and Clinics (United States) [8291-27]

11:50 am: **Integrating human- and computer-based approaches to feature extraction and analysis**, Bernice E. Rogowitz, Visual Perspectives (United States); Alyssa Goodman, Harvard-Smithsonian Ctr. for Astrophysics (United States) [8291-28]

Lunch Break 12:10 to 2:20 pm

SESSION 7A

Room: Regency Ballroom B Wed. 2:20 to 3:20 pm

**Visual Attention: Task and Image Quality: Joint
Session with Conference 8293**

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

2:20 pm: **How do we watch images?: a case of change detection and quality estimation**, Jenni Radun, Tuomas Leisti, Toni Virtanen, Göte Nyman, Univ. of Helsinki (Finland) [8293-20]

2:40 pm: **Examining the effect of task on viewing behavior in videos using saliency maps**, Hani Alers, Judith A. Redi, Technische Univ. Delft (Netherlands); Ingrid Heynderickx, Philips Research (Netherlands) [8291-29]

3:00 pm: **Measuring saliency in images: which experimental parameters for the assessment of image quality?**, Clement Fredembach, Geoff Woolfe, Jue Wang, Canon Information Systems Research Australia Pty. Ltd. (Australia) [8293-21]

Coffee Break 3:20 to 3:50 pm

SESSION 7B

Room: Regency Ballroom B Wed. 3:50 to 5:50 pm

**Visual Attention: Task and Image Quality: Joint
Session with Conference 8293**

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

3:50 pm: **Investigations of the tone reproduction curves on the perceived image quality for fine art reproductions**, Jun Jiang, Franziska Frey, Susan Farnand, Rochester Institute of Technology (United States) [8293-23]

4:10 pm: **Characterizing eye movements during temporal- and global-quality assessment of h.264 compressed video sequences**, Claire Mantel, Nathalie Guyader, Patricia Ladret, Gelu Ionescu, Gipsa-lab (France); Thomas Kunlin, STMicroelectronics (France) [8291-30]

4:30 pm: **A compressed sensing model of crowding in peripheral vision**, Jens Hocke, Univ. zu Lübeck (Germany); Michael Dorr, Schepens Eye Research Institute (United States); Erhardt Barth, Univ. zu Lübeck (Germany) [8291-31]

4:50 pm: **Foveated self-similarity in nonlocal image filtering**, Alessandro Foi, Tampere Univ. of Technology (Finland); Giacomo Boracchi, Politecnico di Milano (Italy) [8291-32]

5:10 pm: **A statistical study of the correlation between interest points and gaze points**, Michael Nauge, Mohamed-Chaker Larabi, Univ. de Poitiers (France) [8291-33]

5:30 pm: **Interest point analysis as a model for the Poggendorff illusion**, Fred W. M. Stentiford, Univ. College London (United Kingdom) [8291-34]

Thursday 26 January

SESSION 8

Room: Regency Ballroom B Thurs. 8:30 to 11:40 am

Art Theory, Perception, and Rendering

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

8:30 am: **The perception of art and the science of perception** (*Invited Paper*), Robert Pepperell, Cardiff School of Art & Design (United Kingdom) [8291-35]

9:00 am: **Paintings, photographs, and computer graphics are calculated appearances**, John J. McCann, McCann Imaging (United States) [8291-36]

9:20 am: **Image integrity and aesthetics: towards a more encompassing definition of visual quality**, Judith A. Redi, Technische Univ. Delft (Netherlands); Ingrid Heynderickx, Philips Research (Netherlands) and Delft Univ. of Technology (Netherlands) [8291-37]

9:40 am: **Depicting 3D shape using lines** (*Invited Paper*), Doug DeCarlo, Rutgers, The State Univ. of New Jersey (United States) [8291-38]

Coffee Break 10:10 to 10:40 am

10:40 am: **Box spaces in pictorial space: linear perspective versus templates**, Huib de Ridder, Sylvia C. Pont, Technische Univ. Delft (Netherlands) [8291-39]

11:00 am: **Warping realist art to ensure consistent perspective: a new software tool for art investigations**, Yu-Sung Chang, Wolfram Research (United States); David G. Stork, Ricoh Innovations, Inc. (United States) [8291-40]

11:20 am: **Sound meets image: freedom of expression in texture description**, Reinier J. Jansen, René van Egmond, Huib de Ridder, Technische Univ. Delft (Netherlands); Thrasylvoulos N. Pappas, Northwestern Univ. (United States) [8291-41]

Lunch Break 11:40 am to 1:00 pm

Conference 8291

SESSION 9

Room: Regency Ballroom B Thurs. 1:00 to 3:20 pm

Computer Vision and Image Analysis of Art

Session Chairs: **Christopher W. Tyler**, The Smith-Kettlewell Eye Research Institute (United States); **Tiarna Doherty**, J. Paul Getty Museum (United States); **David M. Stone**, Univ. of Delaware (United States)

1:00 pm: **On the dynamics of aesthetic appreciation** (*Invited Paper*), Claus-Christian Carbon, Otto-Friedrich-Univ. Bamberg (Germany)[8291-42]

1:40 pm: **Museum as an integrated imaging device: visualization of ancient Kyoto cityscape from folding screen artifact**, Kimiyoshi Miyata, Umi Oyabu, Michihiro Kojima, National Museum of Japanese History (Japan). [8291-46]

2:00 pm: **An experimental and theoretical analysis of the merits of 'virtual cleaning' of paintings**, John Delaney, National Gallery of Art (United States); Andrea Casini, Istituto di Fisica Applicata Nello Carrara (Italy); Lionel Simonot, Univ. de Poitiers (France); M. Thoury, National Gallery of Art (United States); Marcello Picollo, Lorenzo Stefani, Istituto di Fisica Applicata Nello Carrara (Italy); Marco Poggesi, Consiglio Nazionale delle Ricerche (Italy); D. Conover, K. Fleisher, E. René de la Rie, National Gallery of Art (United States). [8291-43]

2:20 pm: **In search of Leonardo: computer-based facial image analysis of Renaissance artworks for identifying Leonardo as subject**, Christopher W. Tyler, The Smith-Kettlewell Eye Research Institute (United States); William Smith, The Univ. of York (United Kingdom); David G. Stork, Ricoh Innovations, Inc. (United States). [8291-44]

2:40 pm: **Non-destructive analytical imaging of metallic surfaces using spectral measurements and ultrahigh-resolution scanning for cultural heritage investigation**, Jun Kaneko, Yusuke Murayama, Jay Arre Toque, Ari Ide-Ekessabi, Kyoto Univ. (Japan) [8291-45]

3:00 pm: **Mapping colors from paintings to tapestries: rejuvenating the faded colors in tapestries based on colors in reference paintings**, Eija Johansson, Marie Strom, Chalmers Univ. of Technology (Sweden); David G. Stork, Ricoh Innovations, Inc. (United States) [8291-47]

Coffee Break 3:20 to 3:40 pm

Excursion Thurs. 3:40 to 9:00 pm

Museum Visit: San Francisco Museum of Modern Art: Exhibition and Discussion

3:40 to 5:00 pm: Travel to San Francisco

5:00 to 7:00 pm: Museum Tour

7:00 pm: No-Host Group Dinner

We will be visiting an exhibition at the San Francisco Museum of Modern Art and explore the current exhibit with the curator. Participants will leave the conference hotel at 3:40 pm. Transportation, fee details, restaurant, and exhibit information to be provided at the conference.

Conference 8292

Tuesday-Thursday 24-26 January 2012 • Proceedings of SPIE Vol. 8292

Color Imaging XVII: 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**, Consultant (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)

Tuesday 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am
Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

SESSION 1

Room: Regency Ballroom C Tues. 9:30 to 10:50 am

Vision and HDR I

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

9:30 am: **Spatiochromatic detection, appearance, and motivations for wide-gamut color** (*Invited Paper*), Scott J. Daly, Dolby Labs., Inc. (United States) [8292-01]

10:00 am: **Color assimilation and contrast near absolute threshold** (*Invited Paper*), John J. McCann, McCann Imaging (United States) [8292-02]

10:30 am: **Multi-illuminant color constancy for HDR images through exposure segmentation**, Heng Zhang, Huaping Liu, Oregon State Univ. (United States); Shuxue Quan, Broadcom Corp. (United States) . [8292-03]

Coffee Break 10:50 to 11:20 am

SESSION 2

Room: Regency Ballroom C Tues. 11:20 am to 12:20 pm

Vision and HDR II

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

11:20 am: **Tone mapping for HDR images with dimidiate luminance and spatial distributions of bright and dark regions**, Masaki Kitaura, Fumio Okura, Masayuki Kanbara, Naokazu Yokoya, Nara Institute of Science and Technology (Japan) [8292-04]

11:40 am: **Color universal design: analysis of color category dependency on color vision type**, Natsuki Kojima, Yasuyo G. Ichihara, Kogakuin Univ. (Japan); Kei Ito, The Univ. of Tokyo (Japan); Miyuki G. Kamachi, Kogakuin Univ. (Japan) [8292-05]

12:00 pm: **Colour perception with changes in levels of illumination**, Kwame F. Baah, Dept. of Health (United Kingdom) and Univ. of the Arts London (United Kingdom) [8292-06]

Lunch Break 12:20 to 1:50 pm

SESSION 3

Room: Regency Ballroom C Tues. 1:50 to 3:30 pm

Color Management

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

1:50 pm: **Reducing the number of calibration patterns for the two-by-two dot centering model**, Vahid Babaei, Romain Rossier, Roger D. Hersch, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [8292-07]

2:10 pm: **Spatial gamut mapping for preserving the details of an image**, In-Yong Song, Ho-Gun Ha, Wang-Jun Kyung, Yeong-Ho Ha, Kyungpook National Univ. (Korea, Republic of) [8292-08]

2:30 pm: **Evaluating color calibration kits with virtual display**, Wei-Chung Cheng, Hugo Caceres, Aldo Badano, U.S. Food and Drug Administration (United States) [8292-09]

2:50 pm: **Optimizing color fidelity in wide-gamut-display devices when processing images compressed by block-based DCT transforms**, Fritz Lebowsky, STMicroelectronics (France) [8292-10]

3:10 pm: **Optimal gamut volume design for three primary and multiprimary display systems**, Carlos Eduardo Rodriguez-Pardo, Gaurav Sharma, Univ. of Rochester (United States); Xiao-Fan Feng, Jon Speigle, Ibrahim Sezan, Sharp Labs. of America, Inc. (United States) . . . [8292-11]

Coffee Break 3:30 to 4:00 pm

SESSION 4

Room: Regency Ballroom C Tues. 4:00 to 5:30 pm

The Dark Side of the Color

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

4:00 pm: **The dark side of CIELAB**, Gaurav Sharma, Carlos Eduardo Rodriguez-Pardo, Univ. of Rochester (United States) [8292-12]

4:15 pm: **Complexities of complex contrast**, Eliezer Peli, Schepens Eye Research Institute (United States) [8292-13]

4:30 pm: **It's not the pixel count, you fool**, Michael A. Kriss, MAK Consultants (United States) [8292-14]

4:45 pm: **Color imaging and aesthetics: is there the cheshire cat?**, Elena A. Fedorovskaya, Eastman Kodak Co. (United States) . . . [8292-15]

5:00 pm: **Dark texture in artworks**, Carinna E. Parraman, Univ. of the West of England (United Kingdom) [8292-16]

5:15 pm: **Harmonious colors: from alchemy to science**, Giordano B. Beretta, Nathan M. Moroney, Hewlett-Packard Labs. (United States) [8292-17]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

Characterization of color scanners based on SVR, Bin Li, Yixin Zhang, Jiangnan Univ. (China) [8292-44]

Deducing ink thickness variations of fluorescent print by a spectral prediction model, Juan Qing Wang, Yixin Zhang, Jiangnan Univ. (China) [8292-46]

Bio-inspired color sketch for eco-friendly printing, Ilia V. Safonov, Ekaterina Tolstaya, Michael N. Rychagov, Samsung Electronics Co., Ltd. (Russian Federation); Ho Keun Lee, SangHo Kim, Donchul Choi, Samsung Electronics Co., Ltd. (Korea, Republic of) [8292-48]

Reflectance model for recto-verso color halftone images, Juan Wang, Zhang Yi Xin, Tian Dong Wen, Jiangnan Univ. (China) [8292-49]

The study on physical dot gain of second order FM halftone based on ink spreading in all ink superposition conditions, Shikun Xi, Yixin Zhang, Jiangnan Univ. (China) [8292-50]

Tensor decomposition for color printer model lookup table, Vishal Monga, The Pennsylvania State Univ. (United States); Marty Maltz, Zhiqiang Fan, Xerox Corp. (United States) [8292-51]

Genetic algorithm for segmentation and classification of colony images automatically, Weisheng Li, Henan Polytechnic Univ. (China) [8292-52]

Color edge detection using edge density, Weixing Wang, Henan Polytechnic Univ. (China) [8292-53]

Spectral prediction model for variable dot-size ink jet presswork (Invited Paper), Weiyong Xing, Yixin Zhang, Yangtze Univ. (China) [8292-54]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 5

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

Image Processing I

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

9:30 am: **Detection and compensation of backlight images using chrominance**, Hyung Jun Park, Seong Wook Han, Samsung Electronics Co., Ltd. (Korea, Republic of) [8292-18]

9:50 am: **A new method for skin color enhancement**, Huan Zhao Zeng, Hewlett-Packard Co. (United States); Ronnier Luo, Univ. of Leeds (United Kingdom) [8292-20]

Coffee Break 10:10 to 10:50 am

SESSION 6

Room: Regency Ballroom C Wed. 10:50 am to 12:10 pm

Image Processing II

Session Chair: Fritz Lebowsky, STMicroelectronics (France)

10:50 am: **CIE chromaticity, Planckian locus, and correlated color temperature estimation from raw-image data using colorchecker training images**, Touraj Tajbakhsh, Technische Univ. Hamburg-Harburg (Germany) [8292-21]

11:10 am: **Comparative performance analysis of mobile displays**, Reza Safaee-Rad, Qualcomm Inc. (Canada); Milivoje Aleksic, Qualcomm Inc. (United States) [8292-22]

11:30 am: **Termites: a Retinex implementation based on a colony of agents**, Gabriele Simone, Gjøvik Univ. College (Norway); Giuseppe Audino, Univ. degli Studi di Milano (Italy); Ivar Farup, Gjøvik Univ. College (Norway); Alessandro Rizzi, Univ. degli Studi di Milano (Italy) [8292-23]

11:50 am: **A color quantization algorithm based on minimization of L_p norm error in a modified CIELAB space**, Haitao Xue, Jan P. Allebach, Charles A. Bouman, Purdue Univ. (United States) [8292-24]

Lunch Break 12:10 to 2:10 pm

SESSION 7

Room: Regency Ballroom C Wed. 2:10 to 3:10 pm

Applications

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

2:10 pm: **Human skin imaging using three-phase spectral matching imager**, Akira Kimachi, Osaka Electro-Communication Univ. (Japan); Shigeru Ando, The Univ. of Tokyo (Japan); Motonori Doi, Shogo Nishi, Osaka Electro-Communication Univ. (Japan) [8292-25]

2:30 pm: **Appearance analysis of human skin with cosmetic foundation**, Rie Ohtsuki, Kanebo Cosmetics Inc. (Japan) and Chiba Univ. (Japan); Shoji Tominaga, Chiba Univ. (Japan); Rie Hikima, Kanebo Cosmetics Inc. (Japan) [8292-27]

2:50 pm: **Color analysis and image rendering of woodblock prints with oil-based ink**, Takahiko Horiuchi, Tetsushi Tanimoto, Shoji Tominaga, Chiba Univ. (Japan) [8292-28]

Coffee Break 3:10 to 3:40 pm

SESSION 8

Room: Regency Ballroom C Wed. 3:40 to 5:00 pm

Printing and Halftoning I

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

3:40 pm: **Pre-RIP color management for soft proofing**, Ingeborg Tastl, Kok-Wei Koh, Hewlett-Packard Labs. (United States) [8292-30]

4:00 pm: **Parametrically controlled, stochastically seeded clustered halftones**, Edgar Andres Bernal, Shen-ge Wang, Robert P. Loce, Xerox Corp. (United States) [8292-31]

4:20 pm: **Assessing color reproduction tolerances in commercial print workflow**, Giordano B. Beretta, Eric Hoarau, Sunil Kothari, I-Jong Lin, Jun Zeng, Hewlett-Packard Labs. (United States) [8292-32]

4:40 pm: **Investigation of the paper dependency of laser-printed colors for uncoated papers**, Saeideh Gorji Kandi, Institute for Color Science & Technology (Iran, Islamic Republic of) [8292-33]

Thursday 26 January

SESSION 9

Room: Regency Ballroom C Thurs. 8:30 to 10:30 am

Printing and Halftoning II

Session Chair: Shoji Tominaga, Chiba Univ. (Japan)

8:30 am: **Color-dependent banding characterization and simulation on natural images**, Sirui Hu, Jia Zhang, Purdue Univ. (United States); Hila Nachlieli, Doron Shaked, Hewlett-Packard Labs. Israel Ltd. (Israel); Smadar Shiffman, Indigo Ltd. (Israel); Jan P. Allebach, Purdue Univ. (United States) [8292-34]

8:50 am: **Modeling large-area influence in digital halftoning for electrophotographic printers**, Yanling Ju, Xujie Zhang, Dhruv Saxena, Purdue Univ. (United States); Tamar Kashti, Dror Kella, Indigo Ltd. (Israel); Doron Shaked, Mani Fischer, Hewlett-Packard Labs. Israel Ltd. (Israel); Robert A. Ulichney, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) [8292-35]

9:10 am: **The octagon screen set: a square N-color, high-order, Moiré-free screen set**, Yung-Yao Chen, Purdue Univ. (United States); Mani Fischer, Hewlett-Packard Labs. Israel Ltd. (Israel); Tamar Kashti, Indigo Ltd. (Israel); Doron Shaked, Hewlett-Packard Labs. Israel Ltd. (Israel); Jan P. Allebach, Purdue Univ. (United States) [8292-36]

9:30 am: **Colour print workflow and methods for multi-layering of colour and decorative inks using UV inkjet for fine-art printing**, Carinna E. Parraman, Paul Laidler, Univ. of the West of England (United Kingdom) [8292-38]

9:50 am: **Halftone blending between smooth- and detail-screens to improve print quality with electrophotographic printers**, Seong Jun Park, Purdue Univ. (United States); Mark Q. Shaw, George Kerby, Terry Nelson, Di-Yuan Tzeng, Victor Loewen, Kurt Bengtson, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) [8292-39]

10:10 am: **Ink-saving strategy based on document content characterization and halftone textures**, Maria V. Ortiz Segovia, Purdue Univ. (United States) and Océ Print Logic Technologies (France); Nicolas Bonnier, Océ Print Logic Technologies (France); Jan P. Allebach, Purdue Univ. (United States) [8292-37]

Coffee Break 10:30 to 11:00 am

SESSION 10

Room: Regency Ballroom C Thurs. 11:00 am to 12:20 pm

Spectral and Display

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

11:00 am: **Spectral transmittance model for piles of transparencies printed in halftone**, Jacques Machizaud, Mathieu Hébert, Lab. Hubert Curien (France) and Univ. Jean-Monnet Saint-Etienne (France) and CNRS (France) [8292-40]

11:20 am: **Optimal estimation of spectral reflectance based on metamerism**, Tzren-Ru Chou, Wei-Ju Lin, National Taiwan Normal Univ. (Taiwan) [8292-41]

11:40 am: **Hue-shift model for DLP projector with the white peaking function**, Il-Su Park, Ho-Gun Ha, Dae-Chul Kim, Yeong-Ho Ha, Kyungpook National Univ. (Korea, Republic of) [8292-42]

12:00 pm: **Content-dependent noise reduction for mobile displays**, Ga-Hee Kim, Yoon-Gyoo Lee, Han-Eol Kim, Choon-Woo Kim, Inha Univ. (Korea, Republic of) [8292-43]

Image Quality and System Performance IX

Conference Chairs: **Frans Gaykema**, Océ Technologies B.V. (Netherlands); **Peter D. Burns**, Burns Digital Imaging (United States)

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); **Dirk W. Hertel**, E Ink Corp. (United States); **Robin B. Jenkin**, Aptina Imaging Corp. (United States); **Sang Ho Kim**, Samsung Digital City (Korea, Republic of); **Chaker Larabi**, Univ. de Poitiers (France); **Lindsay W. MacDonald**, London College of Communication (United Kingdom); **Yoichi Miyake**, Chiba Univ. (Japan); **Göte S. Nyman**, Univ. of Helsinki (Finland); **D. René Rasmussen**, Qi Analytics LLC (United States); **Sophie Triantaphillidou**, Univ. of Westminster (United Kingdom); **Eric K. Zeise**, Kodak's Graphic Communications Group (United States); **Hongqin Zhang**, Apple Inc. (United States)

Tuesday 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am
Plenary Session and Society Award Presentations
 8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

SESSION 1

Room: Regency Ballroom A Tues. 9:30 to 10:30 am

Image Quality and Mobile Imaging I: Joint Session with Conference 8299

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

9:30 am: **Development of the I3A CPIQ spatial metrics**, Henrik Eliasson, Sony Ericsson Mobile Communications AB (Sweden); Donald Baxter, STMicroelectronics (R&D) Ltd. (United Kingdom); Frédéric Cao, DxO Labs (France); Jonathan Phillips, Eastman Kodak Co. (United States) .[8293-01]

9:50 am: **A functional-design approach to lens shading correction issues on mobile camera system**, Seunghun Yoo, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); TaeChan Kim, SAMSUNG Electronics Co., Ltd. (United States)[8299-18]

10:10 am: **Rethinking user interfaces for cameraphones**, Stephen A. Brewster, Christopher McAdam, Univ. of Glasgow (United Kingdom)[8299-19]

Coffee Break10:30 to 11:10 am

SESSION 2

Room: Regency Ballroom A Tues. 11:10 am to 12:30 pm

Image Quality and Mobile Imaging II: Joint Session with Conference 8299

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

11:10 am: **Calibration and adaptation of ISO visual noise for camera phone image quality assessment**, Donald J. Baxter, Andrew Murray, STMicroelectronics (R&D) Ltd. (United Kingdom)[8293-02]

11:30 am: **An objective method for evaluating the texture-preserving capability of digital camcorders**, Kongfeng Zhu, Shujun Li, Dietmar Saupe, Univ. Konstanz (Germany)[8293-03]

11:50 am: **Improving texture loss measurement: spatial frequency response based on a colored target**, Uwe Artmann, Dietmar Wueller, Image Engineering GmbH & Co. KG (Germany)[8293-04]

12:10 pm: **On the performances of computer vision algorithms on mobile platforms**, Sebastiano Battiato, Giovanni M. Farinella, Enrico Messina, Giovanni Puglisi, Daniele Ravi, Univ. degli Studi di Catania (Italy); Alessandro Capra, Valeria Tomaselli, STMicroelectronics (Italy) .[8299-20]

Lunch Break 12:30 to 2:00 pm

SESSION 3

Room: Harbour Room B Tues. 2:00 to 3:20 pm

Image Acquisition Performance: Characterization and Measurement

Session Chair: **Robin B. Jenkin**, Aptina Imaging Corp. (United States)

2:00 pm: **The uncertainty of scanner illumination II**, Luke C. Cui, Lexmark International, Inc. (United States)[8293-05]

2:20 pm: **Measuring the modulation transfer function of image capture devices: what do the numbers really mean?**, Xujie Zhang, Yanling Ju, Purdue Univ. (United States); Tamar Kashti, Dror Kella, Tal Frank, Indigo Ltd. (Israel); Doron Shaked, Hewlett-Packard Labs. Israel Ltd. (Israel); Robert A. Ulichney, Hewlett-Packard Co. (United States); Mani Fischer, Hewlett-Packard Labs. Israel Ltd. (Israel); Jan P. Allebach, Purdue Univ. (United States)[8293-06]

2:40 pm: **A fast, automatic camera image stabilization benchmarking scheme**, Jun Yu, Scott Craver, Binghamton Univ. (United States)[8293-07]

3:00 pm: **A comparison of signal-to-noise ratio (SNR) of linear CCD sensors for optical payload**, Mahmood Waqas, Pakistan Space and Upper Atmospheric Research Commission (SUPARCO) (Pakistan)[8293-08]

Coffee Break 3:20 to 3:50 pm

SESSION 4

Room: Harbour Room B Tues. 3:50 to 5:30 pm

Image Processing Performance: Characterization and Measurement

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

3:50 pm: **A sharpness measure on automatically selected edge segments**, Francesca Gasparini, Fabrizio Marini, Silvia Corchs, Schettini Raimondo, Univ. degli Studi di Milano-Bicocca (Italy)[8293-09]

4:10 pm: **Selecting the proper window for SSIM**, Steven McFadden, Univ. of Waterloo (Canada) and Christie Digital Systems Canada, Inc (Canada); Paul A. S. Ward, Univ. of Waterloo (Canada)[8293-10]

4:30 pm: **Measurement of texture loss for JPEG 2000 compression**, Peter D. Burns, Burns Digital Imaging (United States); Don Williams, Image Science Associates (United States)[8293-11]

4:50 pm: **A no-reference image quality metric for blur and ringing distortions based on weighting process**, Aladine Chetouani, Azeddine Beghdadi, Univ. Paris-Nord (France).....[8293-12]

5:10 pm: **A new method to identify and quantify image distortion based on Gabor filter bank and multiple regression analysis**, Benhur Ortiz Jaramillo, Univ. Nacional de Colombia (Colombia) and Univ. Gent (Belgium); Julio Cesar Garcia Alvarez, Univ. Nacional de Colombia (Colombia); Hartmut Führ, RWTH Aachen (Germany); Sergio Alejandro Orjuela Vargas, Univ. Gent (Belgium); German Castellanos Dominguez, Univ. Nacional de Colombia (Colombia); Wilfried Philips, Univ. Gent (Belgium)[8293-36]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

Optimal patch code design via device characterization, Wencheng Wu, Edul N. Dalal, Xerox Corp. (United States)[8293-37]

Influence of viewing device and soundtrack in HDTV on subjective video quality, Arne Redl, Christian Keimel, Klaus Diepold, Technische Univ. München (Germany).....[8293-38]

Influence of viewing experience and stabilization phase in subjective video testing, Christian Keimel, Arne Redl, Klaus Diepold, Technische Univ. München (Germany).....[8293-39]

Perceptual visual image sharpness metric for image-based imager stabilization, Fabien F. G. Gavant, Laurent Alacoque, Antoine Dupret, Tien Ho-Phuoc, Dominique David, CEA-LETI (France).....[8293-40]

A unified method for comparison of algorithms of saliency extraction, Tien Ho-Phuoc, Laurent Alacoque, Antoine Dupret, CEA-LETI (France); Anne Guérin-Dugué, Gipsa-lab (France); Arnaud Verdant, CEA-LETI (France).....[8293-41]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 5

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

Image Display Performance: Color Adjustment

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

9:30 am: **Comparative performance analysis of two picture adjustment methods: HSV versus YCbCr**, Reza Safaee-Rad, Milivoje Aleksic, Qualcomm Inc. (Canada).....[8293-13]

9:50 am: **Evaluation of preferred lightness rescaling methods for color reproduction**, Yerin Chang, Phil Green, London College of Communication (United Kingdom)[8293-14]

10:10 am: **Investigations of the display white point on the perceived image quality**, Jun Jiang, Farhad Abed, Joseph Voelkel, Rochester Institute of Technology (United States).....[8293-15]

Coffee Break 10:30 to 11:10 am

SESSION 6

Room: Harbour Room B Wed. 11:10 am to 12:30 pm

Perceptual Image Quality Experimentation

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

11:10 am: **The mobile image quality survey game**, D. René Rasmussen, Qi Analytics LLC (United States).....[8293-16]

11:30 am: **Evaluation of perceived image sharpness with changes in the displayed image size**, Jae-Young Park, Sophie Triantaphillidou, Ralph E. Jacobson, Univ. of Westminster (United Kingdom)[8293-17]

11:50 am: **Towards a perceptual metric for computer-generated images**, Pierre Boulenguez, Boris Airieau, Mohamed-Chaker Larabi, Daniel Meneveau, Univ. de Poitiers (France)[8293-18]

12:10 pm: **Assessing product image quality for online shopping**, Anjan Goswami, Sung H. Chung, Naren Chittar, Atiq Islam, eBay Inc. (United States).....[8293-19]

Lunch Break 12:30 to 2:20 pm

SESSION 7A

Room: Regency Ballroom B Wed. 2:20 to 3:20 pm

Visual Attention: Task and Image Quality: Joint Session with Conference 8291

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

2:20 pm: **How do we watch images?: a case of change detection and quality estimation**, Jenni Radun, Tuomas Leisti, Toni Virtanen, Göte Nyman, Univ. of Helsinki (Finland).....[8293-20]

2:40 pm: **Examining the effect of task on viewing behavior in videos using saliency maps**, Hani Alers, Judith A. Redi, Technische Univ. Delft (Netherlands); Ingrid Heynderickx, Philips Research (Netherlands)[8291-29]

3:00 pm: **Measuring saliency in images: which experimental parameters for the assessment of image quality?**, Clement Fredembach, Geoff Woolfe, Jue Wang, Canon Information Systems Research Australia Pty. Ltd. (Australia).....[8293-21]

Coffee Break 3:20 to 3:50 pm

Conference 8293

SESSION 7B

Room: Regency Ballroom B Wed. 3:50 to 5:50 pm

Visual Attention: Task and Image Quality: Joint Session with Conference 8291

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

3:50 pm: **Investigations of the tone reproduction curves on the perceived image quality for fine art reproductions**, Jun Jiang, Franziska Frey, Susan Farnand, Rochester Institute of Technology (United States) [8293-23]

4:10 pm: **Characterizing eye movements during temporal- and global-quality assessment of h.264 compressed video sequences**, Claire Mantel, Nathalie Guyader, Patricia Ladret, Gelu Ionescu, Gipsa-lab (France); Thomas Kunlin, STMicroelectronics (France) [8291-30]

4:30 pm: **A compressed sensing model of crowding in peripheral vision**, Jens Hocke, Univ. zu Lübeck (Germany); Michael Dorr, Schepens Eye Research Institute (United States); Erhardt Barth, Univ. zu Lübeck (Germany) [8291-31]

4:50 pm: **Foveated self-similarity in nonlocal image filtering**, Alessandro Foi, Tampere Univ. of Technology (Finland); Giacomo Boracchi, Politecnico di Milano (Italy) [8291-32]

5:10 pm: **A statistical study of the correlation between interest points and gaze points**, Michael Nauge, Mohamed-Chaker Larabi, Univ. de Poitiers (France) [8291-33]

5:30 pm: **Interest point analysis as a model for the Poggendorff illusion**, Fred W. M. Stentiford, Univ. College London (United Kingdom) [8291-34]

Thursday 26 January

SESSION 8

Room: Harbour Room B Thurs. 8:50 to 10:10 am

Image Quality in Print

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

8:50 am: **A method of detecting changes in image quality via sensing on customer documents**, Wencheng Wu, Beilei Xu, John C. Handley, Xerox Corp. (United States) [8293-24]

9:10 am: **Print quality analysis for ink-saving algorithms**, Maria V. Ortiz Segovia, Purdue Univ. (United States) and Océ Print Logic Technologies (France); Nicolas Bonnier, Océ Print Logic Technologies (France); Jan P. Allebach, Purdue Univ. (United States) [8293-25]

9:30 am: **Masking mediated print defect visibility predictor**, Xiaochen Jing, Purdue Univ. (United States); Hila Nachlieli, Doron Shaked, Smadar Shiffman, Hewlett-Packard Labs. Israel Ltd. (Israel); Jan P. Allebach, Purdue Univ. (United States) [8293-26]

9:50 am: **Psychophysical evaluation of banding visibility in the presence of print content**, Jia Zhang, Purdue Univ. (United States); Doron Shaked, Hila Nachlieli, Smadar Shiffman, Hewlett-Packard Labs. Israel Ltd. (Israel); Jan P. Allebach, Purdue Univ. (United States) [8293-27]

Coffee Break 10:10 to 10:50 am

SESSION 9

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

System Performance: Video

Session Chair: Luke C. Cui, Lexmark International, Inc. (United States)

10:50 am: **No-reference video quality assessment of H.264 video streams based on semantic saliency maps**, Hugo Boujut, Jenny Benois-Pineau, Toufik Ahmed, Bordeaux Univ. (France); Ofer Hadar, Ben-Gurion Univ. of the Negev (Israel); Patrick Bonnet, Audemat Worldcast Systems (France) [8293-28]

11:10 am: **Linking quality assessment of free-viewpoint video objects up with algorithm development**, Sara Kepplinger, Technische Univ. Ilmenau (Germany) [8293-29]

11:30 am: **A perceptual optimization of H.264/AVC bit allocation at the frame and macroblock levels**, Miryem Hrarti, Hakim Saadane, Mohamed-Chaker Larabi, XLIM-SIC (France) [8293-30]

11:50 am: **QoE assessment method for mobile video services based on user motivation**, Fumiya Kobayashi, Masataka Masuda, Takanori Hayashi, NTT Network Innovation Labs. (Japan) [8293-31]

12:10 pm: **Quality rules for detection, recognition, and identification in video-surveillance applications**, Mohamed-Chaker Larabi, Didier Nicholson, Univ. de Poitiers (France) [8293-32]

Lunch Break 12:30 to 2:00 pm

SESSION 10

Room: Harbour Room B Thurs. 2:00 to 3:00 pm

Image Quality Evaluation: New Developments

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

2:00 pm: **A learning-based approach for automated quality assessment of computer-rendered images**, Xi Zhang, Gady Agam, Illinois Institute of Technology (United States) [8293-33]

2:20 pm: **A comparison of techniques for superresolution evaluation**, Monica A. Trifas, Jacksonville State Univ. (United States) [8293-34]

2:40 pm: **Detection of image quality metamers based on the metric for unified image quality**, Kimiyoshi Miyata, National Museum of Japanese History (Japan); Norimichi Tsumura, Chiba Univ. (Japan) [8293-35]

Visualization and Data Analysis 2012

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: **Robert Kosara**, The Univ. of North Carolina at Charlotte (United States); **Mark A. Livingston**, U.S. Naval Research Lab. (United States); **Jinah Park**, Korea Advanced Institute of Science and Technology (Korea, Republic of); **Ian Roberts**, Pacific Northwest National Lab. (United States)

Program Committee: **Madjid Allili**, Bishop's Univ. (Canada); **Guoning Chen**, The Univ. of Utah (United States); **Yi-Jen Chiang**, Polytechnic Institute of NYU (United States); **George Chin**, Pacific Northwest National Lab. (United States); **Scott E. Dillard**, Pacific Northwest National Lab. (United States); **Marian Dörk**, Univ. of Calgary (Canada); **Sussan Einakian**, The Univ. of Alabama in Huntsville (United States); **Matti T. Gröhn**, Ctr. for Scientific Computing (Finland); **Halldor Janetzko**, Univ. Konstanz (Germany); **Ming Jiang**, Lawrence Livermore National Lab. (United States); **Alark Joshi**, Boise State Univ. (United States); **Dan Keefe**, Univ. of Minnesota (United States); **Daniel A. Keim**, Univ. Konstanz (Germany); **Bongshin Lee**, Microsoft Corp. (United States); **Bob Lewis**, Washington State Univ. (United States); **Guo-Shi Li**, ExxonMobil Upstream Research Company (United States); **Peter Lindstrom**, Lawrence Livermore National Lab. (United States); **Lars Linsen**, Jacobs Univ. Bremen gGmbH (Germany); **Zhanping Liu**, Kentucky State Univ. (United States); **Lucille T. Nowell**, U.S. Dept. of Energy (United States); **Harald Obermaier**, Univ. of Kaiserslautern (Germany); **Donald A. Pellegrino, Jr.**, Drexel Univ. (United States); **William Pike**, Pacific Northwest National Lab. (United States); **Theresa-Marie Rhyne**, Computer Graphics and E-Learning (United States); **Tobias Schreck**, Univ. Konstanz (Germany); **Han-Wei Shen**, The Ohio State Univ. (United States); **Chad A. Steed**, Oak Ridge National Lab. (United States); **Kalpathi R. Subramanian**, The Univ. of North Carolina at Charlotte (United States); **Soon Tee Teoh**, San José State Univ. (United States); **Matthew O. Ward**, Worcester Polytechnic Institute (United States); **Yingcai Wu**, Univ. of California, Davis (United States); **Caixia Zhang**, Google (United States); **Jian Zhang**, Drexel Univ. (United States); **Song Zhang**, Mississippi State Univ. (United States)

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Monday 23 January

Room: Sandpebble Room E Mon. 8:30 to 8:45 am

Opening Remarks

Session Chair: **Pak Chung Wong**, Pacific Northwest National Lab. (United States)

Room: Sandpebble Room E Mon. 8:45 to 9:00 am

Information Visualization (IVS) Introduction

Chaomei Chen, Drexel Univ. (United States)

SESSION 1

Room: Sandpebble Room E Mon. 9:00 to 10:00 am

Interactive Visualization

Session Chair: **Pak Chung Wong**, Pacific Northwest National Lab. (United States)

9:00 am: **StreamSqueeze: a dynamic stream visualization for monitoring of event data**, Florian Mansmann, Milos Krstajic, Fabian Fischer, Enrico Bertini, Univ. Konstanz (Germany) [8294-01]

9:20 am: **Interactive data-centric viewpoint selection**, Han Suk Kim, Didem Unat, Scott B. Baden, Jurgen P. Schulze, Univ. of California, San Diego (United States) [8294-02]

9:40 am: **Interactive analysis of situational awareness metrics**, Derek R. Overby, James A. Wall, John Keyser, Texas A&M Univ. (United States) [8294-03]

Coffee Break 10:00 to 10:30 am

SESSION 2

Room: Sandpebble Room E Mon. 10:30 to 11:10 am

Visual Analytics

Session Chair: **Chaomei Chen**, Drexel Univ. (United States)

10:30 am: **Incremental visual text analytics of news story development**, Milos Krstajic, Univ. Konstanz (Germany) [8294-04]

10:50 am: **Guided text analysis using adaptive visual analytics**, Chad A. Steed, Christopher T. Symons, Frank A. DeNap, Thomas E. Potok, Oak Ridge National Lab. (United States) [8294-05]

Session Break 11:10 to 11:20 am

SESSION 3

Room: Sandpebble Room E Mon. 11:20 am to 12:20 pm

Visualization Techniques and Applications

Session Chair: **Chad A. Steed**, Oak Ridge National Lab. (United States)

11:20 am: **Designing a better weather display**, Colin Ware, Matthew Plumlee, The Univ. of New Hampshire (United States) [8294-06]

11:40 am: **Visualization feedback for musical ensemble practice: a case study on phrase articulation and dynamics**, Trevor Knight, Nicolas Boulliot, Jeremy Cooperstock, McGill Univ. (Canada) [8294-07]

12:00 pm: **Exploring ensemble visualization**, Christopher G. Healey, Madhura N. Phadke, Lifford Pinto, North Carolina State Univ. (United States); Femi Alabi, Jonathan M. Harter, Russell M. Taylor II, The Univ. of North Carolina at Chapel Hill (United States); Xunlei Wu, Renaissance Computing Institute (United States); Hannah Petersen, Steffen A. Bass, Duke Univ. (United States) [8294-08]

Lunch Break 12:20 to 1:50 pm

Conference 8294

Room: Sandpebble Room E Mon. 1:50 to 2:40 pm

Keynote Presentation I

Session Chair: **Mark A. Livingston**, U.S. Naval Research Lab.
(United States)

1:50 pm: **Data analysis using R**, Patrick Hanrahan, Stanford Univ.
(United States) [8294-42]

Session Break 2:40 to 3:00 pm

SESSION 4

Room: Sandpebble Room E Mon. 3:00 to 3:40 pm

Large Data Visualization

Session Chair: **Mark A. Livingston**, U.S. Naval Research Lab. (United States)

3:00 pm: **Parallel large-data visualization with display walls**, Luiz Scheidegger, Facebook Inc. (United States); Huy Vo, Polytechnic Institute of New York Univ. (United States); Jens Kruger, Univ. des Saarlandes (Germany); Claudio T. Silva, Polytechnic Institute of New York Univ. (United States); Joao L. D. Comba, Univ. Federal do Rio Grande do Sul (Brazil) [8294-09]

3:20 pm: **Visual exploratory analysis of a large volume of SQL log data with the SDSS log viewer**, Jian Zhang, Chaomei Chen, Michael Vogeley, Danny Pan, Drexel Univ. (United States); Ani Thakar, Jordan Raddick, The Johns Hopkins Univ. (United States) [8294-10]

Coffee Break 3:40 to 4:10 pm

SESSION 5

Room: Sandpebble Room E Mon. 4:10 to 5:10 pm

Evaluations

Session Chair: **Christopher G. Healey**, North Carolina State Univ. (United States)

4:10 pm: **Comparison of open-source visual analytics toolkits**, John R. Harger, Sandia National Labs. (United States) and The Univ. of New Mexico (United States); Patricia J. Crossno, Sandia National Labs. (United States) [8294-11]

4:30 pm: **Evaluation of progressive treemaps to convey tree and node properties**, René Rosenbaum, Bernd Hamann, Univ. of California, Davis (United States) [8294-12]

4:50 pm: **Evaluation of multivariate visualizations: a case study of refinements and user experience**, Mark A. Livingston, Jonathan Decker, U.S. Naval Research Lab. (United States) [8294-13]

Tuesday 24 January

Room: Grand Peninsula

Ballroom A Tues. 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

SESSION 6

Room: Sandpebble Room E Tues. 10:00 to 10:40 am

Geo-Temporal Visualizations

Session Chair: **Chaomei Chen**, Drexel Univ. (United States)

10:00 am: **Integrating sentiment analysis and term associations with geo-temporal visualizations on customer feedback streams**, Ming C. Hao, Hewlett-Packard Labs. (United States); Christian Rohrdantz, Halldór Janetzko, Daniel A. Keim, Univ. Konstanz (Germany); Umeshwar Dayal, Hewlett-Packard Labs. (United States); Lars-Erik Haug, Hewlett-Packard Co. (United States); Meichun Hsu, Hewlett-Packard Labs. (United States) [8294-14]

10:20 am: **A self-adaptive technique for visualizing geospatial data in 3D with minimum occlusion**, Abon Chaudhuri, Han-Wei Shen, The Ohio State Univ. (United States) [8294-15]

Coffee Break 10:40 to 11:10 am

SESSION 7

Room: Sandpebble Room E Tues. 11:10 am to 12:30 pm

Visualization Algorithms

Session Chair: **Han-Wei Shen**, The Ohio State Univ. (United States)

11:10 am: **Space/error tradeoffs for lossy wavelet reconstruction**, Jonathan Frain, R. Daniel Bergeron, The Univ. of New Hampshire (United States) [8294-16]

11:30 am: **A configurable data prefetching scheme for interactive visualization of large-scale volume data**, Byungil Jeong, Schlumberger (United States); Paul Navratil, Kelly Gaither, Gregory Abram, Gregory P. Johnson, The Univ. of Texas at Austin (United States) [8294-17]

11:50 am: **A general approach for similarity-based linear projections using a genetic algorithm**, James A. Mouradian, Bernd Hamann, René Rosenbaum, Univ. of California, Davis (United States) [8294-18]

12:10 pm: **Image space adaptive volume rendering**, Andrew Corcoran, John Dingliana, Trinity College Dublin (Ireland) [8294-19]

Lunch Break 12:30 to 2:00 pm

Room: Sandpebble Room E Tues. 2:00 to 2:50 pm

Keynote Presentation II

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

2:00 pm: **Imaging the Antikythera Mechanism**, Thomas Malzbender, Hewlett-Packard Labs. (United States) [8294-43]

Session Break 2:50 to 3:10 pm

SESSION 8

Room: Sandpebble Room E Tues. 3:10 to 3:40 pm

Poster Fast Forward I

Session Chair: **Robert F. Erbacher**, Utah State Univ. (United States)

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

Coffee Break 3:40 to 4:10 pm

SESSION 9

Room: Sandpebble Room E Tues. 4:10 to 4:40 pm

Poster Fast Forward II

Session Chair: Robert F. Erbacher, Utah State Univ. (United States)

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

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

X3DBio1: a visual analysis tool for biomolecular structure exploration, Hong Yi, Renaissance Computing Institute (United States); Abhishek Singh, Yaroslava G. Yingling, North Carolina State Univ. (United States) [8294-25]

Increasing the perceptual salience of relationships in parallel coordinate plots, Jonathan M. Harter, Xunlei Wu, The Univ. of North Carolina at Chapel Hill (United States); Daniel Dougherty, Michigan State Univ. (United States); Hannah Petersen, Steffen Bass, Duke Univ. (United States); Russell M. Taylor II, The Univ. of North Carolina at Chapel Hill (United States); Madhura N. Phadke, Lifford Pinto, North Carolina State Univ. (United States); Oluwafemi S. Alabi, The Univ. of North Carolina at Chapel Hill (United States) [8294-26]

Comparative visualization of ensembles using ensemble surface slicing, Oluwafemi S. Alabi, The Univ. of North Carolina at Chapel Hill (United States); Xunlei Wu, Renaissance Computing Institute (United States); Hannah Petersen, Steffen Bass, Duke Univ. (United States); Sharon Zhong, Michigan State Univ. (United States); Madhura N. Phadke, Lifford Pinto, Christopher G. Healey, North Carolina State Univ. (United States); Russell M. Taylor II, The Univ. of North Carolina at Chapel Hill (United States) [8294-27]

A performance assessment on the effectiveness of digital image registration methods, Steve T. Kacencar, Lockheed Martin Corp. (United States); Bing Li, Lockheed Martin Systems Integration-Owego (United States); Alan Ostrow, Lockheed Martin Maritime Systems & Sensors (United States) [8294-29]

An evaluation of rendering and interactive methods for volumetric data exploration in virtual reality environments, Nan Wang, Alexis Paljic, Philippe Fuchs, Mines ParisTech (France) [8294-30]

Efficient, dynamic data visualization with persistent data structures, Joseph A. Cottam, Andrew Lumsdaine, Indiana Univ. (United States) [8294-32]

Radial visualizations for comparative data analysis, Geoffrey Draper, Matthew G. Styles, Brigham Young Univ.-Hawaii (United States); Richard F. Riesenfeld, Brigham Young Univ. (United States) [8294-33]

Exploiting major trends in subject hierarchies for large-scale collection visualization, Charles-Antoine Julien, Pierre Tirilly, Univ. of Wisconsin-Milwaukee (United States); John E. Leide, Catherine Guastavino, McGill Univ. (Canada) [8294-36]

Visualization of multidimensional time, Luther A. Tychonievich, Brigham Young Univ. (United States) and Univ. of Virginia (United States); Robert P. Burton, Brigham Young Univ. (United States) [8294-37]

Degeneracy-aware interpolation of 3D diffusion tensor fields, Chongke Bi, Shigeo Takahashi, The Univ. of Tokyo (Japan); Issei Fujishiro, Keio Univ. (Japan) [8294-38]

Visualization and analysis of 3D gene expression patterns in zebrafish using web services, Dome Potikanond, Fons J. Verbeek, Leiden Univ. (Netherlands) [8294-39]

Vortex core detection: back to basics, Allen Van Gelder, Univ. of California, Santa Cruz (United States) [8294-40]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures,** David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 10

Room: Sandpebble Room E Wed. 9:50 to 10:30 am

Bioinformatics Visualizations

Session Chair: Mark A. Livingston, U.S. Naval Research Lab. (United States)

9:50 am: **Visualization of mappings between the gene ontology and cluster trees,** Ilir Jusufi, Andreas Kerren, Vladyslav Aleksakhin, Linnaeus Univ. (Sweden); Falk Schreiber, Leibniz Institute of Plant Genetics and Crop Plant Research (Germany) and Martin-Luther Univ. Halle-Wittenberg (Germany) [8294-20]

10:10 am: **Visualizing uncertainty in biological expression data,** Clemens Holzhüter, Univ. Rostock (Germany); Alexander Lex, Dieter Schmalstieg, Hans-Jörg Schulz, Technische Univ. Graz (Austria); Heidrun Schumann, Univ. Rostock (Germany); Marc Streit, Technische Univ. Graz (Austria) [8294-21]

Coffee Break 10:30 to 11:00 am

SESSION 11

Room: Sandpebble Room E Wed. 11:00 am to 12:00 pm

Flow Visualization

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

11:00 am: **Instant visitation maps for interactive visualization of uncertain particle trajectories,** Kai Bürger, Roland Fraedrich, Technische Univ. München (Germany); Dorit Merhof, Univ. Konstanz (Germany); Rüdiger Westermann, Technische Univ. München (Germany) . . . [8294-22]

11:20 am: **Motion visualization in large particle simulations,** Roland Fraedrich, Rüdiger Westermann, Technische Univ. München (Germany) [8294-23]

11:40 am: **Animating streamlines with repeated asymmetric patterns for steady flow visualization,** Chih-Kuo Yeh, National Cheng Kung Univ. (Taiwan); Zhanping Liu, Univ. of Pennsylvania (United States); Tong-Yee Lee, National Cheng Kung Univ. (Taiwan) [8294-24]

Room: Sandpebble Room E Wed. 12:00 to 12:15 pm

Closing Remarks

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

Image Processing: Algorithms and Systems X

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

Program Committee: **Til Aach**, RWTH Aachen (Germany); **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); **Eli Saber**, Rochester Institute of Technology (United States); **Jagath K. Samarabandu**, The Univ. of Western Ontario (Canada); **Ivan W. Selesnick**, Polytechnic Institute of NYU (United States); **Damir Sersic**, Univ. of Zagreb (Croatia); **Akira Taguchi**, Musashi Kogyo Univ. (Japan)

Monday 23 January

SESSION 1

Room: Evergreen Room Mon. 8:50 to 10:10 am

Image Analysis

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

8:50 am: **Analysis of different image-based biofeedback models for improving cycling performances**, Daniele Bibbo, Silvia Conforto, Ivan Bernabucci, Marco Carli, Maurizio Schmid, Tommaso D'Alessio, Univ. degli Studi di Roma Tre (Italy) [8295A-01]

9:10 am: **Textured areas detection and segmentation in circular harmonic functions domain**, Luca Costantini, Licia Capodiferno, Fondazione Ugo Bordoni (Italy); Marco Carli, Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) [8295A-02]

9:30 am: **Searching for streamer trajectories on synoptic maps of the sun corona**, Antoine Llebaria, Observatoire Astronomique de Marseille-Provence (France) [8295A-03]

9:50 am: **Performance evaluation for 2D and 3D filtering methods of noise removal in color images**, Vladimir Vasilyevich Lukin, Alexander A. Zelensky, Nikolay N. Ponomarenko, National Aerospace Univ. (Ukraine); Karen O. Egiazarian, Jaakko T. Astola, Tampere Univ. of Technology (Finland) [8295A-04]

Coffee Break 10:10 to 10:50 am

SESSION 2

Room: Evergreen Room Mon. 10:50 am to 12:10 pm

Image Classification and Recognition

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

10:50 am: **Integrated text detection and recognition in natural images**, Nadejda S. Roubtsova, Technische Univ. Eindhoven (Netherlands) and ViNotion B.V. (Netherlands); Rob Wijnhoven, ViNotion B.V. (Netherlands) and Technische Univ. Eindhoven (Netherlands); Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) [8295A-05]

11:10 am: **Ear recognition based on edge potential function**, Federica Battisti, Marco Carli, Univ. degli Studi di Roma Tre (Italy); Francesco G. B. De Natale, Univ. degli Studi di Trento (Italy); Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) [8295A-06]

11:30 am: **Feature extraction from ladar data using modified GPCA**, Peter F. Stiller, Texas A&M Univ. (United States) [8295A-07]

11:50 am: **Recognition of rotated images using the multi-valued neuron and rotation-invariant 2D Fourier descriptors**, Evgeni Aizenberg, Irving J. Bigio, Eladio Rodriguez-Diaz, Boston Univ. (United States) [8295A-08]

Lunch Break 12:10 to 2:20 pm

SESSION 3

Room: Evergreen Room Mon. 2:20 to 3:20 pm

Image Representation I

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

2:20 pm: **Amoeba-based superpixel partitioning of multispectral images into elementary, uniform, connected units**, Jacopo Grazzini, Lakshman Prasad, Los Alamos National Lab. (United States) [8295A-10]

2:40 pm: **Smooth partition of unity with Hermite interpolation: applications to image processing**, Lubomir T. Dechevsky, Peter Zanaty, Arne Lakså, Børre Bang, Narvik Univ. College (Norway) [8295A-11]

3:00 pm: **An algorithm for GPGPU-computing of multidimensional DWTs based on bijective mapping of tensor-product wavelet bases of different number of variables**, Lubomir T. Dechevsky, Jostein Bratlie, Børre Bang, Arne Lakså, Narvik Univ. College (Norway) [8295A-12]

Coffee Break 3:20 to 4:00 pm

SESSION 4

Room: Evergreen Room Mon. 4:00 to 5:00 pm

Image Representation II

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

4:00 pm: **Quantitative evaluation of image mosaicing in multiple scene categories**, Debabrata Ghosh, Sangho Park, Naima Kaabouch, William Semke, Ronald Fevig, The Univ. of North Dakota (United States) [8295A-13]

4:20 pm: **Curvelet transform with adaptive tiling**, Hasan Al-Marzouqi, Ghassan Al-Regib, Georgia Institute of Technology (United States) [8295A-14]

4:40 pm: **Tetrachromatic colour space**, Alfredo Restrepo, Univ. de Los Andes (Colombia) [8295A-15]

Tuesday 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am
Plenary Session and Society Award Presentations
 8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

SESSION 5

Room: Evergreen Room Tues. 9:30 to 10:30 am

Image Synthesis and Reconstruction I

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

9:30 am: **Smooth image inpainting by least square oriented edge prediction**, Emiliano Pallotti, Licia Capodiferro, Federica Mangiatordi, Fondazione Ugo Bordoni (Italy); Paolo Sità, Univ. degli Studi di Roma Tre (Italy) [8295A-16]

9:50 am: **Image inpainting using cubic spline-based edge reconstruction**, Viatcheslav Voronin, Vladimir I. Marchuk, South-Russian State Univ. of Economics and Service (Russian Federation); Karen O. Egiazarian, Tampere Univ. of Technology (Finland); Alexandr Sherstobitov, South-Russian State Univ. of Economics and Service (Russian Federation) [8295A-17]

10:10 am: **Global registration and stabilization of jittered and noisy airborne image sequences**, Nader M. Namazi, The Catholic Univ. of America (United States); William Scharpf, U.S. Naval Research Lab. (United States); Jerome Obermark, DCS Corp. (United States); James Caron, Research Support Instruments, Inc. (United States) . . . [8295A-18]

Coffee Break 10:30 to 11:10 am

SESSION 6

Room: Evergreen Room Tues. 11:10 am to 12:10 pm

Image Synthesis and Reconstruction II

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

11:10 am: **Image and video restoration via Ising-like models**, Ofer Hadar, Ben-Gurion Univ. of the Negev (Israel); Eliahu Cohen, Tel Aviv Univ. (Israel) [8295A-19]

11:30 am: **Region adaptive correction method for radial distortion of fish-eye image**, Ki Sun Song, Young Seok Han, Moon Gi Kang, Yonsei Univ. (Korea, Republic of) [8295A-20]

11:50 am: **Super-resolution image reconstruction with edge adaptive weight in video sequence**, Ji Yong Kwon, Du Sic Yoo, Moon Gi Kang, Yonsei Univ. (Korea, Republic of) [8295A-21]

Lunch Break 12:10 to 2:00 pm

SESSION 7

Room: Evergreen Room Tues. 2:00 to 3:20 pm

Image Filtering and Enhancement I

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

2:00 pm: **Color image enhancement based on genetic algorithm and ensemble empirical mode decomposition**, Somayeh Bakhtiari, Sos Agaian, Mo Jamshidi, The Univ. of Texas at San Antonio (United States) [8295A-22]

2:20 pm: **Image classification and interpolation**, Animesh Khemka, KLA-Tencor Corp. (United States); Charles A. Bouman, Purdue Univ. (United States) [8295A-23]

2:40 pm: **Optimal fractional filter for image segmentation**, Amir Nakib, Yohanna Schulze M.D., Eric Petit, Univ. Paris 12 - Val de Marne (France) [8295A-24]

3:00 pm: **Multi-scale image enhancement using a second derivative-like measure of contrast**, Shahan C. Nercessian, Karen Panetta, Tufts Univ. (United States); Sos Agaian, The Univ. of Texas at San Antonio (United States) [8295A-25]

Coffee Break 3:20 to 4:00 pm

SESSION 8

Room: Evergreen Room Tues. 4:00 to 5:00 pm

Image Filtering and Enhancement II

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

4:00 pm: **A new denoising method in high-dimensional PCA space**, Quoc Bao Do, Azeddine Beghdadi, Marie Luong, Univ. Paris 13 (France) [8295A-26]

4:20 pm: **Intelligent detection of impulse noise using multilayer neural network with multi-valued neurons**, Igor Aizenberg, Glen Wallace, Texas A&M Univ.-Texarkana (United States) [8295A-27]

4:40 pm: **An homomorphic filtering and expectation maximization approach for the point spread function estimation in ultrasound imaging**, Said Benameur, Eiffel Medtech, Inc. (Canada); Max Mignotte, Univ. de Montréal (Canada); Frederic Lavoie, Eiffel Medtech, Inc. (Canada) [8295A-28]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging

Posters 5:30 to 7:00 pm

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

Intensity-constrained, flat-kernel filter for local dark feature suppression: application to removal of hair artifacts in dermatoscopic images, Alex A. Gutenev, Retiarus Pty Ltd. (Australia) [8295A-35]

New decision support tool for acute lymphoblastic leukemia classification, Monica Madhukar, Sos Agaian, Anthony Chronopoulos, The Univ. of Texas at San Antonio (United States) [8295A-36]

Sharpness metric for no-reference image visual quality assessment, Vladimir Vasilyevich Lukin, Nikolay N. Ponomarenko, Oleg Ereemeev, National Aerospace Univ. (Ukraine); Karen O. Egiazarian, Jaakko T. Astola, Tampere Univ. of Technology (Finland) [8295A-37]

- A new system of computer-aided diagnosis of skin lesions**, Isaac A. Sanchez, Sos Agaian, The Univ. of Texas at San Antonio (United States) [8295A-38]
- Image denoising using a combined criterion**, Evgeny Semenishchev, Vladimir I. Marchuk, South-Russian State Univ. of Economics and Service (Russian Federation); Karen O. Egiazarian, Tampere Univ. of Technology (Finland); Viatcheslav Voronin, South-Russian State Univ. of Economics and Service (Russian Federation) [8295A-39]
- Non-cooperative stationary ground targets detection based on IRST**, Degui Yang, Yuliang Qin, Xufeng Zhang, Xizhang Wei, Hongqiang Wang, National Univ. of Defense Technology (China) [8295A-40]
- Motion-compensated spatial-temporal filtering for noisy color filter array sequence**, Min Seok Lee, Yonsei Univ. (Korea, Republic of) [8295A-41]
- Application of 1D FIR filter methods to 3D polygonal meshes**, William S. Ward, The Univ. of Texas at San Antonio (United States) . . [8295A-42]
- An automatic approach for 3D registration of CT scans**, Yang Hu, Eli Saber, Sohail Dianat, Sreenath Rao Vantaram, Rochester Institute of Technology (United States); Vishwas Abhyankar, DataPhysics Research, Inc. (United States) [8295A-43]
- Boundary handling mechanism for lifting-based spatial adaptation of filter banks**, Dakala Jayachandra, Anamitra Makur, Nanyang Technological Univ. (Singapore) [8295A-44]
- A simple and efficient algorithm for connected-component labeling in color images**, M. Emre Celebi, Louisiana State Univ. Shreveport (United States) [8295A-45]
- An adaptive and deterministic method for initializing the Lloyd-Max algorithm**, Jared Vicory, M. Emre Celebi, Louisiana State Univ. Shreveport (United States) [8295A-46]
- Multi-resolution analysis for region of interest extraction in thermographic, nondestructive evaluation**, Benhur Ortiz Jaramillo, Hermes Alexander Fandino Toro, Univ. Nacional de Colombia (Colombia); Hernan Darío Benitez Restrepo, Pontificia Univ. Javeriana, Cali (Colombia); Sergio Alejandro Orjuela Vargas, Univ. Gent (Belgium); German Castellanos Dominguez, Univ. Nacional de Colombia (Colombia); Wilfried Philips, Univ. Gent (Belgium) [8295A-47]
- Estimation of deformations in ultrasound images using dynamic programming**, Sérgio S. Furuie, Fernando M. Cardoso, Escola Politécnica da Univ. de São Paulo (Brazil) [8295A-48]
- Combining skin texture and facial structure for face identification**, Rachel E. Manoni, Photon Research Associates, Inc. (United States); Roxanne L. Canosa, Rochester Institute of Technology (United States) [8295A-49]
- Development of a human vision simulation camera and its application**, Hiroshi Okumura, Mai Fukusaki, Shoichiro Takubo, Kohei Arai, Saga Univ. (Japan) [8295A-50]
- Reconstruction from divergent ray projections**, Challa Subrahmanya Sastry, International Institute of Information Technology (India); Santosh Singh, Siemens Information Systems Ltd. (India) [8295A-51]
- Fusing electro-optic and infrared signals for high-resolution night images**, Xiaopeng Huang, Stevens Institute of Technology (United States); Ravi Netravali, Columbia Univ. (United States); Hong Man, Victor B. Lawrence, Stevens Institute of Technology (United States) . . . [8295A-52]
- Texture and color descriptors as a tool for context-aware patch-based image inpainting**, Tijana Ruzic, Aleksandra Pižurica, Wilfried Philips, Univ. Gent (Belgium) [8295A-53]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 9

Room: Evergreen Room Wed. 9:30 to 10:30 am

Image Processing Systems I

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

9:30 am: **Hybrid gesture recognition system for short-range use**, Akihiro Minagawa, Fujitsu Labs. (Japan); Wei Fan, Fujitsu Research and Development Center Co., Ltd. (China); Yutaka Katsuyama, Hiroaki Takebe, Noriaki Ozawa, Yoshinobu Hotta, Fujitsu Labs. (Japan); Jun Sun, Fujitsu Research and Development Center Co., Ltd. (China) [8295A-29]

9:50 am: **Tracking white road line by particle filter from the video sequence acquired by the camera attached to a walking human body**, Shohei Takahashi, Jun Ohya, Waseda Univ. (Japan) [8295A-30]

10:10 am: **Driver/passenger discrimination for the interaction with the dual-view touch screen integrated to the automobile centre console**, Enrico Herrmann, Andrey Makrushin, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany); Claus Vielhauer, Fachhochschule Brandenburg (Germany) [8295A-31]

Coffee Break 10:30 to 11:10 am

SESSION 10

Room: Evergreen Room Wed. 11:10 am to 12:10 pm

Image Processing Systems II

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

11:10 am: **A linear filter design technique for equalizing document scanners**, Ahmed Hamad Eid, Lexmark International, Inc. (United States) [8295A-32]

11:30 am: **Application of spatial contrast techniques on satellite imagery for cloud shape differentiation**, Jules R. Dim, Hiroshi Murakami, Japan Aerospace Exploration Agency (Japan) [8295A-33]

11:50 am: **A multi-step system for screening and localization of hard exudates in retinal images**, Ajit S. Bopardikar, Vishal Bhola, Raghavendra B. S., Rangavittal Narayanan, Samsung Electronics, India Software Operations Ltd. (India) [8295A-34]

Parallel Processing for Imaging Applications II

Conference Chairs: **John Recker**, Hewlett-Packard Labs. (United States); **Guijin Wang**, Tsinghua Univ. (China)

Program Committee: **Jiansheng Chen**, Tsinghua Univ. (China); **Justin Hensley**, Advanced Micro Devices, Inc. (United States); **Wen-Mei Hwu**, Univ. of Illinois at Urbana-Champaign (United States); **Constantine Kretasoulas**, Merck & Co., Inc. (United States); **I-Jong Lin**, Hewlett-Packard Labs. (United States); **Thomas Malzbender**, Hewlett-Packard Labs. (United States); **Richard J. Moore**, 3M Co. (United States); **Sung W. Park**, Samsung Electronics Co., Ltd. (Korea, Republic of); **William Pratt**, Pixelsoft, Inc (United States); **Norman Rubin**, AMD (United States); **Huachun Tan**, Beijing Institute of Technology (China); **Chung M. Wong**, Northrop Grumman Aerospace Systems (United States)

Monday 23 January

SESSION 11

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

Parallel Systems

Session Chair: **William Pratt**, PixelSoft, Inc. (United States)

11:10 am: **GPGPU-based surface inspection from structured white light** (*Invited Paper*), Miguel Bordallo Lopez, Univ. of Oulu (Finland); Karri Niemelä, VTT Technical Research Ctr. of Finland (Finland); Olli Johannes Silvén, Univ. of Oulu (Finland) [8295B-52]

11:40 am: **IMPAIR-GPU: massively parallel deconvolution algorithm for GPUs**, Michael Sherry, Andrew Shearer, National Univ. of Ireland, Galway (Ireland) [8295B-54]

12:00 pm: **Parallel processing architectures for H.264 deblocking filter on multicore platforms**, Durga P. Prasad, Sekar Sonachalam, Mangesh Kumar Kunchamwar, Nageswara Rao Gunupudi, Parallel Prisms (United States) [8295B-55]

Room: Bayside Room B Mon. 12:20 to 12:50 pm

Keynote Presentation

Session Chair: **William Pratt**, Pixel Soft, Inc. (United States)

12:20 pm: **Compute infrastructure challenges of commercial digital print**, I-Jong Lin, Hewlett-Packard Labs. (United States) . . . [8295B-56]

Lunch Break 12:50 to 2:00 pm

SESSION 12

Room: Bayside Room B. Mon. 2:00 to 3:30 pm

Parallel Algorithms

Session Chair: **Robert A. Ulichney**, Hewlett-Packard Co. (United States)

2:00 pm: **Interactive plenoptic rendering with GPUs**, Andrew Lumsdaine, Georgi N. Chunev, Indiana Univ. (United States); Todor G. Georgiev, Adobe Systems Inc. (United States) [8295B-57]

2:20 pm: **Three-level GPU accelerated Gaussian mixture model for background subtraction**, Yin Li, Guijin Wang, Xinggang Lin, Tsinghua Univ. (China) [8295B-58]

2:40 pm: **Plane-dependent error diffusion on a GPU**, Yao Zhang, Univ. of California, Davis (United States); John L. Recker, Hewlett-Packard Labs. (United States); Robert A. Ulichney, Ingeborg Tastl, Hewlett-Packard Co. (United States); John D. Owens, Univ. of California, Davis (United States) [8295B-59]

3:00 pm: **An analysis of OpenCL for portable imaging** (*Invited Paper*), Richard J. Moore, 3M Co. (United States); Ben Zimmer, 3M Co. (United States) and Univ. of Wisconsin-Eau Claire (United States) . . . [8295B-60]

Tuesday 24 January

Room: Grand Peninsula
Ballroom A Tues. 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

Speed-up on GPU in Bayesian image reconstruction, Shuma Horiuchi, Shuhei Yoshida, Zenta Ushiyama, Manabu Yamamoto, Tokyo Univ. of Science (Japan) [8295B-61]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

Computational Imaging X

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

Program Committee: **Samit Basu**, GE Security (United States); **Thomas S. Denney, Jr.**, Auburn Univ. (United States); **Maya R. Gupta**, Univ. of Washington (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); **Yongyi Yang**, Illinois Institute of Technology (United States)

Monday 23 January

SESSION 1

Room: Harbour Room A Mon. 8:30 am to 12:10 pm

Special Session on Microscopy and Information Modeling

- 8:30 am: **Imaging with electrons: a review of modern modalities** (*Keynote Presentation*), Marc DeGraef, United States (United States) [8296-01]
- 9:00 am: **Improving boundary localization in the statistical image segmentation of materials micrographs**, Mary L. Comer, Purdue Univ. (United States) [8296-02]
- 9:20 am: **Scanning transmission electron tomography and applications to materials science**, Lawrence F. Drummy, Air Force Research Lab. (United States) [8296-03]
- 9:40 am: **Combining global labeling and local relabeling for metallic image segmentation**, Jarrell W. Waggoner, Univ. of South Carolina (United States); Jeff Simmons, Air Force Research Lab. (United States); Song Wang, Univ. of South Carolina (United States) [8296-04]
- 10:00 am: **Towards automated detection of active colitis in images of H&E-stained tissue samples**, Michael McCann, Ramu Bhagavatula, Carnegie Mellon Univ. (United States); Matthew Fickus, Air Force Institute of Technology (United States); Jelena Kovacevic, Carnegie Mellon Univ. (United States) [8296-05]
- Coffee Break 10:20 to 10:50 am
- 10:50 am: **Computer-aided fiber analysis for crime scene forensics**, Mario Hildebrandt, Andrey Makrushin, Jana Dittmann, Christian Arndt, Otto-von-Guericke-Univ. Magdeburg (Germany) [8296-06]
- 11:10 am: **An automated diagnostic aid for otitis media**, Anupama Kuruville, Carnegie Mellon Univ. (United States); Pablo H. Hennings Yeomans, Ontario Institute for Cancer Research (Canada); Pedro Quelhas, Instituto de Engenharia Biomédica (Portugal); Alejandro Hoberman, Univ. of Pittsburgh (United States); Jelena Kovacevic, Carnegie Mellon Univ. (United States) [8296-07]
- 11:30 am: **3D reconstruction based on single-particle cryo electron microscopy images as a random signal in noise problem**, Qiu Wang, Cornell Univ. (United States); Yili Zheng, Lawrence Berkeley National Lab. (United States); Peter C. Doerschuk, Cornell Univ. (United States) [8296-08]
- 11:50 am: **Highly scalable methods for exploiting a label with unknown location in order to orient a set of single-particle cryo electron microscopy images**, Cory J. Prust, Milwaukee School of Engineering (United States); Peter C. Doerschuk, Cornell Univ. (United States); John E. Johnson, The Scripps Research Institute (United States) [8296-09]
- Lunch Break 12:10 to 1:40 pm

SESSION 2

Room: Harbour Room A Mon. 1:40 to 3:50 pm

Reconstruction

- 1:40 pm: **Plenoptic camera with freely movable microlenses**, Todor G. Georgiev, Adobe Systems Inc. (United States); Sergio Goma, Qualcomm Inc. (United States) [8296-10]
- 2:00 pm: **Image reconstruction using projections from a few views by discrete steering combined with DART**, Jungyun Kwon, Samuel M. Song, Brian Kauke, Douglas P. Boyd, TeleSecurity Sciences, Inc. (United States) [8296-11]
- 2:20 pm: **One-dimensional control grid interpolation-based demosaicing and color image interpolation**, Christine M. Zwart, David H. Frakes, Arizona State Univ. (United States) [8296-12]
- 2:40 pm: **Limited view angle iterative CT reconstruction for transportation security application**, Sherman J. Kisner, Charles A. Bouman, Purdue Univ. (United States) [8296-13]
- Coffee Break 3:00 to 3:30 pm
- 3:30 pm: **Variational semi-blind sparse image reconstruction with application to MRFM**, Se Un Park, Alfred O. Hero, Univ. of Michigan (United States); Nicolas Dobigeon, Univ. de Toulouse (France) . . [8296-15]

SESSION 3

Room: Harbour Room A Mon. 3:50 to 5:10 pm

Classification and Detection

- 3:50 pm: **Moon search algorithms for NASA's Dawn mission to asteroid Vesta**, Nargess Memarsadeghi, Lucy A. McFadden, David R. Skillman, NASA Goddard Space Flight Ctr. (United States); Brian McLean, Max Mutchler, Space Telescope Science Institute (United States) [8296-16]
- 4:10 pm: **CLEAN: a false alarm reduction method for SAR CCD**, Rhonda Phillips, MIT Lincoln Lab. (United States) [8296-17]
- 4:30 pm: **Insertion of synthetic features in SAR CCD imagery**, Eric Turner, Rhonda Phillips, Miriam Cha, MIT Lincoln Lab. (United States) [8296-18]
- 4:50 pm: **Multichannel hierarchical image classification using multivariate copulas**, Aurelie Voisin, Vladimir Krylov, INRIA Sophia Antipolis - Méditerranée (France); Gabriele Moser, Sebastiano B. Serpico, Univ. degli Studi di Genova (Italy); Josiane Zerubia, INRIA Sophia Antipolis - Méditerranée (France) [8296-19]

Tuesday 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Keynote Presentation

Room: Harbour Room A Tues. 9:30 to 10:00 am

9:30 am: **Definition of shape**, Zygmunt Pizlo, Purdue Univ. (United States) [8296-43]

SESSION 4

Room: Harbour Room A Tues. 10:00 am to 12:10 pm

Enhancement, Denoising, and Restoration I

10:00 am: **Denoising and deblurring of Fourier-transform infrared spectroscopic imaging**, Tan H. Nguyen, Rohith K. Reddy, Michael J. Walsh, Matthew Schulmerich, Gabriel Popescu, Minh N. Do, Rohit Bhargava, Univ. of Illinois at Urbana-Champaign (United States) [8296-20]

Coffee Break 10:20 to 10:50 am

10:50 am: **Iterative weighted risk estimation for nonlinear image restoration with analysis priors**, Jeffrey Rosen, Zhihao Liu, Sathish Ramani, Jeffrey A. Fessler, Univ. of Michigan (United States) . . . [8296-21]

11:10 am: **Nonlocal transform-domain denoising of volumetric data with groupwise adaptive variance estimation**, Matteo T. Maggioni, Alessandro Foi, Tampere Univ. of Technology (Finland) [8296-22]

11:30 am: **Non-uniform contrast correction for coded source neutron imaging**, Hector J. Santos-Villalobos, Philip R. Bingham, Oak Ridge National Lab. (United States) [8296-23]

11:50 am: **Image enhancement and quality measures for dietary assessment using mobile devices**, Chang Xu, Fengqing Zhu, Nitin Khanna, Carol J. Boushey, Edward J. Delp III, Purdue Univ. (United States) [8296-24]

Lunch Break 12:10 to 1:40 pm

SESSION 5

Room: Harbour Room A Tues. 1:40 to 2:40 pm

Enhancement, Denoising, and Restoration II

1:40 pm: **Risk estimates for MRI denoising**, Patrick J. Wolfe, Harvard Univ. (United States) [8296-25]

2:00 pm: **Subjective evaluations of example-based, total variation, and joint regularization for image processing**, Hyrum S. Anderson, Maya R. Gupta, Univ. of Washington (United States); Jon Hardeberg, Gjøvik Univ. College (Norway) [8296-26]

2:20 pm: **Removal of haze and noise from a single image**, Erik Matlin, Peyman Milanfar, Univ. of California, Santa Cruz (United States) [8296-27]

SESSION 6

Room: Harbour Room A Tues. 2:40 to 5:50 pm

Computer Vision and 3D Modeling

2:40 pm: **Finding saliency in noisy images**, Chelhwon Kim, Peyman Milanfar, Univ. of California, Santa Cruz (United States) [8296-28]

3:00 pm: **Automatic loop closure detection using multiple cameras for 3D indoor localization**, Nicholas Corso, John Kua, Jacky Chen, Avideh Zakhori, Univ. of California, Berkeley (United States) [8296-29]

Coffee Break 3:20 to 3:50 pm

3:50 pm: **An information theoretic trackability measure**, Scott T. Acton, Alla Aksel, Univ. of Virginia (United States) [8296-30]

4:10 pm: **Text replacement on cylindrical surfaces: a semi-automatic approach**, Hengzhou Ding, Raja Bala, Zhigang Fan, Xerox Corp. (United States); Charles A. Bouman, Jan P. Allebach, Purdue Univ. (United States) [8296-31]

4:30 pm: **Figure-ground organization is easier than previously thought**, Yunfeng Li, Taekyu Kwon, Purdue Univ. (United States); Longin Jan Latecki, Temple Univ. (United States); Zygmunt Pizlo, Purdue Univ. (United States) [8296-32]

4:50 pm: **An efficient and iterative two-step depth camera self-calibration technique using depth measurements**, R. S. Pahwa, D. Babacan, M. N. Do, Univ. of Illinois at Urbana-Champaign (United States) [8296-41]

5:10 pm: **Registration and integration of multiple depth images using signed distance function**, D. Kubacki, H. Q. Bui, D. Babacan, M. N. Do, Univ. of Illinois at Urbana-Champaign (United States) [8296-42]

5:30 pm: **Image reconstruction from nonuniformly spaced samples in Fourier domain optical coherence tomography**, Jun Ke, Edmund Y. Lam, Rui Zhu, The Univ. of Hong Kong (Hong Kong, China) [8296-14]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 8:00 pm

Interactive papers will be placed on display after 10:30 am on Tuesday. An interactive paper session, with authors present at their papers, will be held Tuesday evening, 5:30 to 8:00 pm.

Analysis of practical coverage of uniform motions for approximating real camera shakes, Hojin Cho, Sunghyun Cho, Pohang Univ. of Science and Technology (Korea, Republic of); Young Su Moon, Junguk Cho, Shihwa Lee, Samsung Electronics Co., Ltd. (Korea, Republic of); Seungyong Lee, Pohang Univ. of Science and Technology (Korea, Republic of) [8296-33]

Real-time computational camera system for high-sensitivity imaging by using combined long/short exposure, Satoshi Sato, Yusuke Okada, Takeo Azuma, Panasonic Corp. (Japan) [8296-34]

Color correction with edge preserving and minimal SNR decrease using multi-layer decomposition, Byung Kwan Park, Wonhee Choe, JaeGuyn Lim, SeongDeok Lee, ChangYeong Kim, Samsung Electronics Co., Ltd. (Korea, Republic of) [8296-35]

Bayesian image superresolution for hyperspectral image reconstruction, Yusuke Murayama, Ari Ide-Ektessabi, Kyoto Univ. (Japan) [8296-36]

ToF depth image deblurring using 3D blur shape models and motion blur saliency map (MBSM), Seungkyu Lee, Kate Shim, James D. K. Kim, Chang yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) [8296-37]

Computational imaging of defects in commercial substrates for electronic and photonic devices, Ryo Kashiwagi, Masayuki Fukuzawa, Masayoshi Yamada, Kyoto Institute of Technology (Japan) [8296-38]

Nondestructive three-dimensional measurement of gas temperature distribution by phase tomography, Satoshi Tomioka, Shusuke Nishiyama, Hokkaido Univ. (Japan) [8296-39]

Closed-form inverses for the mixed pixel/multpath interference problem in AMCW lidar, John P. Godbaz, Michael J. Cree, Adrian Dorrington, The Univ. of Waikato (New Zealand) [8296-40]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

Document Recognition and Retrieval XIX

Conference Chairs: **Christian Viard-Gaudin**, Univ. de Nantes (France); **Richard Zanibbi**, Rochester Institute of Technology (United States)

Program Committee: **Gady Agam**, Illinois Institute of Technology (United States); **Elisa H. Barney Smith**, Boise State Univ. (United States); **Bill Barrett**, Brigham Young Univ. (United States); **Kathrin Berkner**, Ricoh Innovations, Inc. (United States); **Bertrand Couasnon**, Institut National des Sciences Appliquées de Rennes (France); **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); **Jiaying Hu**, IBM TJ Watson Research Ctr. (United States); **Laurence Likforman-Sulem**, Telecom ParisTech (France); **Xiaofan Lin**, Vobile, Inc. (United States); **Marcus Liwicki**, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); **Daniel P. Lopresti**, Lehigh Univ. (United States); **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); **Berrin Yanikoglu**, Sabanci Univ. (Turkey); **Jie Zou**, National Library of Medicine (United States)

Tuesday 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am
Plenary Session and Society Award Presentations
 8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm
Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

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

- Bleed-through removal in degraded documents**, Róisín F. Rowley-Brooke, Anil Kokaram, Trinity College Dublin (Ireland) [8297-28]
- Clustering document fragments using background color and texture information**, Sukalpa Chanda, Katrin Franke, Gjøvik Univ. College (Norway); Umapada Pal, Indian Statistical Institute (India) [8297-29]
- Lecture video segmentation and indexing**, Di Ma, Gady Agam, Illinois Institute of Technology (United States) [8297-30]
- Unsupervised categorization method of graphemes on handwritten manuscripts: application to style recognition**, Hani Daher, Djamel Gaceb, Veronique Eglin, Stephane Bres, Nicole Vincent, Institut National des Sciences Appliquées de Lyon (France) [8297-31]
- Retrieving handwriting by combining word spotting and manifold ranking**, Sebastian Peña Saldarriaga, Synchronmedia (Canada); Emmanuel Morin, Christian Viard-Gaudin, Univ. de Nantes (France) [8297-32]
- The A2iA French handwriting recognition system at the Rimes-ICDAR2011 competition**, Farès Menasri, Jérôme Louradour, Anne-Laure Bianne-Bernard, Christopher Kermorvant, A2iA SA (France) [8297-33]
- Using connected component decomposition to detect straight line segments in documents**, Xiaofan Feng, Abdou Youssef, The George Washington Univ. (United States) [8297-34]
- A synthetic document image dataset for developing and evaluating historical document processing methods**, Daniel D. Walker IV, William B. Lund, Eric K. Ringger, Brigham Young Univ. (United States) . . [8297-35]

Wednesday 25 January

Room: Grand Peninsula Ballroom A Wed. 8:20 to 9:30 am
Plenary Session and Conference Award Presentations
 8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 1

Room: Harbour Room A Wed. 9:30 to 10:30 am
Invited Presentation I
Session Chair: Christian Viard-Gaudin, Univ. de Nantes (France)
 9:30 am: **Large scale visual semantic extraction (Invited Paper, Presentation Only)**, Samy Bengio, Google Inc. (United States) . . [8297-01]
 Coffee Break 10:30 to 11:00 am

SESSION 2

Room: Harbour Room A Wed. 11:00 am to 12:20 pm
Region Labeling
Session Chair: Gady Agam, Illinois Institute of Technology (United States)
 11:00 am: **Graphical image classification combining an evolutionary algorithm and binary particle swarm optimization**, Beibei Cheng, Renzhong Wang, Missouri Univ. of Science and Technology (United States); Sameer K. Antani, National Library of Medicine (United States); R. Joe Stanley, Missouri Univ. of Science and Technology (United States); George R. Thoma, National Library of Medicine (United States) . [8297-02]
 11:20 am: **Combining SVM classifiers to identify investigator name zones in biomedical articles**, Jongwoo Kim, Daniel X. Le, George R. Thoma, National Library of Medicine (United States) [8297-03]
 11:40 am: **Comprehensive color segmentation system for noisy digitized documents to enhance text extraction**, Asma Ouji, Yann Leydier, Frank LeBourgeois, Institut National des Sciences Appliquées de Lyon (France) [8297-04]
 12:00 pm: **Ensemble methods with simple features for document zone classification**, Tayo Obafemi-Ajayi, Gady Agam, Bingqing Xie, Illinois Institute of Technology (United States) [8297-05]
 Lunch Break 12:20 to 1:50 pm

SESSION 3

Room: Harbour Room A Wed. 1:50 to 3:30 pm

Handwriting Recognition

Session Chair: Xiaoqing Ding, Tsinghua Univ. (China)

1:50 pm: **A robust omnifont open-vocabulary arabic OCR system using pseudo-2D-HMM**, Abdullah M. Rashwan, Cairo Univ. (Egypt) and RDI (Egypt); Mohsen A. Rashwan, Sherif Abdou, Ahmed Abdel-Hameed, Cairo Univ. (Egypt) [8297-06]

2:10 pm: **Variable length and context-dependent HMM letter form models for Arabic handwritten word recognition**, Anne-Laure Bianne-Bernard, A2iA SA (France) and Telecom ParisTech (France); Farès Menasri, A2iA SA (France); Laurence Likforman-Sulem, Telecom ParisTech (France); Chafic Mokbel, Univ. of Balamand (Lebanon); Christopher Kermorvant, A2iA SA (France) [8297-07]

2:30 pm: **Post-processing for offline Chinese handwritten character string recognition**, Yanwei Wang, Xiaoqing Ding, Changsong Liu, Tsinghua Univ. (China) [8297-08]

2:50 pm: **Complexity reduction with recognition rate maintained for online handwritten Japanese text recognition**, Jinfeng Gao, Tokyo Univ. Agriculture and Technology (Japan) [8297-09]

3:10 pm: **Improving isolated and in-context classification of handwritten characters**, Vadim Mazalov, Stephen M. Watt, The Univ. of Western Ontario (Canada) [8297-10]

Coffee Break 3:30 to 4:00 pm

SESSION 4

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

Graphics Recognition

Session Chair: Bertrand Couasnon, Institut National des Sciences Appliquées de Rennes (France)

4:00 pm: **Using specific evaluation for comparing and combining competing algorithms: applying it to table column detection**, Ana Costa C. Silva, Univ. do Porto (Portugal) [8297-11]

4:20 pm: **Identification of embedded mathematical formulas in PDF documents using SVM**, Xiaoyan Lin, Liangcai Gao, Zhi Tang, Peking Univ. (China); Xuan Hu, BeiHang Univ. (China); Xiaofan Lin, Vobile, Inc. (United States) [8297-12]

4:40 pm: **Chemical structure recognition: a rule-based approach**, Nouredin M. Sadawi, Alan P. Sexton, Volker Sorge, The Univ. of Birmingham (United Kingdom) [8297-13]

5:00 pm: **Quantify spatial relations to discover handwritten graphical symbols**, Jinpeng Li, Harold Mouchère, Christian Viard-Gaudin, Univ. de Nantes (France) [8297-14]

Thursday 26 January

SESSION 5

Room: Harbour Room A Thurs. 8:30 to 9:30 am

Invited Presentation II

Session Chair: Richard Zanibbi, Rochester Institute of Technology (United States)

8:30 am: **Language modeling for information retrieval (Invited Paper, Presentation Only)**, Christopher Manning, Stanford Univ. (United States) [8297-15]

SESSION 6

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

Information Retrieval

Session Chair: Richard Zanibbi, Rochester Institute of Technology (United States)

9:30 am: **Automatic indexing of scanned documents: a layout-based approach**, Daniel Esser, Daniel Schuster, Klemens Muthmann, Alexander Schill, Technische Univ. Dresden (Germany) [8297-16]

9:50 am: **Layout-based substitution tree indexing and retrieval for mathematical expressions**, Thomas Schellenberg, Richard Zanibbi, Bo Yuan, Rochester Institute of Technology (United States) [8297-17]

Coffee Break 10:10 to 10:40 am

SESSION 7

Room: Harbour Room A Thurs. 10:40 am to 12:20 pm

Human-Computer Interaction

Session Chair: Xiaofan Lin, Vobile, Inc. (United States)

10:40 am: **Efficient cost-sensitive human-machine collaboration for off-line signature verification**, Johannes Coetzer, Jacques Swanepoel, Stellenbosch Univ. (South Africa); Robert Sabourin, Ecole de Technologie Supérieure (Canada) [8297-18]

11:00 am: **Questioned document workflow for handwriting with automated tools**, Sargur N. Srihari, Krishnanand Das, Harish Srinivasan, Univ. at Buffalo (United States) [8297-19]

11:20 am: **Iterative analysis of document collections enables efficient human-initiated interaction**, Joseph Chazalon, Bertrand Couasnon, Institut National des Sciences Appliquées de Rennes (France) . . [8297-20]

11:40 am: **VeriClick: an efficient tool for table format verification**, George Nagy, Mangesh Tamhankar, Rensselaer Polytechnic Institute (United States) [8297-21]

12:00 pm: **Asymptotic cost in document conversion**, Dorothea Blostein, Queen's Univ. (Canada); George Nagy, Rensselaer Polytechnic Institute (United States) [8297-22]

Lunch Break 12:20 to 1:50 pm

SESSION 8

Room: Harbour Room A Thurs. 1:50 to 3:30 pm

Style or Writer Identification

Session Chair: Daniel P. Lopresti, Lehigh Univ. (United States)

1:50 pm: **Style comparisons in calligraphy**, Xiafen Zhang, Shanghai Maritime Institute (China); George Nagy, Rensselaer Polytechnic Institute (United States) [8297-23]

2:10 pm: **An Oracle-based co-training framework for writer identification in offline handwriting**, Utkarsh Porwal, Univ. at Buffalo (United States); Sreeranga Rajan, Fujitsu Labs. of America, Inc. (United States); Venu Govindaraju, Univ. at Buffalo (United States) [8297-24]

2:30 pm: **Handwritten document age classification based on handwriting styles**, Chetan Ramaiah, Gaurav Kumar, Venu Govindaraju, Univ. at Buffalo (United States) [8297-25]

2:50 pm: **Handwriting individualization using distance and rarity**, Yi Tang, Sargur N. Srihari, Univ. at Buffalo (United States); Harish Srinivasan, Janya Inc. (United States) [8297-26]

3:10 pm: **Construction of language models for an handwritten mail reading system**, Olivier Morillot, Laurence Likforman-Sulem, Telecom ParisTech (France); Emmanuèle Grosicki, Direction Générale de L'armement (France) [8297-27]

Sensors, Cameras, and Systems for Industrial/Scientific Applications XIII

Conference Chairs: Ralf Widenhorn, Portland State Univ. (United States); Valérie Nguyen, CEA LETI MINATEC (France); 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); James A. DiBella, Sr., Eastman Kodak Co. (United States); Terrence S. Lomheim, The Aerospace Corp. (United States); Pierre Magnan, Institut Supérieur de l'Aéronautique et de l'Espace (France); Kevin J. Matherson, Hewlett-Packard Co. (United States); Alice L. Reinheimer, e2v (United States); Nobukazu Teranishi, Panasonic Corp. (Japan); Xinyang Wang, CMOSIS nv (Belgium)

Tuesday 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am
Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations. 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

The embedded network infrared video monitoring system based on Linux OS, Lei Liu, Nanjing Univ. of Science & Technology (China); Ning Chen, Nanjing Normal Univ. (China); Xiaojun Zhou, Tao Pan, Nanjing Univ. of Science & Technology (China) [8298-27]

Motion blur-free time-of-flight range sensor, Seungkyu Lee, Byongmin Kang, James D.K. Kim, Chang Yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) [8298-28]

CMOS buried double junction (BDJ) photodiode for trichromatic sensing, Lien Tu, Swetadri Vasan Setlur Nagesh, Univ. at Buffalo (United States); ZhenHong Fu, OmniVision Technologies, Inc. (United States); Albert H. Titus, Univ. at Buffalo (United States) [8298-29]

On image sensor dynamic range utilized by security cameras, Anders Johannesson, Axis Communications AB (Sweden) [8298-30]

Design of low-noise output amplifier for p-channel: fully depleted charge-coupled devices, Sufia Haque, Stephen E. Holland, Armin Karcher, William Kolbe, Natalie Roe, Lawrence Berkeley National Lab. (United States); Robert Groulx, Raymond Frost, Francois Dion, Teledyne DALSA Semiconductor (Canada); Guobin Wang, Lawrence Berkeley National Lab. (United States) [8298-31]

S/N improvement for the optical-multiplex image-acquisition system, Tadakuni Narabu, Sony Corp. (Japan) [8298-32]

Fully integrated system-on-chip for pixel-based 3D depth and scene mapping, Martin Popp, Beat De Coi, Markus Thalmann, Radoslav Gancarz, Pascal Ferrat, Martin Dürmüller, Florian Britt, Marco Annese, Markus Ledergerber, Gion-Pol Catregn, ESPROS Photonics AG (Switzerland) [8298-33]

Wednesday 25 January

Room: Grand Peninsula Ballroom A Wed. 8:20 to 9:30 am
Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 1

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

High Speed Sensors

Session Chair: Morley M. Blouke, Portland State Univ. (United States)

9:30 am: **High-speed VGA resolution CMOS image sensor with global shutter**, Pieter Willems, Guido Vanhorebeek, Cheng Ma, CMOSIS nv (Belgium) [8298-01]

9:50 am: **High-speed global shutter CMOS machine vision sensor with high-dynamic range image acquisition and embedded intelligence**, Ángel B. Rodríguez-Vázquez, Univ. de Sevilla (Spain); Rafael Dominguez-Castro, Fernando Medeiro, Francisco Jimenez-Garrido, Anafocus (Spain) [8298-02]

10:10 am: **High-speed CMOS image sensor for high-throughput lensless microfluidic imaging system with point-of-care application**, Mei Yan, Xiwei Huang, Revanth Nadipalli, Yang Shang, Hao Yu, Nanyang Technological Univ. (Singapore); Minkyu Je, A*STAR Institute of Microelectronics (Singapore); Chen Xu, OmniVision Technologies, Inc. (United States); Kiatseng Yeo, Nanyang Technological Univ. (Singapore) [8298-03]

Coffee Break 10:30 to 11:10 am

SESSION 2

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

Smart Sensors

Session Chair: Alice L. Reinheimer, e2v (United States)

11:10 am: **Smart image sensor with adaptive correction of brightness**, Michel Paindavoine, Auguste Ngoua, Olivier Brousse, Cedric Clerc, Univ. de Bourgogne (France) [8298-04]

11:30 am: **Algorithm architecture co-design for ultra low-power image sensor**, Timothé Laforest, Antoine Dupret, Arnaud Verdant, Didier Lattard, Patrick Villard, CEA-LETI (France) [8298-05]

11:50 am: **A CMOS imager using focal-plane pinhole effect for confocal multi-beam scanning microscopy**, Min-Woong Seo, An Wang, Zhuo Li, Keita Yasutomi, Keiichiro Kagawa, Shoji Kawahito, Shizuoka Univ. (Japan) [8298-06]

12:10 pm: **Time-to-impact sensors in robot vision applications based on the near-sensor image processing concept**, Anders Astrom, Combitech AB (Sweden); Robert Forchheimer, Linköping Univ. (Sweden)[8298-07]
 Lunch Break 12:30 to 1:30 pm

SESSION 3

Room: Regency Ballroom A Wed. 1:30 to 3:00 pm

High Performance Sensors

Session Chair: Valérie Nguyen, Commissariat à l'Énergie Atomique (France)

1:30 pm: **Diffusion dark current in front-illuminated CCDs and CMOS image sensors**, Morley M. Blouke, Portland State Univ. (United States)[8298-36]
 1:40 pm: **A 176x144 148dB adaptive tone-mapping imager**, Sonia Vargas-Sierra, Gustavo Liñán-Cembrano, Ángel B. Rodríguez-Vázquez, Univ. de Sevilla (Spain)[8298-08]
 2:00 pm: **A high-dynamic range (HDR) back-side illuminated (BSI) CMOS image sensor for extreme UV detection**, Xinyang Wang, CMOSIS nv (Belgium)[8298-09]
 2:20 pm: **A low-noise, 15µm pixel-pitch, 640x512 hybrid InGaAs image sensor for night vision**, Fabrice Guellec, Sébastien Dubois, Eric de Borniol, Pierre Castelein, Sébastien Martin, Romain Guiguet, Michaël Tchagaspanian, Anne Rouvie, Philippe Bois, CEA-LETI (France). [8298-10]
 2:40 pm: **High-dynamic range, 4 megapixel CMOS image sensor for scientific applications**, Paul Vu, Boyd Fowler, Chiao Liu, Steve Mims, Peter Bartkovjak, Hung Do, Wang Li, Jeff Appelbaum, Angel Lopez, BAE Systems Imaging Solutions (United States)[8298-11]
 Coffee Break 3:00 to 3:30 pm

SESSION 4

Room: Regency Ballroom A Wed. 3:30 to 5:40 pm

Noise and Characterization

Session Chair: Kevin J. Matherson, Hewlett-Packard Co. (United States)

3:30 pm: **Projecting the rate of in-field pixel defects based on pixel size, sensor area, and ISO**, Glenn H. Chapman, Jenny Leung, Ana Namburete, Simon Fraser Univ. (Canada); Israel Koren, Zahava Koren, Univ. of Massachusetts Amherst (United States)[8298-12]
 3:50 pm: **Dynamic CCD pixel depletion edge model and the effects on dark current production**, Justin C. Dunlap, Morley M. Blouke, Erik Bodegom, Ralf Widenhorn, Portland State Univ. (United States). [8298-13]
 4:10 pm: **Characterizing the response of charge-couple device digital color cameras**, Viktor Slavkovikj, Jon Yngve Hardeberg, Gjøvik Univ. College (Norway); Alexander Eichhorn, Simula Research Lab. (Norway)[8298-14]
 4:30 pm: **Implementing and using the EMVA1288 standard**, Arnaud Darmont, Jean-François Lemaitre, Jawad Chahiba, Aphesa SPRL (Belgium)[8298-15]
 4:50 pm: **An overview of the European patent system with particular emphasis on IP issues for imaging devices**, M. Boero, A. Cabrita, European Patent Office (Netherlands)[8298-35]
 5:10 pm: **Image sensor for defence applications (Invited Paper)**, Eric Belhaire, Jean-Claude L. Fontanella, Thales Optronique S.A. (France)[8298-34]

Thursday 26 January

SESSION 5

Room: Regency Ballroom A Thurs. 8:30 to 10:10 am

Technological Improvements

Session Chair: Xinyang Wang, CMOSIS nv (Belgium)

8:30 am: **Development of high-transmittance, back-illuminated, silicon-on-sapphire substrates thinned below 25 micrometers and bonded to fused silica for high-quantum efficiency and high-resolution avalanche photodiode imaging arrays**, Alvin G. Stern, AG Stern, LLC (United States)[8298-16]
 8:50 am: **29 mp, 35 mm format interline CCD image sensor**, Eric J. Meisenzahl, Douglas A. Carpenter, James E. Doran, Robert P. Fabinski, Stephen L. Kosman, John P. McCarten, Eastman Kodak Co. (United States)[8298-17]
 9:10 am: **Photodiode dopant structure with atomically flat Si surface for high-sensitivity and stability to UV light**, Taiki Nakazawa, Rihito Kuroda, Yasumasa Koda, Shigetoshi Sugawa, Tohoku Univ. (Japan)[8298-18]
 9:30 am: **New smart readout technique performing edge detection designed to control vision sensors dataflow**, Hawraa Amhaz, Gilles Sicard, TIMA Lab. (France)[8298-19]
 9:50 am: **Characterization of orthogonal transfer array CCDs for the WIYN one-degree imager**, Michael P. Lesser, David Ouellette, The Univ. of Arizona (United States); Todd Boroson, National Optical Astronomy Observatory (United States); Daniel Harbeck, Pierre Martin, WIYN Observatory (United States); George Jacoby, Carnegie Observatories (United States); John Cavin, Univ. of Wisconsin-Madison (United States); David Sawyer, National Optical Astronomy Observatory (United States); Kasey Boggs, Richard Bredthauer, Semiconductor Technology Associates Inc. (United States)[8298-20]
 Coffee Break 10:10 to 10:50 am

SESSION 6

Room: Regency Ballroom A ... Thurs. 10:50 am to 12:10 pm

Color Imaging

Session Chair: Erik Bodegom, Portland State Univ. (United States)

10:50 am: **Multispectral imaging device for help in diagnosis**, Céline Delporte, Mohamed Ben Chouikha, Sylvie Sautrot, Univ. Pierre et Marie Curie (France); Françoise Viénot, Muséum National d'Histoire Naturelle (France); Georges Alquié, Univ. Pierre et Marie Curie (France) . . .[8298-21]
 11:10 am: **Development of a driving method suitable to ultra-high-speed shooting in 2M-fps, 300k-pixel single-chip color camera**, Jun Yonai, Toshiaki Arai, Japan Broadcasting Corp. (Japan); Tetsuya Hayashida, NHK Engineering Services, Inc. (Japan); Hiroshi Ohtake, Japan Broadcasting Corp. (Japan); Takeharu Goji Etoh, Kinki Univ. (Japan); Tetsuo Yoshida, Jun Namiki, Hitachi Kokusai Electric Inc. (Japan)[8298-22]
 11:30 am: **Accurate color with increased sensitivity using IR**, Amy Enge, Eastman Kodak Co. (United States)[8298-24]
 11:50 am: **Computational color constancy using chromagenic filters in color filter arrays**, Raju Shrestha, Jon Yngve Hardeberg, Gjøvik Univ. College (Norway)[8298-25]

Digital Photography VIII

Conference Chairs: **Sebastiano Battiato**, Univ. degli Studi di Catania (Italy); **Brian G. Rodricks**, Fairchild Imaging (United States); **Nitin Sampat**, Rochester Institute of Technology (United States)

Conference Co-Chairs: **Francisco H. Imai**, Canon U.S.A., Inc. (United States); **Feng Xiao**, Vimicro Corp. (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); **Ted J. Cooper**, Lens Vector, Inc. (United States); **Jeffrey M. DiCarlo**, Intuitive Surgical, Inc. (United States); **Alexandru F. Drimborean**, Tessera (FotoNation) Ireland Ltd. (Ireland); **Joyce E. Farrell**, Stanford Univ. (United States); **Guotong Feng**, Ricoh Innovations, Inc. (United States); **Boyd A. Fowler**, Fairchild Imaging (United States); **Sergio R. Goma**, Qualcomm Inc. (United States); **Mirko Guarnera**, STMicroelectronics (Italy); **Xiaoyun Jiang**, Qualcomm Inc. (United States); **George John**, Motorola, Inc. (United States); **Michael A. Kriss**, Consultant (United States); **Jiangtao Kuang**, OmniVision Technologies, Inc. (United States); **Feng Li**, Aptina Imaging Corp. (United States); **J. Dylan Li**, Lifesize Communications, Inc. (United States); **Kevin J. Matherson**, Hewlett-Packard Co. (United States); **Jon S. McElvain**, Dolby Labs., Inc. (United States); **Ricardo J. Motta**, NVIDIA Corp. (United States); **Seishi Ohmori**, Nikon Corp. (Japan); **Manu Parmar**, Qualcomm Inc. (United States); **Gloria G. Putnam**, Eastman Kodak Co. (United States); **John R. Reinert-Nash**, Lifetouch, Inc. (United States); **Filippo D. Stanco**, Univ. degli Studi di Catania (Italy); **Qun Sun**, Aptina Imaging Corp. (United States); **Sabine Süssstrunk**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Touraj Tajbakhsh**, Dream Chip Technologies (Germany); **Radka Tezaur**, Nikon Precision Inc. (United States); **Michael Wang**, Cisco Systems, Inc. (United States); **Dietmar Wüller**, Image Engineering Dietmar Wüller (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 23 January

SESSION 1

Room: Regency Ballroom A Mon. 8:30 am to 12:10 pm

Sensors and Optics

Session Chair: **Feng Li**, Aptina Imaging Corp. (United States)

8:30 am: **An objective protocol for comparing the noise performance of silver halide film and digital sensor**, Frédéric Cao, Régis Tessières, Guichard Frédéric, Hervé Homung, DxO Labs (France) [8299-01]

8:50 am: **Sensor defect probability estimation and yield**, Honghong Peng, Brian Keelan, Aptina Imaging Corp. (United States) [8299-02]

9:10 am: **Optimum spectral sensitivity functions for single-sensor color imaging**, Zahra Sadeghipoor, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Yue Lu, Harvard School of Engineering and Applied Sciences (United States); Sabine Süssstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [8299-03]

9:30 am: **A metric for the evaluation of wide dynamic-range cameras**, Ping Wah Wong, Pixim Inc. (United States); Yu Hua Lu, Ministry of Public Security (China) [8299-04]

9:50 am: **Active pixels of transverse field detector based on a charge preamplifier**, Giacomo Langfelder, Cesare Buffa, Antonio Francesco Longoni, Alice Pelamatti, Federico Zaraga, Politecnico di Milano (Italy) [8299-05]

Coffee Break 10:10 to 10:50 am

10:50 am: **Digital focusing and re-focusing with thin multi-aperture cameras**, Alexander Oberdörster, Andreas Brückner, Frank C. Wippermann, Andreas Bräuer, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Hendrik P. A. Lensch, Univ. Ulm (Germany) [8299-06]

11:10 am: **The multi-focus plenoptic camera**, Todor G. Georgiev, Adobe Systems Inc. (United States); Andrew Lumsdaine, Indiana Univ. (United States) and Adobe Systems Inc. (United States) [8299-07]

11:30 am: **Spatial domain analysis of discrete plenoptic sampling**, Andrew Lumsdaine, Indiana Univ. (United States); Todor G. Georgiev, Adobe Systems Inc. (United States) [8299-08]

11:50 am: **Design framework for a spectral mask for a plenoptic camera**, Kathrin Berkner, Sapna A. Shroff, Ricoh Innovations, Inc. (United States) [8299-09]

Lunch Break 12:10 to 2:00 pm

SESSION 2

Room: Regency Ballroom A Mon. 2:00 to 5:20 pm

Image Enhancement

Session Chair: **Ajit S. Bopardikar**, Samsung Electronics, India Software Operations Ltd. (India)

2:00 pm: **Detection thresholds of structured noise in the presence of shot noise**, Feng Li, Brian W. Keelan, Alexander Dokoutchaev, Robin Jenkin, Aptina Imaging Corp. (United States) [8299-10]

2:20 pm: **Reduced-reference image quality assessment based on statistics of edge patterns**, Yuting Chen, Xuanqin Mou, Xi'an Jiaotong Univ. (China) [8299-11]

2:40 pm: **Joint chromatic aberration correction and demosaicking**, Tripurari Singh, Mritunjay Singh, Image Algorithmics (United States) [8299-12]

3:00 pm: **Optimal defocus estimates from individual images for autofocusing a digital camera**, Johannes Burge, Wilson S. Geisler, The Univ. of Texas at Austin (United States) [8299-13]

Coffee Break 3:20 to 4:00 pm

4:00 pm: **Quality versus color saturation and noise**, Brian W. Keelan, Robin B. Jenkin, Elaine W. Jin, Aptina Imaging Corp. (United States) [8299-14]

4:20 pm: **Bio-inspired framework for automatic image quality enhancement**, Francesca Gasparini, Schettini Raimondo, Ceresi Andrea, Marini Fabrizio, Univ. degli Studi di Milano-Bicocca (Italy) [8299-15]

4:40 pm: **An efficient, multiple-exposure image fusion in JPEG domain**, Ramya S. M. Hebbalaguppe, Dublin City Univ. (Ireland); Ramakrishna Kakarala, Nanyang Technological Univ. (Singapore) [8299-16]

5:00 pm: **A controllable anti-aliasing filter for digital film cameras**, Branko Petljanski, Panavision Inc. (United States) [8299-17]

Tuesday 24 January

**Room: Grand Peninsula
Ballroom A Tues. 8:20 to 9:30 am**
Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman,
Massachusetts Institute of Technology (United States)

SESSION 3

Room: Regency Ballroom A Tues. 9:30 am to 10:30 pm

**Image Quality and Mobile Imaging I: Joint Session
with Conference 8293**

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

9:30 am: **Development of the I3A CPIQ spatial metrics**, Henrik Eliasson,
Sony Ericsson Mobile Communications AB (Sweden); Donald Baxter,
STMicroelectronics (R&D) Ltd. (United Kingdom); Frédéric Cao, DxO Labs
(France); Jonathan Phillips, Eastman Kodak Co. (United States) .[8293-01]

9:50 am: **A functional-design approach to lens shading correction
issues on mobile camera system**, Seunghun Yoo, SAMSUNG Electronics
Co., Ltd. (Korea, Republic of); TaeChan Kim, SAMSUNG Electronics Co.,
Ltd. (United States)[8299-18]

10:10 am: **Rethinking user interfaces for cameraphones**, Stephen A.
Brewster, Christopher McAdam, Univ. of Glasgow (United
Kingdom)[8299-19]

Coffee Break10:30 to 11:10 am

SESSION 4

Room: Regency Ballroom A Tues. 11:10 am to 12:30 pm

**Image Quality and Mobile Imaging II: Joint Session
with Conference 8293**

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

11:10 am: **Calibration and adaptation of ISO visual noise for camera
phone image quality assessment**, Donald J. Baxter, Andrew Murray,
STMicroelectronics (R&D) Ltd. (United Kingdom)[8293-02]

11:30 am: **An objective method for evaluating the texture-preserving
capability of digital camcorders**, Kongfeng Zhu, Shujun Li, Dietmar
Saupe, Univ. Konstanz (Germany)[8293-03]

11:50 am: **Improving texture loss measurement: spatial frequency
response based on a colored target**, Uwe Artmann, Dietmar Wueller,
Image Engineering GmbH & Co. KG (Germany)[8293-04]

12:10 pm: **On the performances of computer vision algorithms on
mobile platforms**, Sebastiano Battiato, Giovanni M. Farinella, Enrico
Messina, Giovanni Puglisi, Daniele Ravi, Univ. degli Studi di Catania (Italy);
Alessandro Capra, Valeria Tomaselli, STMicroelectronics (Italy) .[8299-20]

Lunch Break 12:30 to 2:00 pm

SESSION 5

Room: Regency Ballroom A Tues. 2:00 to 3:00 pm

Multispectral

Session Chair: **Nitin Sampat**, Rochester Institute of Technology
(United States)

2:00 pm: **Spectral sensitivity evaluation considering color constancy**,
Hideyasu Kuniba, Nikon Corp. (Japan)[8299-22]

2:20 pm: **Multispectral demosaicking using guided filter**, Yusuke
Monno, Masayuki Tanaka, Masatoshi Okutomi, Tokyo Institute of
Technology (Japan)[8299-23]

2:40 pm: **An LED-based lighting system for acquiring multispectral
scenes**, Joyce E. Farrell, Manu Parmar, Steve Linsel, Stanford Univ.
(United States)[8299-24]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations. 5:30 to 8:00 pm

*A symposium-wide demonstration session will be open to attendees 5:30 to
8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on
demonstrations of a wide-range of products related to Electronic Imaging.*

Posters 5:30 to 7:00 pm

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

**Fast in-plane translation and rotation estimation for multi-image
registration**, Xiaoyun Jiang, Haiyin Wang, Qualcomm Inc. (United
States)[8299-25]

**Multispectral filter wheel cameras: modeling aberrations for filters in
front of lens**, Julie Klein, Til Aach, RWTH Aachen (Germany) . . .[8299-26]

Correcting saturated pixels in images, Jun Fu, Wenbo Ji, Xuanqin Mou,
Xi'an Jiaotong Univ. (China)[8299-27]

**Real-time, multi-directional 2D fast wavelet transform and its
denoised sharpening application**, ByungJoon Baek, TaeChan Kim,
SAMSUNG Electronics Co., Ltd. (Korea, Republic of)[8299-28]

Color transfer using semantic image annotation, Francesca Gasparini,
Raimondo Schettini, Claudio Cusano, Univ. degli Studi di Milano-Bicocca
(Italy)[8299-29]

Adaptive directional color image sharpening with overshoot control,
Touraj Tajbakhsh, Technische Univ. Hamburg-Harburg (Germany)[8299-30]

Wednesday 25 January

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

**Plenary Session and Conference Award
Presentations**

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of
Illinois at Urbana-Champaign (United States)

Image Processing: Machine Vision Applications V

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**, Montanuniversitaet Loeben (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 Scott Gleason**, Oak Ridge National Lab. (United States); **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); **A. 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 NYU (United States); **Ralph Seulin**, Univ. de Bourgogne (France); **Christophe Stolz**, Univ. de Bourgogne (France); **Yvon Voisin**, Univ. de Bourgogne (France); **Gerald Zauner**, Fachhochschule Wels (Austria)

Tuesday 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am
Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations. 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

Efficient local approximation of perceptual color differences for color inspection, Reinhold Huber-Mörk, Austrian Institute of Technology (Austria)[8300-16]

Modified fuzzy c-means applied to a Bragg-grating-based spectral imager for material clustering, Aida Rodríguez, Juan Luis Nieves, Eva Valero, Univ. de Granada (Spain); Estibaliz Garrote, TECNALIA (Spain); Javier Hernández-Andrés, Javier Romero, Univ. de Granada (Spain)[8300-17]

Robust recognition of 1D barcodes using hough transform, John Dwinell, Long Xiang Bian, SICK, Inc. (United States); Peng Bian, Microsoft Corp. (China)[8300-18]

Estimating the coordinates of pillars and posts in the parking lots for intelligent parking assist system, JaeHyung Choi, Jung Gap Kuk, Nam Ik Cho, Seoul National Univ. (Korea, Republic of)[8300-19]

Recognizing human gestures using a novel SVM tree, Hitesh Jain, Abhik Chatterjee, Sanjeev Kumar, Balasubramanian Raman, Indian Institute of Technology Roorkee (India)[8300-21]

Fabric defect detection using the wavelet transform in an ARM processor, Jose Armando Fernandez Gallego, Antonio Nariño Univ. (Colombia); Sergio Alejandro Orjuela Vargas, Univ. Gent (Belgium); Jorge Alvarez, Antonio Nariño Univ. (Colombia); Wilfried Philips, Univ. Gent (Belgium)[8300-22]

Orthophotoplan segmentation based on regions merging for roof detection, Youssef El Merabet, Cyril Meurie, Yassine Ruichek, Univ. de Technologie de Belfort-Montbéliard (France); Abderrahmane Sbihi, Ecole Nationale des Sciences Appliquées de Tanger (Morocco); Rajja Touahni, Univ. Ibn Tofail (Morocco)[8300-23]

Motion cue analysis for Parkinsonian gait recognition, Taha M. Khan, Jerker Westin, Mark Dougherty, Dalarna Univ. (Sweden)[8300-24]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 1

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

Systems

Session Chair: **Edmund Y. Lam**, The Univ. of Hong Kong (Hong Kong, China)

9:30 am: **An introduction to omnidirectional vision: theory and applications**, David Fofi, Saleh Mosaddegh, Abd El Rahman Shabayek, Olivier Morel, Univ. de Bourgogne (France)[8300-01]

9:50 am: **Sensor placement optimization in buildings**, Simone Bianco, Raimondo Schettini, Francesco Tisato, Univ. degli Studi di Milano-Bicocca (Italy)[8300-02]

10:10 am: **Optical feature extraction with illumination-encoded linear functions**, Robin Gruna, Karlsruher Institut für Technologie (Germany); Jürgen Beyerer, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany)[8300-03]

Coffee Break10:30 to 11:10 am

SESSION 2

Room: Bayside Room B. Wed. 11:10 am to 12:30 pm

Algorithms

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

11:10 am: **An illumination-invariant phase-shift algorithm in three-dimensional profilometry**, Fuqin Deng, The Univ. of Hong Kong (Hong Kong, China) and ASM Assembly Automation Ltd. (Hong Kong, China); Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China); Wuifung Sze, Jiangwen Deng, Kenneth S.M. Fung, W.H. Leung, Chang Liu, ASM Assembly Automation Ltd. (Hong Kong, China)[8300-04]

11:30 am: **Fusing shape and texture features for pose-robust face recognition**, Thorsten Gernoth, Rolf-Rainer Grigat, Technische Univ. Hamburg-Harburg (Germany)[8300-05]

11:50 am: **Automated inspection of tubular material based on magnetic particle inspection**, Adhiguna Mahendra, Christophe Stolz, Fabrice Meriaudeau, Univ. de Bourgogne (France); Sebastien Petit, Alexandre Noel, Fabien Degoutin, Vallourec S.A. (France)[8300-06]

12:10 pm: **Intermediate-level segmentation of color images through perception and geometry-based contour completions and shape cuts**, Jacopo Grazzini, Lakshman Prasad, Los Alamos National Lab. (United States)[8300-07]

Lunch Break 12:30 to 2:00 pm

SESSION 3

Room: Bayside Room B. Wed. 2:00 to 3:20 pm

Detection and Tracking

Session Chair: David Fofi, Univ. de Bourgogne (France)

2:00 pm: **Runway hazard detection in poor visibility conditions**, Bo Jiang, National Institute of Aerospace (United States); Zia-ur Rahman, Old Dominion Univ. (United States)[8300-08]

2:20 pm: **Application of image processing to track twin boundary motion in magnetic shape memory alloys**, Adrian Rothenbuhler, Elisa H. Barney Smith, Peter Müllner, Boise State Univ. (United States)[8300-09]

2:40 pm: **A new point process model for trajectory-based events annotation**, Nicolas Ballas, CEA LIST (France) and Mines ParisTech (France); Bertrand Delezoide, CEA LIST (France); Françoise Prêteux, Mines ParisTech (France)[8300-10]

3:00 pm: **Face detection and eyeglasses detection for thermal face recognition**, Yufeng Zheng, Alcorn State Univ. (United States)[8300-11]

Coffee Break 3:20 to 3:50 pm

SESSION 4

Room: Bayside Room B. Wed. 3:50 to 5:30 pm

Applications

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

3:50 pm: **Strain analysis by regularized non-rigid registration**, Amir Badshah, Paul L. O'Leary, Matthew J. Harker, Montan Univ. Leoben (Austria)[8300-25]

4:10 pm: **Combining spatial and spectral information to improve crop/weed discrimination algorithms**, Gawain Jones, Sylvain Villette, Jean-Noel Paoli, Christelle Gée, AgroSup Dijon (France)[8300-12]

4:30 pm: **Automated parasite detection in clams by transillumination imaging and pattern classification**, Miguel E. Soto, Pablo A. Coelho, Sergio N. Torres, Daniel G. Sbarbaro, Univ. de Concepción (Chile)[8300-13]

4:50 pm: **Vision-based, in-line fabric defect detection using yarn-specific shape features**, Dorian Schneider, Til Aach, RWTH Aachen (Germany)[8300-14]

5:10 pm: **3D temperature mapping of turboshaft components using thermal paints and color recognition**, Samuel Guérin, Turbomeca SA (France) and ONERA, The French Aerospace Lab (France); Christine Lempereur, ONERA, The French Aerospace Lab. (France); Philippe Brevet, Turbomeca SA (France)[8300-15]

Intelligent Robots and Computer Vision XXIX: Algorithms and Techniques

Conference Chairs: **Juha Röning**, Univ. of Oulu (Finland); **David P. 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); **Oliver Sidla**, SLR Engineering OG (Austria); **Bernard L. Theisen**, U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States); **Dili Zhang**, Monotype Imaging (United States)

Monday 23 January

SESSION 1

Room: Bayside Room A Mon. 8:20 to 9:50 am

Invited Papers on Intelligent Robotics

Session Chair: **Juha Röning**, Univ. of Oulu (Finland)

8:20 am: **Software-based, neural-network-assisted movement compensation for nanoresolution piezo actuators** (*Invited Paper*), Juha Röning, Marko Kauppinen, Univ. of Oulu (Finland) [8301-01]

8:50 am: **Traffic monitoring with distributed smart cameras** (*Invited Paper*), Oliver Sidla, Marcin Rosner, SLR Engineering OG (Austria); Michael Ulm, Austrian Institute of Technology (Austria) [8301-02]

9:20 am: **The 19th annual intelligent ground vehicle competition: student-built autonomous ground vehicles** (*Invited Paper*), Bernard L. Theisen, U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States) [8301-03]

SESSION 2

Room: Bayside Room A Mon. 9:50 am to 12:10 pm

Stereo Vision and Applications

Session Chair: **Juha Röning**, Univ. of Oulu (Finland)

9:50 am: **Accurate, dense 3D reconstruction of moving and still objects from dynamic color image and depth image sequences based on temporal modified-RANSAC and feature-cut**, Naotomo Tatematsu, Jun Ohya, Waseda Univ. (Japan) [8301-04]

10:10 am: **Efficient hybrid monocular-stereo approach to on-board, video-based traffic sign detection and tracking**, Javier Marinas, Luis Salgado, Jon Arróspide, Massimo Camplani, Univ. Politécnica de Madrid (Spain) [8301-05]

Coffee Break 10:30 to 10:50 am

10:50 am: **A general model and calibration method for spherical stereoscopic vision**, Weijia Feng, Tianjin Univ. (China); Juha Röning, Univ. of Oulu (Finland); Xiaoning Zong, Tianjin Univ. of Technology (China); Baofeng Zhang, Tianjin Univ. (China); Juho Kannala, Univ. of Oulu (Finland) [8301-06]

11:10 am: **An approach to stereo-point cloud registration using image homographies**, Stephen D. Fox, Damian M. Lyons, Fordham Univ. (United States) [8301-07]

11:30 am: **Hazardous sign detection for safety applications in traffic monitoring**, Wanda Benesova, Slovak Univ. of Technology (Slovakia); Oliver Sidla, SLR Engineering OG (Austria); Michal Kottman, Slovak Univ. of Technology (Slovakia); Elena Sikudova, Zuzana Cernekova, Comenius Univ. in Bratislava (Slovakia) [8301-08]

11:50 am: **PROViScout: a planetary scouting rover demonstrator**, Gerhard M. Paar, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); Mark Woods, SciSys Ltd. (United Kingdom); Christiane Gimkiewicz, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Fred Labrosse, Aberystwyth Univ. (United Kingdom); Alberto Medina, GMV S.A. (Spain) [8301-09]

Lunch Break 12:10 to 2:00 pm

SESSION 3

Room: Bayside Room A Mon. 2:00 to 3:40 pm

Novel People and Vehicle Tracking Approaches

Session Chair: **Oliver Sidla**, SLR Engineering OG (Austria)

2:00 pm: **Red-light traffic enforcement at railway crossings**, Oliver Sidla, Marcin Rosner, SLR Engineering OG (Austria) [8301-10]

2:20 pm: **Image projection clues for improved real-time vehicle tracking in tunnels**, Vedran Jelaca, Jorge Oswaldo Niño-Castaneda, Aleksandra Pizurica, Wilfried Philips, Univ. Gent (Belgium) [8301-11]

2:40 pm: **Decentralized tracking of humans using a camera network**, Sebastian Gruenwedel, Vedran Jelaca, Jorge Oswaldo Niño-Castaneda, Peter Van Hese, Dimitri Van Cauwelaert, Peter Veelaert, Wilfried Philips, Univ. Gent (Belgium) [8301-12]

3:00 pm: **Real-time detection of traffic events using smart cameras**, Marko M. Macesic, Tehnomobil-Protech (Serbia); Vedran Jelaca, Jorge Oswaldo Niño-Castaneda, Univ. Gent (Belgium); Nenad Prodanovic, Marko Panic, Univ. of Novi Sad (Serbia); Aleksandra Pizurica, Univ. Gent (Belgium); Vladimir Crnojevic, Univ. of Novi Sad (Serbia); Wilfried Philips, Univ. Gent (Belgium) [8301-13]

3:20 pm: **Mixed road traffic: data acquisition, optical tracking, and microscopic modeling**, Robert Schönauer, Technische Univ. Graz (Austria); Yuri Lypetsky, SLR Engineering OG (Austria) [8301-14]

Coffee Break 3:40 to 4:00 pm

SESSION 4

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

UAVs and Aerial Applications

Session Chair: **Terrell N. Mundhenk**, HRL Labs., LLC (United States)

4:00 pm: **AR.Drone: security threat analysis and exemplary attack to track objects or persons**, Fred Samland, Jana Fruth, Mario Hildebrandt, Tobias Hoppe, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) [8301-15]

4:20 pm: **Detection of unknown targets from aerial camera and extraction of simple object fingerprints for the purpose of target reacquisition**, Terrell N. Mundhenk, Kang-Yu Ni, Yang Chen, Kyungnam Kim, Yuri Owechko, HRL Labs., LLC (United States) [8301-16]

4:40 pm: **Superresolution terrain map enhancement for navigation based on satellite imagery**, Jeremy Straub, Jacksonville State Univ. (United States) [8301-18]

Tuesday 24 January

SESSION 7

**Room: Grand Peninsula
Ballroom A Tues. 8:20 to 9:30 am**
Plenary Session and Society Award Presentations
8:25 am: **Computational Photography**, William T. Freeman,
Massachusetts Institute of Technology (United States)

SESSION 5

Room: Bayside Room A Tues. 9:30 to 10:50 am

Robot Manipulation and Application

Session Chair: David P. Casasent, Carnegie Mellon Univ. (United States)

9:30 am: **3D positional control of magnetic levitation system using adaptive control: improvement of positioning control in horizontal plane**, Toshimasa Nishino, Norihiko Kato, Mie Univ. (Japan); Naoaki Tsuda, Wakayama National College of Technology (Japan); Yoshihiko Nomura, Mie Univ. (Japan) [8301-19]

9:50 am: **Robots in agriculture: an I-weed robot for a specific spraying**, Ghislain Salis, Christelle Gée, Sylvain Villette, Jean-Noel Paoli, Gawain Jones, AgroSup Dijon (France) [8301-20]

10:10 am: **The magic glove: a gesture-based remote controller for intelligent mobile robots**, Chaomin Luo, Yue Chen, Mohan Krishnan, Mark Paulik, Univ. of Detroit Mercy (United States) [8301-21]

10:30 am: **Way-point navigation for a skid steer vehicle in unknown environments**, Peiyi Chen, Arun Das, Prasenjit Mukherjee, Steven Waslander, Univ. of Waterloo (Canada) [8301-22]

Coffee Break 10:50 to 11:10 am

SESSION 6

Room: Bayside Room A Tues. 11:10 am to 12:50 pm

Vision Navigation and Activity Recognition

Session Chair: Charles A. McPherson, Draper Lab. (United States)

11:10 am: **Integrated field testing of planetary robotics vision processing: the PRoVisG campaign in Tenerife 2011**, Gerhard M. Paar, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); Lester Waugh, EADS Astrium Ltd. (United Kingdom); David P. Barnes, Aberystwyth Univ. (United Kingdom); Tomas Pajdla, Czech Technical Univ. in Prague (Czech Republic); Mark Woods, SciSys Ltd. (United Kingdom); Hans-Rudolf Graf, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Yang Gao, Univ. of Surrey (United Kingdom); Konrad Willner, Technische Univ. Berlin (Germany); Jan-Peter A. Muller, Univ. College London (United Kingdom); Rongxing Li, The Ohio State Univ. (United States); Michel Maurette, Ctr. National d'Études Spatiales (France) [8301-23]

11:30 am: **Hierarchical loop detection for mobile outdoor robots**, Dagmar Lang, Christian Winkens, Marcel Häselich, Dietrich W. Paulus, Univ. Koblenz-Landau (Germany) [8301-24]

11:50 am: **A novel margin-based, linear embedding technique for visual object recognition**, Fadi Dornaika, Univ. del País Vasco (Spain) [8301-25]

12:10 pm: **Real-time, two-level foreground detection and person-silhouette extraction enhanced by body-parts tracking**, Rada Deeb, Élodie Desserée, Saida Bouakaz, Univ. Claude Bernard Lyon 1 (France) [8301-26]

12:30 pm: **Activity recognition from video using layered approach**, Charles A. McPherson, John M. Irvine, Mon Young, Draper Lab. (United States); Anthony Stefanidis, George Mason Univ. (United States) [8301-27]

Lunch Break 12:50 to 2:00 pm

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

Visual Algorithms

Session Chairs: David P. Casasent, Carnegie Mellon Univ. (United States); *Oliver Sidla*, SLR Engineering OG (Austria)

2:00 pm: **Method for fast detecting the intersection of a plane and a cube in an octree structure to find point sets within a convex region**, Keisuke Fujimoto, Nobutaka Kimura, Toshio Moriya, Hitachi, Ltd. (Japan) [8301-28]

2:20 pm: **Lucas-Kanade image registration using camera motions**, Sunghyun Cho, Hojin Cho, Pohang Univ. of Science and Technology (Korea, Republic of); Young Su Moon, Junguk Cho, Shihwa Lee, Samsung Electronics Co., Ltd. (Korea, Republic of); Seungyong Lee, Pohang Univ. of Science and Technology (Korea, Republic of) [8301-30]

2:40 pm: **Object tracking with adaptive HOG detector and adaptive Rao-Blackwellised particle filter**, Stefano Rosa, Marco Paleari, Paolo Ariano, Istituto Italiano di Tecnologia (Italy); Basilio Bona, Politecnico di Torino (Italy) [8301-31]

3:00 pm: **A modular real-time vision system for humanoid robots**, Alina L. Trifan, António J.R. Neves, Bernardo Cunha, Nuno Lau, Univ. de Aveiro (Portugal) [8301-32]

Coffee Break 3:20 to 4:00 pm

SESSION 8

Room: Bayside Room A Tues. 4:00 to 5:40 pm

Intelligent Ground Vehicle Competition

Session Chair: Bernard L. Theisen, U.S. Army Tank Automotive Research, Development and Engineering Ctr. (United States)

4:00 pm: **Radial polar histogram approach to obstacle avoidance and path planning for robotic cognition and motion control**, Po-Jen Wang, Nicholas R. Keyawa, Craig Euler, C. T. Lin, California State Univ., Northridge (United States) [8301-33]

4:20 pm: **Optimising a mobile robot control system with GPU acceleration**, Nat Tuck, Michael E. McGuinness, Fred Martin, Univ. of Massachusetts Lowell (United States) [8301-34]

4:40 pm: **Design and realization of an intelligent ground vehicle with modular payloads**, Mehmet A. Akmanalp, Ryan M. Doherty, Jeffrey Gorges, Peter Kalasuskas, Ellen Peterson, Felipe Polido, Stephen S. Nestinger, Taskin Padir, Worcester Polytechnic Institute (United States) [8301-35]

5:00 pm: **Navigating a path delineated by colored flags: an approach for an IGVC 2011 requirement**, Alex Szmatula, Matt Parrish, Mohan Krishnan, Mark Paulik, Utayba Mohammad, Chaomin Luo, Univ. of Detroit Mercy (United States) [8301-36]

5:20 pm: **Navigating with VFH: a strategy to avoid traps**, Chaomin Luo, Mohan Krishnan, Mark Paulik, Utayba Mohammad, Univ. of Detroit Mercy (United States) [8301-37]

Conference 8301

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

Measurement of noises and modulation transfer function of cameras used in optical-digital correlators, Nikolay N. Evtikhiev, Sergey N. Starikov, Pavel A. Cheryomkhin, Vitaly V. Krasnov, National Research Nuclear Univ. MEPhI (Russian Federation) [8301-38]

A phase-space approach for detection and removal of rain in video, Varun Santhaseelan, K. Vijayan Asari, Univ. of Dayton (United States) [8301-39]

Intelligence algorithms for autonomous navigation in a ground vehicle, Steve J. Petkovsek, Adam Norton, Trinity College (United States) [8301-40]

Hierarchical, multi-level image mosaicing for autonomous navigation of UAV, Sangho Park, Debabrata Ghosh, Naima Kaabouch, Ronald Fevig, William Semke, The Univ. of North Dakota (United States) [8301-41]

A diffraction-limited 10-mm-aperture adaptive lens, Robert Batchko, Holochip Corp. (United States) [8301-42]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

Imaging and Printing in a Web 2.0 World III

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**, Univ. of Oldenburg (Germany); **Reiner Fageth**, CeWe Color AG & Co. OHG (Germany); **Xiaofan Lin**, Vobile, Inc. (United States); **Jerry Liu**, Hewlett-Packard Labs. (United States); **Jiebo Luo**, Eastman Kodak Co. (United States); **Robert J. Rolleston**, Xerox Corp. (United States); **David N. Slatter**, Hewlett-Packard Labs. (United Kingdom); **Yonghong Tian**, Peking Univ. (China); **Shengjin Wang**, Tsinghua Univ. (China); **Wiley H. Wang**, Shutterfly (United States)

Tuesday 24 January

Room: Grand Peninsula Ballroom A Tues. 8:20 to 9:30 am
Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Wednesday 25 January

Room: Grand Peninsula Ballroom A Wed. 8:20 to 9:30 am
Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 1

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

Industrial Applications I

Session Chair: **Qian Lin**, Hewlett-Packard Labs. (United States)

9:30 am: **Organizing visual moments for sharing and reflections: VisR** (*Invited Paper*), Ramesh C. Jain, Univ. of California, Irvine (United States)[8302-01]

10:00 am: **The role of digital presses, Web 2.0, and mobile in enabling the internet of things** (*Invited Paper*), Tony F. Rodriguez, Digimarc Corp. (United States)[8302-02]

Coffee Break 10:30 to 11:00 am

SESSION 2

Room: Bayside Room A Wed. 11:00 am to 12:30 pm

Industrial Applications II

Session Chair: **Qian Lin**, Hewlett-Packard Labs. (United States)

11:00 am: **Mobile image processing for fashion marketplace** (*Invited Paper*), Manish Chandra, Gautam Golwala, Chetan Pungaliya, Poshmark, Inc. (United States)[8302-03]

11:30 am: **Mobile capture: the end of the photocopier?** (*Invited Paper*), Michael J. Gormish, Ricoh Innovations, Inc. (United States)[8302-04]

12:00 pm: **From scenes to screens: connected digital imaging** (*Invited Paper*), Ziv Gillat, Eye-Fi (United States)[8302-05]

Lunch Break 12:30 to 2:00 pm

SESSION 3

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

Web Printing and Analysis

Session Chair: **Qian Lin**, Hewlett-Packard Labs. (United States)

2:00 pm: **Text documents as social networks**, Helen Balinsky, Hewlett-Packard Labs. (United Kingdom); Alexander Balinsky, Cardiff Univ. (United Kingdom); Steven J. Simske, Hewlett-Packard Co. (United States)[8302-06]

2:20 pm: **HP2.ME URL shorten service**, Hua Zhang, Wei Xiao Wu, Yu Zhang, Can Zheng, Hewlett-Packard China Co., Ltd. (China); Qian Lin, Jerry Liu, Hewlett-Packard Labs. (United States)[8302-08]

2:40 pm: **HP Smartprint**, Hua Zhang, Zhen Liu, Yue Yuan, Guo Jia Liao, Hewlett-Packard China Co., Ltd. (China); Qian Lin, Jerry Liu, Hewlett-Packard Labs. (United States)[8302-09]

Coffee Break 3:00 to 3:40 pm

SESSION 4

Room: Bayside Room A Wed. 3:40 to 5:00 pm

Online Photo Services

Session Chair: **Qian Lin**, Hewlett-Packard Labs. (United States)

3:40 pm: **Kind of images in printed photo books**, Reiner Fageth, Peter Schuetz, Thomas Wagner, CeWe Color AG & Co. OHG (Germany)[8302-10]

4:00 pm: **SmartFit: automatic photo fitting for variable data printing**, Zachi Karni, Amir Gaash, Hewlett-Packard Labs. Israel Ltd. (Israel)[8302-11]

4:20 pm: **All new custom path photo book creation**, Wiley H. Wang, Russ Muzzolini, Shutterfly (United States)[8302-12]

4:40 pm: **Investigation of the role of aesthetics in differentiating between photographs taken by amateur and professional photographers**, Shao-Fu Xue, Purdue Univ. (United States); Qian Lin, Daniel Tretter, Seungyon Lee, Hewlett-Packard Labs. (United States); Zygmunt Pizlo, Jan P. Allebach, Purdue Univ. (United States)[8302-13]

Thursday 26 January

SESSION 5

Room: Bayside Room A Thurs. 8:20 to 10:10 am

Social Media and Mobile Document Applications

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

8:20 am: **Learning from user data in Facebook** (*Invited Paper*), Jun Yang, Facebook Inc. (United States) [8302-14]

8:50 am: **Measuring engagement effectiveness in social media: a time-sensitive methodology**, Tong Sun, Lei Li, Wei Peng, Xerox Corp. (United States) [8302-15]

9:10 am: **Building a scalable storage for images on a social network**, Jaime Medrano Navarro, Tuenti Technologies (Spain) [8302-16]

9:30 am: **Color correction of smartphone photos with prior knowledge**, Yonghui Zhao, Shen-ge Wang, Xerox Corp. (United States); Jun Jiang, Rochester Institute of Technology (United States) [8302-17]

9:50 am: **XML data compression in web publishing**, Ruiheng Qiu, Wei Hu, Zhi Tang, Xiaoqing Lu, Peking Univ. (China); Lei Zhang, Peking Univ. Founder Group Corp. (China) [8302-18]

Coffee Break 10:10 to 10:40 am

SESSION 6

Room: Bayside Room A Thurs. 10:40 am to 12:20 pm

Layout Analysis and Creation

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

10:40 am: **Layout hierarchies for interactive design reuse**, Darryl S. Greig, Andrew A. Hunter, David N. Slatter, Hewlett-Packard Labs. (United Kingdom) [8302-19]

11:00 am: **Automatic page composition with combined cropping and layout technologies**, Andrew A. Hunter, David N. Slatter, Darryl S. Greig, Hewlett-Packard Labs. (United Kingdom) [8302-20]

11:20 am: **Psychophysical evaluation of document visual similarity**, Aziza Satkhozhina, Ildus Ahmadullin, Purdue Univ. (United States); Seungyon Lee, Hewlett-Packard Co. (United States); Zygmunt Pizlo, Jan P. Allebach, Purdue Univ. (United States) [8302-21]

11:40 am: **Similarity pyramid: browsing a document database with respect to visual similarity**, Ildus Ahmadullin, Jan P. Allebach, Purdue Univ. (United States) [8302-22]

12:00 pm: **Automatic design of magazine covers**, Ali Jahanian, Purdue Univ. (United States) and Hewlett-Packard Labs. (United States); Jan P. Allebach, Purdue Univ. (United States); Qian Lin, Jerry Liu, Niranjan Damera-Venkata, Eamonn O'Brien-Strain, Seungyon Lee, Jian Fan, Daniel Tretter, Hewlett-Packard Labs. (United States) [8302-23]

Lunch Break 12:20 to 2:00 pm

SESSION 7

Room: Bayside Room A Thurs. 2:00 to 5:00 pm

Content Understanding

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

2:00 pm: **Sentiment analysis and live customer intelligence from social channels** (*Invited Paper*), Meichun Hsu, Hewlett-Packard Labs. (United States) [8302-24]

2:30 pm: **Automatic content recognition for the next-generation TV experience**, Xiaofan Lin, Vobile, Inc. (United States) [8302-25]

2:50 pm: **Marketing image categorization using hybrid human-machine combinations**, Nathan Gnanasambandam, Xerox Corp. (United States) [8302-26]

3:10 pm: **Practical experiences in analog to digital content transformation**, Prakash D. Reddy, Hewlett-Packard Labs. (United States) [8302-27]

Coffee Break 3:30 to 4:00 pm

4:00 pm: **Global image analysis to determine suitability for text-based image personalization**, Hengzhou Ding, Raja Bala, Zhigang Fan, Xerox Corp. (United States); Charles A. Bouman, Jan P. Allebach, Purdue Univ. (United States) [8302-28]

4:20 pm: **Chrominance watermark embed using a full-color visibility model**, Alastair M. Reed, Digimarc Corp. (United States) [8302-29]

4:40 pm: **Document image orientation based on both text and image**, Yuejia Sun, Changsong Liu, Xiaoqing Ding, Tsinghua Univ. (China); Zhigang Fan, Francis Tse, Xerox Corp. (United States) [8302-30]

Media Watermarking, Security, and Forensics 2012

Conference Chairs: **Nasir D. Memon**, Polytechnic Institute of NYU (United States); **Adnan M. Alattar**, Digimarc Corp. (United States); **Edward J. Delp III**, Purdue Univ. (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); **Jana Dittmann**, Otto-von-Guericke-Univ. Magdeburg (Germany); **Gwenaël Doërr**, Technicolor S.A. (France); **Jessica Fridrich**, Binghamton Univ. (United States); **Jiwu Huang**, Sun Yat-Sen Univ. (China); **Ton Kalker**, Hewlett-Packard Co. (United States); **Andrew D. Ker**, Univ. of Oxford (United Kingdom); **Alex Chichung Kot**, Nanyang Technological Univ. (Singapore); **Bangalore Manjunath**, Univ. of California, Santa Barbara (United States); **Regunathan Radhakrishnan**, Dolby Labs., Inc. (United States); **Husrev Taha Sencar**, TOBB Ekonomi ve Teknoloji Üniv. (Turkey); **Gaurav Sharma**, Univ. of Rochester (United States); **Claus Viehauer**, Otto-von-Guericke-Univ. Magdeburg (Germany); **Svyatoslav V. Voloshynovskiy**, Univ. of Geneva (Switzerland); **Min Wu**, Univ. of Maryland, College Park (United States); **Chang D. Yoo**, KAIST (Korea, Republic of)

Monday 23 January

Room: Sandpebble Room C Mon. 8:20 to 9:20 am

Keynote Presentation I

Session Chair: **Adnan M. Alattar**, Digimarc Corp. (United States)

8:20 am: **Watermarking and fingerprinting for audience measurement** (*Presentation Only*), Arun Ramaswamy, Nielsen Media Research (United States) [8303-28]

SESSION 1

Room: Sandpebble Room C Mon. 9:20 to 10:10 am

Security

Session Chair: **Scott A. Craver**, Binghamton Univ. (United States)

9:20 am: **Security threat to media security applications based on scale-space feature extraction**, Chao-Yong Hsu, Academia Sinica (Taiwan); Chun-Shien Lu, Institute of Information Science (Taiwan); Soo-Chang Pei, National Taiwan Univ. (Taiwan) [8303-01]

9:45 am: **Robust image obfuscation for privacy protection in Web 2.0 applications**, Andreas Poller, Martin Steinebach, Huajian Liu, Fraunhofer-Institut für Sichere Informations-Technologie (Germany) [8303-02]

Coffee Break 10:10 to 10:40 am

SESSION 2

Room: Sandpebble Room C Mon. 10:40 am to 12:20 pm

Watermark

Session Chair: **Gaurav Sharma**, Univ. of Rochester (United States)

10:40 am: **Improved Fourier domain template and patchwork embedding using spatial masking**, Huajian Liu, Martin Steinebach, Fraunhofer-Institut für Sichere Informations-Technologie (Germany) [8303-03]

11:05 am: **Ranking search for probabilistic fingerprinting codes**, Marcel Schäfer, Waldemar Berchtold, Martin Steinebach, Fraunhofer-Institut für Sichere Informations-Technologie (Germany) [8303-04]

11:30 am: **Stereoscopic watermarking by horizontal noise mean shifting**, Ji-Won Lee, Hee-Dong Kim, Hak-Yeol Choi, Sung-Hee Choi, Heung-Kyu Lee, KAIST (Korea, Republic of) [8303-05]

11:55 am: **Reversible q-ry watermarking with controllable prediction error and location map-free capability**, Tatiana Efimushkina, Karen O. Egiazarian, Tampere Univ. of Technology (Finland) [8303-06]

Lunch Break 12:20 to 2:00 pm

Room: Sandpebble Room C Mon. 2:00 to 2:15 pm

Video 1: Dialogic

SESSION 3

Room: Sandpebble Room C Mon. 2:15 to 3:30 pm

Steganalysis I

Session Chair: **Jessica Fridrich**, Binghamton Univ. (United States)

2:15 pm: **Optimizing pixel predictors for steganalysis**, Vojtech Holub, Jessica Fridrich, Binghamton Univ. (United States) [8303-07]

2:40 pm: **Steganalysis of JPEG images using rich models**, Jan Kodovsky, Jessica Fridrich, Binghamton Univ. (United States) . . [8303-08]

3:05 pm: **Co-occurrence steganalysis in high dimension**, Tomas Pevny, Czech Technical Univ. in Prague (Czech Republic) [8303-09]

Coffee Break 3:30 to 4:00 pm

SESSION 4

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

Guest Speaker 1

Session Chair: **Adnan M. Alattar**, Digimarc Corp. (United States)

4:00 pm: **Privacy and the social network** (*Presentation Only*), Jessica Staddon, Google Inc. (United States) [8303-18]

Tuesday 24 January

Room: Grand Peninsula

Ballroom A Tues. 8:20 to 9:30 am

Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

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

Keynote Presentation II

Session Chair: **Adnan M. Alattar**, Digimarc Corp. (United States)

9:30 am: **The landscape of mobile payments** (*Presentation Only*), Darko Kirovski, Microsoft Research Cambridge (United Kingdom) [8303-29]

Coffee Break 10:30 to 10:50 am

SESSION 5

Room: Sandpebble Room C Tues. 10:50 am to 12:30 pm

Forensics

Session Chair: Gwenaël Doërr, Technicolor S.A. (France)

10:50 am: **Source camcorder identification with cropped and scaled videos**, Dai-Kyung Hyun, Seung-Jin Ryu, Min-Jeong Lee, Jun-Hee Lee, Hae-Yeoun Lee, Heung-Kyu Lee, KAIST (Korea, Republic of) . . . [8303-11]

11:15 am: **Digital image forensics for photographic copying**, Yanmei Fang, Jing Yin, Sun Yat-Sen Univ. (China) [8303-12]

11:40 am: **Forensic audio watermark detection**, Martin Steinebach, Sascha Zmudzinski, Fraunhofer-Institut für Sichere Informations-Technologie (Germany) [8303-13]

12:05 pm: **Sensor-fingerprint based identification of images corrected for lens distortion**, Miroslav Goljan, Jessica Fridrich, Binghamton Univ. (United States) [8303-14]

Lunch Break 12:30 to 2:00 pm

Room: Sandpebble Room C Tues. 2:00 to 2:08 pm

Video 2: Civolution

Room: Sandpebble Room C Tues. 2:08 to 2:15 pm

Video 3: Night Vision Lab

SESSION 6

Room: Sandpebble Room C Tues. 2:15 to 3:30 pm

Authentication

Session Chair: Ton Kalker, Hewlett-Packard Co. (United States)

2:15 pm: **Digital audio authentication by robust feature embedding**, Sascha Zmudzinski, Badar Munir, Martin Steinebach, Fraunhofer-Institut für Sichere Informations-Technologie (Germany) [8303-15]

2:40 pm: **High-resolution printed amino acid traces: a first-feature extraction approach for fingerprint forgery detection**, Mario Hildebrandt, Stefan Kiltz, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) [8303-16]

3:05 pm: **Image forgery detection by means of no-reference quality metrics**, Federica Battisti, Marco Carli, Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) [8303-17]

Coffee Break 3:30 to 4:00 pm

SESSION 7

Room: Sandpebble Room C Tues. 4:00 to 5:00 pm

Guest Speaker 2

Session Chair: Nasir D. Memon, Polytechnic Institute of NYU (United States)

4:00 pm: **Advancing technology: bane and boon for banknotes (Presentation Only)**, Sara E. Church, Board of Governors of the Federal Reserve System (United States) [8303-10]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 8

Room: Sandpebble Room C Wed. 9:30 to 10:20 am

Steganalysis II

Session Chair: Andrew D. Ker, Univ. of Oxford (United Kingdom)

9:30 am: **Going from small to large data in steganalysis**, Ivans Lubenko, Andrew D. Ker, Univ. of Oxford (United Kingdom) [8303-19]

9:55 am: **Identifying a steganographer in realistic and heterogeneous data sets**, Andrew D. Ker, Univ. of Oxford (United Kingdom); Tomas Pevny, Czech Technical Univ. in Prague (Czech Republic) [8303-20]

Coffee Break 10:20 to 10:50 am

SESSION 9

Room: Sandpebble Room C Wed. 10:50 am to 12:30 pm

Fingerprinting

Session Chair: Regunathan Radhakrishnan, Dolby Labs., Inc. (United States)

10:50 am: **Asymmetric robust quantum image hashing**, Martin Steinebach, Huajian Liu, Fraunhofer-Institut für Sichere Informations-Technologie (Germany) [8303-21]

11:15 am: **Fast detection of Tardos codes with Boneh-Shaw types**, Mathieu Desoubeaux, Gaëtan Le Guelvouit, France Telecom R&D (France); William Puech, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France) [8303-22]

11:40 am: **Locatability of modified pixels in steganographic images**, Tu-Thach Quach, Sandia National Labs. (United States) [8303-23]

12:05 pm: **Forensic characterization of camcorder movies: digital cinema versus celluloid film prints**, Xavier Rolland-Neviere, Bertrand Chupeau, Gwenaël Doërr, Laurent Blondé, Technicolor S.A. (France) [8303-24]

Lunch Break 12:30 to 2:00 pm

Room: Sandpebble Room C Wed. 2:00 to 2:15 pm

Video 4: MarkAny

SESSION 10

Room: Sandpebble Room C Wed. 2:15 to 3:30 pm

Miscellaneous

Session Chair: Jeffrey A. Bloom, Dialogic Media Labs (United States)

2:15 pm: **Extending a context model for microphone forensics**, Christian Krätzer, Kun Qian, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) [8303-25]

2:40 pm: **Simulating large-scale acoustic path benchmarking**, Michael Arnold, Peter Baum, Manuel Alonso, Ulrich Gries, Deutsche Thomson oHG (Germany); Gwenaël Doërr, Technicolor S.A. (France) [8303-26]

3:05 pm: **Noise removing in encrypted color image by statistical analysis**, Naveed Islam, William Puech, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France) [8303-27]

Multimedia on Mobile Devices 2012

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); **Nina T. Bhatti**, Hewlett-Packard Labs. (United States); **Faouzi Alaya Cheikh**, Gjøvik Univ. College (Norway); **Linda Breitlauch**, Mediadesign Hochschule Düsseldorf (Germany); **Chang Wen Chen**, Univ. at Buffalo (United States); **Philip C. L. Chen**, The Univ. of Texas at San Antonio (United States); **Kenneth J. Crisler**, Motorola, Inc. (United States); **David Scott Doermann**, Univ. of Maryland, College Park (United States); **Elizabeth Dykstra-Erickson**, Kinoma (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); **Hendrik O. Knoche**, Univ. College London (United Kingdom); **Catalin Lacatus**, Telcordia Technologies, Inc. (United States); **Xin Li**, West Virginia Univ. (United States); **Manzur M. Murshed**, Monash Univ. (Australia); **Sethuraman Panchanathan**, Arizona State Univ. (United States); **Kari A. Pulli**, Nokia Research Ctr. (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**, National Instruments (India); **Thomas Schwotzer**, FHTW (Germany); **Olli Johannes Silvén**, Univ. of Oulu (Finland); **Jarmo Henrik Takala**, Tampere Univ. of Technology (Finland); **Haitao Zheng**, Univ. of California, Santa Barbara (United States)

Tuesday 24 January

Room: Grand Peninsula Ballroom A **Tues. 8:20 to 9:30 am**
Plenary Session and Society Award Presentations
 8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . . **Tues. 5:30 to 8:00 pm**

Demonstrations **5:30 to 8:00 pm**

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters **5:30 to 7:00 pm**

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

Low-complexity bit-plane entropy coding for 3D DWT-based video compression, Evgeny A. Belyaev, Karen O. Egiazarian, Moncef Gabbouj, Tampere Univ. of Technology (Finland). [8304A-16]

Bidirectional probabilistic hyper-graph matching method using Bayes theorem, Wanhyun Cho, Sunworl Kim, Sangcheol Park, Chonnam National Univ. (Korea, Republic of) [8304A-18]

SeamCrop for image retargeting, Johannes Kiess, Benjamin Guthier, Stephan Kopf, Wolfgang Effelsberg, Univ. Mannheim (Germany)[8304A-19]

Collecting fingerprints for recognition using mobile phone cameras, Bian Yang, Xue Li, Christoph Busch, Gjøvik Univ. College (Norway) [8304A-20]

Overview of potential forensic analysis of an Android smartphone, Reiner Creutzburg, Knut Kröger, Stefan Sack, Fachhochschule Brandenburg (Germany) [8304A-21]

Forensics of geodata collected by Apple iOS and Google Android in mobile devices, Knut Kröger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany) [8304A-22]

Template-based mobile platform image processing training, David Akopian, Santosh Chandana Golagani, Moosa Esfahanian, The Univ. of Texas at San Antonio (United States) [8304A-23]

Combining associative computing and distributed arithmetic methods for efficient implementation of multiple inner products, David Guevorkian, Tampere Univ. of Technology (Finland); Petri Liuha, Timo Yli-Pietilä, Nokia Research Ctr. (Finland); Karen O. Egiazarian, Tampere Univ. of Technology (Finland). [8304A-24]

Presentation of forensically interesting Microsoft Xbox 360 console features, Silas Luttenberger, Knut Kröger, Reiner Creutzburg, Fachhochschule Brandenburg (Germany). [8304A-25]

Presentation of forensically interesting Sony Playstation 3 console features, Knut Kröger, Gunnar Daugs, Reiner Creutzburg, Fachhochschule Brandenburg (Germany) [8304A-26]

A neural network-based approach for recognition of engraved and embossed labels on metallic parts, Amir Shirkhodaie, Vinod K. Bandaru, Tennessee State Univ. (United States) [8304A-28]

A fuzzy-logic approach for metallic parts surface defects characterization and shape classification, Amir Shirkhodaie, Fatemeh Vaziribozorg, Tennessee State Univ. (United States) [8304A-30]

Sudoku substitution-permutation image cipher, Yue Wu, Tufts Univ. (United States); Sos Agaian, The Univ. of Texas at San Antonio (United States); Joseph P. Noonan, Tufts Univ. (United States) [8304A-31]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

SESSION 1

Room: Sandpebble Room B Wed. 9:30 to 10:40 am

Emerging Mobile Applications

Session Chairs: **Reiner Creutzburg**, Fachhochschule Brandenburg (Germany); **David Akopian**, The Univ. of Texas at San Antonio (United States)

9:30 am: **Location-aware gang graffiti acquisition and browsing on a mobile device**, Albert Parra Pozo, Mireille Boutin, Edward J. Delp III, Purdue Univ. (United States) [8304A-01]

9:50 am: **Dietary intake assessment using integrated sensors and software**, Junqing Shang, Eric Johnson, Kishore Sundara-Rajan, Ankur Teredesai, Univ. of Washington (United States); Alan Kristal, Fred Hutchinson Cancer Research Ctr. (United States); Alexander V. Mamishev, Univ. of Washington (United States) [8304A-02]

10:10 am: **FCam for multiple cameras** (*Invited Paper*), Alejandro Troccoli, NVIDIA Corp. (United States); Changyin Zhou, Columbia Univ. (United States); Kari Pulli, NVIDIA Corp. (United States) [8304A-03]

Coffee Break 10:40 to 11:00 am

SESSION 2

Room: Sandpebble Room B Wed. 11:00 am to 12:30 pm

Processing and Displays for Mobile Applications

Session Chairs: **Atanas P. Gotchev**, Tampere Univ. of Technology (Finland); **Reiner Creutzburg**, Fachhochschule Brandenburg (Germany)

11:00 am: **Biosensing mobile display principle for healthcare**, Wallen Mphepö, iVorex AB, Borlänge (Sweden) and Beijing Normal Univ. (China) [8304A-04]

11:20 am: **Continuously adjustable Pulfrich spectacles for mobile devices**, Kenneth M. Jacobs, Binghamton Univ. (United States); Ronald S. Karpf, Consultant (United States) [8304A-05]

11:40 am: **Parameters of the human 3D gaze while observing portable autostereoscopic display: a model and measurement results**, Atanas R. Boev, Marianne Hanhela, Atanas P. Gotchev, Timo Utrairinen, Satu Jumisko-Pyykkö, Tampere Univ. of Technology (Finland); Miska Hannuksela, Nokia Research Ctr. (Finland) [8304A-06]

12:00 pm: **Deblocking of mobile stereo video** (*Invited Paper*), Atanas P. Gotchev, Lucio Azzari, Karen O. Egiazarian, Tampere Univ. of Technology (Finland) [8304A-07]

Lunch Break 12:30 to 2:00 pm

SESSION 3

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

Security, Safety, and Location Technologies

Session Chairs: **David Akopian**, The Univ. of Texas at San Antonio (United States); **Namho Hur**, Electronics and Telecommunications Research Institute (Korea, Republic of)

2:00 pm: **SUPL support for mobile devices**, Jayanthi M. Narisetty, Arpine Soghoyan, Mohanapriya C. Sundaramurthy, David Akopian, The Univ. of Texas at San Antonio (United States) [8304A-08]

2:20 pm: **Measuring ionizing radiation with a mobile device**, Matthias Michelsburg, Thomas Fehrenbach, Fernando Puente León, Karlsruhe Institut für Technologie (Germany) [8304A-09]

2:40 pm: **Design and evaluation of security multimedia warnings for children's smart phones**, Jana Fruth, Sven Tuchscheerer, Otto-von-Guericke-Univ. Magdeburg (Germany) [8304A-10]

3:00 pm: **Using Wi-Fi hotspots as an intrusion vector into corporate networks**, Maximilian Scharsich, Friedrich Holl, Fachhochschule Brandenburg (Germany) [8304A-11]

Coffee Break 3:20 to 4:00 pm

SESSION 4

Room: Sandpebble Room B Wed. 4:00 to 5:50 pm

Algorithms for Mobile Computing

Session Chairs: **Wanhyun Cho**, Chonnam National Univ. (Korea, Republic of); **David Akopian**, The Univ. of Texas at San Antonio (United States)

4:00 pm: **Frame rate up-conversion assisted with camera auto exposure information**, Liang Liang, Bob Hung, Gokce Dane, QUALCOMM MEMS Technologies, Inc. (United States) [8304A-12]

4:20 pm: **Fused Fibonacci-like (p,q) sequences with compression and barcoding applications**, Sarkis Agaian, Jose Garcia, Salahodeen S. Abdul-Kafi, John T. Gill III, Stanford Univ. (United States) [8304A-13]

4:40 pm: **White synthesis with user input for color balancing on mobile camera systems**, Satyam Srivastava, Chang Xu, Edward J. Delp III, Purdue Univ. (United States) [8304A-14]

5:00 pm: **Detection and segmentation of symmetric shapes on a mobile device with applications to automatic sign interpretation** (*Invited Paper*), Andrew W. Haddad, Mireille Boutin, Edward J. Delp III, Purdue Univ. (United States) [8304A-15]

5:30 pm: **Raster image adaptation for mobile devices using profiles**, René Rosenbaum, Bernd Hamann, Univ. of California, Davis (United States) [8304A-17]

Multimedia Content Access: Algorithms and Systems VI

Conference Chairs: **Cees G. M. Snoek**, Univ. van Amsterdam (Netherlands); **Nicu Sebe**, Univ. degli Studi di Trento (Italy); **Lyndon Kennedy**, Yahoo! Labs (United States)

Conference Co-Chairs: **Theo Gevers**, Univ. van Amsterdam (Netherlands); **Raimondo Schettini**, Univ. degli Studi di Milano-Bicocca (Italy); **Simone Santini**, Univ. Autónoma de Madrid (Spain)

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**, Hewlett-Packard Co. (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**, IBM Thomas J. Watson Research Ctr. (United States); **Xian-Sheng Hua**, Microsoft Research Asia (China); **Yu-Gang Jiang**, Columbia Univ. (United States); **Paul H. Lewis**, Univ. of Southampton (United Kingdom); **Rainer W. Lienhart**, Univ. Augsburg (Germany); **Vasileios Mezaris**, Informatics and Telematics Institute (Greece); **Chong-Wah Ngo**, City Univ. of Hong Kong (Hong Kong, 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); **Luc J. Van Gool**, Katholieke Univ. Leuven (Belgium); **Dong Wang**, Hulu (China); **Meng Wang**, Microsoft Research Asia (China); **Changsheng Xu**, Institute of Automation (China); **Rong Yan**, Facebook Inc. (United States); **Jun Yang**, Facebook Inc. (United States)

Monday 23 January

SESSION 5

Room: Sandpebble Room A Mon. 8:50 to 10:10 am

Multimedia Content Classification

Session Chair: **Cees G. M. Snoek**, Univ. van Amsterdam (Netherlands)

8:50 am: **Searching through photographic databases with QuickLook**, Claudio Cusano, Gianluigi Ciocca, Raimondo Schettini, Univ. degli Studi di Milano-Bicocca (Italy); Simone Santini, Univ. Autónoma de Madrid (Spain); Andrea De Polo, Francesca Tavanti, Fratelli Alinari (Italy) [8304B-32]

9:10 am: **Large-scale classification of traffic signs under real-world conditions**, Lykele Hazelhoff, Ivo M. Creusen, CycloMedia Technology B.V. (Netherlands); Dennis Van de Wouw, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) [8304B-34]

9:30 am: **Human action recognition using a Markovian conditional exponential model**, Atulya Velivelli, Alexander G. Hauptmann, Carnegie Mellon Univ. (United States) [8304B-35]

9:50 am: **Human activity discovery and recognition based on state transitions modeling in persistent surveillance systems**, Amir Shirkhodaie, Vinayak Elangovan, Tennessee State Univ. (United States) [8304B-36]

Coffee Break 10:10 to 10:50 am

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

Keynote Presentation I

Session Chair: **Lyndon S. Kennedy**, Yahoo! Inc. (United States)

10:50 am: **Learning to recognize objects despite novel environments and sensors**, Trevor Darrell, Univ. of California, Berkeley (United States) [8304B-45]

SESSION 6

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

Semantic Multimedia Access

Session Chair: **Nicu Sebe**, Univ. degli Studi di Trento (Italy)

11:50 am: **Swimmer detection and pose estimation for continuous stroke-rate determination**, Dan Zeche, Thomas Greif, Rainer Lienhart, Univ. Augsburg (Germany) [8304B-37]

12:10 pm: **Multi-view face detection based on position estimation on multi-camera surveillance system**, Ching-Chun Huang, National Kaohsiung Univ. of Applied Sciences (Taiwan); Jay Chou, Jia-Hou Syu, Sheng-Jyh Wang, National Chiao Tung Univ. (Taiwan) [8304B-38]

Lunch Break 12:30 to 2:00 pm

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

Keynote Presentation II

Session Chair: **Cees G. M. Snoek**, Univ. van Amsterdam (Netherlands)

2:00 pm: **Social media mining at the billion scale: insights, method and practice for analyzing social media in Facebook**, Rong Yan, Facebook Inc. (United States) [8304B-46]

SESSION 7

Room: Sandpebble Room A Mon. 3:00 to 5:00 pm

Bay Area Multimedia

Session Chair: **Lyndon S. Kennedy**, Yahoo! Inc. (United States)

3:00 pm: **Mobile visual search**, Radek Grzeszczuk, Nokia Research Ctr. (United States) [8304B-39]

Coffee Break 3:20 to 4:00 pm

4:00 pm: **Discriminative tag learning at YouTube**, George Toderici, Google Inc. (United States) [8304B-40]

4:20 pm: **Revisiting K-means quantization and image object retrieval in an industrial context**, Roelof van Zwol, Yahoo! Inc. (United States) [8304B-41]

4:40 pm: **Multimedia technologies for content creation and consumption (Presentation Only)**, Qian Lin, Hewlett-Packard Labs. (United States) [8304B-42]

Conference 8304B

Tuesday 24 January

**Room: Grand Peninsula
Ballroom A Tues. 8:20 to 9:30 am**

Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman,
Massachusetts Institute of Technology (United States) . . . [E12SE-101]

Interactive Paper and Symposium Demonstration Session

Room: Grand Peninsula Ballroom E . . Tues. 5:30 to 8:00 pm

Demonstrations 5:30 to 8:00 pm

A symposium-wide demonstration session will be open to attendees 5:30 to 8:00 pm Tuesday evening. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Posters 5:30 to 7:00 pm

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

Keyframe generation from cartoon animation using rule-based optical flow, Pakpoom Tanapichet, Nagul Cooharajanone, Rajalida Lipikorn, Chulalongkorn Univ. (Thailand) [8304B-43]

Adaptive characterization, tracking, and semantic labeling of human-vehicle interactions via multimodality data fusion techniques, Amir Shirkhodaie, Vinayak Elangovan, Tennessee State Univ. (United States) [8304B-44]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

Visual Information Processing and Communication III

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); **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); **Thrasylvoulos N. Pappas**, Northwestern Univ. (United States); **William A. Pearlman**, Rensselaer Polytechnic Institute (United States); **Fernando Pereira**, Univ. Técnica de Lisboa (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); **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)

Tuesday 24 January

**Room: Grand Peninsula
Ballroom A Tues. 8:20 to 9:30 am**
Plenary Session and Society Award Presentations

8:25 am: **Computational Photography**, William T. Freeman, Massachusetts Institute of Technology (United States)

Room: Sandpebble Room D . . . Tues. 9:30 to 10:30 am
Keynote Presentation I

9:30 am: **Developments toward high-efficiency video coding (HEVC)**, Gary J. Sullivan, Microsoft Corp. (United States) [8305-38]

Coffee Break 10:30 to 11:10 am

SESSION 1

Room: Sandpebble Room D Tues. 11:10 am to 12:30 pm

11:10 am: **A novel distortion model for quadtree coding in high-efficiency video coding**, Bumshik Lee, Sangsoo Ahn, Munchurl Kim, KAIST (Korea, Republic of) [8305-01]

11:30 am: **Weighted prediction for HEVC**, Philippe Bordes, Technicolor S.A. (France) [8305-02]

11:50 am: **Impact of video parameters on the DCT coefficient distribution for H.264-like video coders**, Nejat Kamaci, Ghassan Al-Regib, Georgia Institute of Technology (United States) [8305-03]

12:10 pm: **Adaptive loop filter with directional similarity mapping for video coding**, PoLin Lai, Felix C. A. Fernandes, SAMSUNG Telecommunications America Inc. (United States) [8305-04]

Lunch Break 12:30 to 2:00 pm

SESSION 2

Room: Sandpebble Room D Tues. 2:00 to 3:20 pm

2:00 pm: **Distributed video coding with progressive significance map**, William A. Pearlman, Yang Hu, Rensselaer Polytechnic Institute (United States) [8305-05]

2:20 pm: **Improving side information generation using dynamic motion estimation for distributed video coding**, Insu Park, David W. Capson, McMaster Univ. (Canada) [8305-06]

2:40 pm: **Directional frame interpolation for MPEG compressed video**, Chang Zhao, Xinwei Gao, Xiaopeng Fan, Debin Zhao, Harbin Institute of Technology (China) [8305-07]

3:00 pm: **A fast intra-prediction method for high-efficiency video coding using Hadamard transform**, Younhee Kim, George Mason Univ. (United States) and Electronics and Telecommunications Research Institute (Korea, Republic of) [8305-08]

Coffee Break 3:20 to 4:00 pm

SESSION 3

Room: Sandpebble Room D Tues. 4:00 to 5:20 pm

4:00 pm: **Lossless description of 3D range models**, Neslihan Bayramoglu, A. Aydin Alatan, Middle East Technical Univ. (Turkey) [8305-09]

4:20 pm: **Reference frame selection for loss-resilient depth map coding in multiview video conferencing**, Bruno Macchiavello, Camilo Dorea, Mintsu Hung, Univ. de Brasília (Brazil) and Hewlett Packard Labs. (United States); Gene Cheung, National Institute of Informatics (Japan); Wai-Tian Tan, Hewlett-Packard Labs. (United States) [8305-10]

4:40 pm: **Low-complexity automated depth-order estimation for 2D-to-3D video conversion**, Robert Klepko, Communications Research Ctr. Canada (Canada) [8305-11]

5:00 pm: **Block-layer, optimal bit allocation based on constant perceptual quality**, Chao Wang, Xuanqin Mou, Xi'an Jiaotong Univ. (China); Lei Zhang, The Hong Kong Polytechnic Univ. (China) . . . [8305-12]

Wednesday 25 January

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

Plenary Session and Conference Award Presentations

8:25 am: **More Words and Bigger Pictures**, David A. Forsyth, Univ. of Illinois at Urbana-Champaign (United States)

**Room: Sandpebble Room D Wed. 9:30 to 10:30 am
Keynote Presentation II**

9:30 am: **Wavelets on graph: theory and applicaitons to video coding**, Antonio Ortega, The Univ. of Southern California (United States) [8305-39]

Coffee Break 10:30 to 11:10 am

SESSION 4

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

11:10 am: **Patch-wise ideal stopping time for anisotropic diffusion**, Hossein Talebi, Peyman Milanfar, Univ. of California, Santa Cruz (United States) [8305-13]

11:30 am: **Video attention deviation estimation using inter-frame visual saliency map analysis**, Yunlong Feng, Gene Cheung, National Institute of Informatics (Japan); Patrick Le Callet, Polytech' Nantes (France); Yusheng Ji, National Institute of Informatics (Japan) [8305-14]

11:50 am: **Robust grid registration for non-blind PSF estimation**, Jonathan Simpkins, Robert L. Stevenson, Univ. of Notre Dame (United States) [8305-15]

12:10 pm: **Fast pseudo-semantic segmentation for joint region-based hierarchical and multiresolution representation**, Rafiq Sekkal, Clement Strauss, François Pasteau, Marie Babel, Olivier Déforges, Institut National des Sciences Appliquées de Rennes (France) [8305-16]

Lunch Break 12:30 to 2:00 pm

SESSION 5

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

2:00 pm: **Optimal local dimming for LED-backlit LCD displays via linear programming**, Xiao Shu, Xiaolin Wu, McMaster Univ. (Canada); Soren Forchhammer, Technical Univ. of Denmark (Denmark) [8305-17]

2:20 pm: **Gestures for natural interaction with video**, Nesrine Fourati, Emmanuel Marilly, Alcatel-Lucent Bell Labs. Villarceaux (France) [8305-18]

2:40 pm: **Improving underwater visibility using vignetting correction**, Ken Sooknanan, Anil Kokaram, Trinity College Dublin (Ireland) . . [8305-19]

3:00 pm: **Defect pixel interpolation for lossy compression of camera raw data**, Michael Schöberl, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Joachim Keinert, Fraunhofer-Institut für Integrierte Schaltungen (Germany); Jürgen Seiler, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Siegfried Foessel, Fraunhofer-Institut für Integrierte Schaltungen (Germany); André Kaup, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) [8305-20]

Coffee Break 3:20 to 4:00 pm

SESSION 6

Room: Sandpebble Room D Wed. 4:00 to 4:40 pm

4:00 pm: **Cubic-panorama image dataset compression**, Saeed Salehi, Eric Dubois, Univ. of Ottawa (Canada) [8305-21]

4:20 pm: **Lossless halftone image compression using adaptive context template update**, Sung-Bum Park, Dai-Woong Choi, Jae-Won Yoon, Samsung Electronics Co., Ltd. (Korea, Republic of) [8305-22]

Thursday 26 January

**Room: Sandpebble Room D . . . Thurs. 9:00 to 10:00 am
Keynote Presentation III**

9:00 am: **More physics!: The benefits of incorporating near-infrared cues in image processing and computer vision tasks**, Sabine Süsstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [8305-40]

Coffee Break 10:00 to 10:40 am

SESSION 7

Room: Sandpebble Room D . . . Thurs. 10:40 am to 12:20 pm

10:40 am: **Recognition of sport players' numbers using fast-color segmentation**, Cédric Verleysen, Christophe De Vleeschouwer, Univ. Catholique de Louvain (Belgium) [8305-33]

11:00 am: **On the use of clustering for resource allocation in wireless visual sensor networks**, Angeliki V. Katsenou, Lisimachos Paul Kondi, Konstantinos E. Parsopoulos, Univ. of Ioannina (Greece) [8305-34]

11:20 am: **Kalai-Smorodinsky bargaining solution for optimal resource allocation over wireless DS-CDMA visual sensor networks**, Katerina Pandremmenou, Lisimachos Paul Kondi, Konstantinos E. Parsopoulos, Univ. of Ioannina (Greece) [8305-35]

11:40 am: **State-of-the-art lossy compression of Martian images via the CMA-ES evolution strategy**, Frank W. Moore, Brendan Babb, Univ. of Alaska Anchorage (United States); Shawn Aldridge, The Univ. of Southern California (United States); Michael R. Peterson, Univ. of Hawai'i at Hilo (United States) [8305-36]

12:00 pm: **Spatially adaptive superresolution using the optimal recovery framework**, Abdul Jabeer Shaik, Sergio D. Cabrera, The Univ. of Texas at El Paso (United States) [8305-37]

Lunch Break 12:20 to 2:00 pm

SESSION 8

Room: Sandpebble Room D Thurs. 2:00 to 3:20 pm

2:00 pm: **Survey of imaging applications used in roadway transportation** (*Invited Paper*), Natesh Manikoth, ACS, A Xerox Co. (United States); Robert P. Loce, Wencheng Wu, Edgar Bernal, Xerox Corp. (United States) [8305-31]

2:40 pm: **Compression of 2D navigation views with rotational and translational motion**, Dominic Springer, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Franz Simmet, Dieter Niederkorn, Audi AG (Germany); André Kaup, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) [8305-27]

3:00 pm: **A semi-automatic traffic sign detection, classification, and positioning system**, Ivo M. Creusen, Lykele Hazelhoff, Peter H. N. de With, CycloMedia Technology B.V. (Netherlands) and Technische Univ. Eindhoven (Netherlands) [8305-25]

Coffee Break 3:20 to 4:00 pm

SESSION 9

Room: Sandpebble Room D Thurs. 4:00 to 5:40 pm

4:00 pm: **Image simulation for automatic license plate recognition**, Raja Bala, Yonghui Zhao, Aaron Burry, Vladimir Kozitsky, Xerox Corp. (United States); Craig Saunders, Xerox Research Ctr. Europe Grenoble (France) [8305-32]

4:20 pm: **Traffic camera markup language (TCML)**, Yang Cai, Carnegie Mellon Univ. (United States) [8305-26]

4:40 pm: **Passive detection of heavily laden vehicles**, Troy McKay, Carl Salvaggio, Philip S. Salvaggio, Jason Faulring, Donald M. McKeown, Rochester Institute of Technology (United States); Alfred J. Garrett, David Coleman, Larry Koffman, Savannah River National Lab. (United States) [8305-29]

5:00 pm: **Application of the SNoW machine learning paradigm to a set of transportation imaging problems**, Peter Paul, Aaron Burry, Xerox Corp. (United States); Yuheng Wang, Rochester Institute of Technology (United States); Vladimir Kozitsky, Xerox Corp. (United States) . . [8305-30]

5:20 pm: **On-board side pedestrian detection for automotive active safety system**, Ruzhong Cheng, Yong Zhao, Xin'an Wang, Jiayao Xu, Shaoting Lv, Peking Univ. (China) [8305-28]

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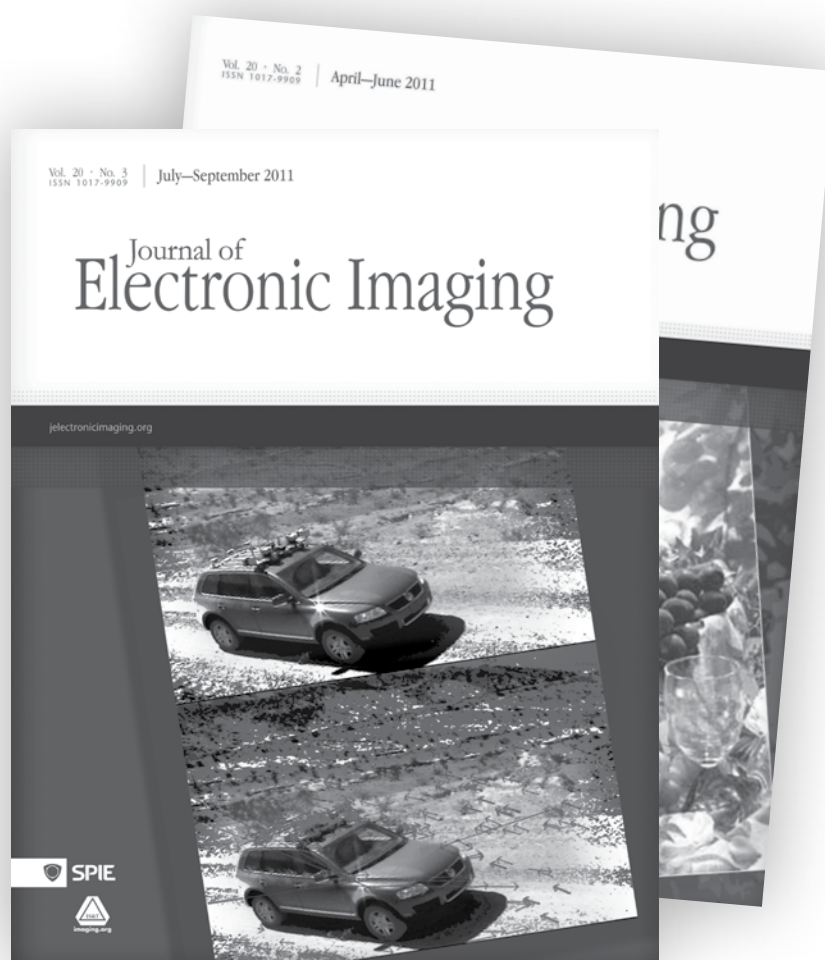
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