IS&T / SPIE

Electronic Imaging

SCIENCE AND TECHNOLOGY

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Exploring the state of the art in imaging technologies

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Technical Program

Conferences + Courses: 17–21 January 2010

San Jose Marriott and
San Jose Convention Center

San Jose, California, USA

Welcome

On behalf of IS&T-The Society for Imaging Science and Technology and SPIE, we would like to welcome you to the 22nd 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.

Electronic Imaging 2010 is the one international conference where papers on all aspects of electronic imaging are presented, and where you can develop both your career and business by networking with leading researchers and entrepreneurs in the field. We look forward to seeing you this week.

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.

Image courtesy of Christos Theoharatos, published in "Color image segmentation using Laplacian eigenmaps," *Journal of Electronic Imaging* 18(2), 023004 (2009).

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Contents

Technical Conferences

3D Imaging, Interaction, and Measurement

Imaging, Visualization, and Perception

Image Processing

Digital Imaging Sensors and Applications

Multimedia Processing and Applications

Visual Information Processing and Communication

Symposium Chair:
Jan P. Allebach, Purdue Univ.

Symposium Cochair:
Sabine Süsstrunk, École Polytechnique Fédérale de Lausanne (Switzerland)

Symposium Steering Committee:

Jan P. Allebach, Symposium Chair, Purdue University

Sabine Süsstrunk, Symposium Cochair, École Polytechnique Fédérale de Lausanne (Switzerland)

Nitin Sampat, Technical Advisory Chair, Rochester Institute of Technology

Suzanne E. Grinnan, IS&T Executive Director

Jeanne Anderson, SPIE Event Manager

Ron Scotti, SPIE Science & Technology Advisor

Course Chair:
Gaurav Sharma, Univ. of Rochester

Technical Organizing Committee

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Anna Bentkowska-Kafel, King's College London (United Kingdom)

Erik Bodegom, Portland State Univ. (United States)

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

David P. Casasent, Carnegie Mellon Univ. (United States)

Chaomei Chen, Drexel Univ. (United States)

Jim Coddington, Museum of Modern Art (United States)

Reiner Creutzburg, Fachhochschule Brandenburg (Germany)

Edward J. Delp III, Purdue Univ. (United States)

Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany)

Neil A. Dodgson, Univ. of Cambridge (United Kingdom)

Margaret Dolinsky, Indiana Univ. (United States)

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

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Nasir D. Memon, Polytechnic Institute (United States)

Valérie Nguyen, CEA Leti MINATEC (France)

Thrasyvoulos N. Pappas, Northwestern Univ. (United States)

Jinah Park, Korea Advanced Institute of Science and Technology (Korea, Republic of)

Ilya Pollak, Purdue Univ. (United States)

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

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)

Raimondo Schettini, Univ. degli Studi di Milano-Bicocca (Italy)

Cees Snoek, Univ. van Amsterdamn (Netherlands)

David G. Stork, Ricoh Innovations, Inc. (United States) and Stanford Univ. (United States)

Shoji Tominaga, Chiba Univ. (Japan)

Frédéric Truchetet, Univ. de Bourgogne (France)

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

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

Andrew J. Woods, Curtin Univ. of Technology (Australia)

Feng Xiao, Fairchild Imaging (United States)

Interactive Paper and Symposium Demonstraton Session

San Jose Convention Center, Exhibit Hall 1

Tuesday 19 January . . . . . 5:30 to 8:00 pm

Interactive Paper Set Up, Viewing, and Presentations

Author Set Up: Monday 18 January, 8:00 to 10:00 am

General Viewing: Monday 18 January and Tuesday 19 January, 10:00 am to 4:00 pm

Interactive Paper Session: Tuesday 19 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 beginning Monday/Tuesday 10 am to 4 pm. Authors are asked to set up their poster papers between 8:00 and 10:00 am on Monday. Pushpins are provided; other supplies can be obtained at the Conference Registration Desk. Posters will be on display Monday and Tuesday in Exhibit Hall 1. 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

San Jose Convention Center, Exhibit Hall 1

Tuesday 19 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.

Exhibition

Convention Center Concourse

Tuesday 19 January . . . . . 10:00 am to 6:00 pm

Wednesday 20 January. . . . . 10:00 am to 4:00 pm

An intimate exhibit features select Electronic Imaging companies and publishers showcasing the latest products, technologies, and books. There is no charge to visit the exhibit; however a registration badge is required for admittance.

All-Conference Reception

Marriott Ballroom

Wednesday 20 January. . . . . 7:30 to 9:30 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.

Phantograms 2010 Exhibition

Convention Center Concourse

Phantograms are a special type of stereo image that never fail to fascinate the viewer and elicit a surprise. Through perspective distortion, a stereo pair is manipulated into an anaglyph image that when placed flat on a table and viewed with common red/cyan glasses, appears to be a real object or scene. Creating the images at life-size and in true color enhances this illusion. And because the subject is placed near to the stereo window, the eyes don't have to work as hard to lock into focus. For this reason, many people who normally have difficulty viewing stereo images have no trouble with phantograms.

Terry Wilson will once again display a variety of these decidedly simple, low-tech phantograms in the exhibit area, during exhibit hours. Sizes range from postcards to 30" x 60" prints, representing a number of stereo photographers, including Terry herself. Most of the images will be for sale as well.

Award Announcements and Plenary Presentation I

Marriott Ballroom

Tuesday 19 January . . . . . 8:00 to 9:15 am

Automatic 3D Modeling and Analysis of Large Scale Urban Environments

Avideh Zakhor, Univ. of California, Berkeley

Abstract: Three dimensional modeling of objects, scenes, and urban environments, consisting of geometry and texture of visible surfaces, are useful in a variety of applications such as urban planning, training, and simulation for disaster scenarios, virtual heritage conversation, and combating urban terrorism. In this talk I will describe an approach to fast, automated 3D model generation of urban environment so as to generate virtual, yet photorealistic walk throughs, drive throughs, and fly-throughs. To this end, we have developed two sets of modeling techniques; ground based, and airborne based. Our ground based modeling method uses a vehicle equipped with 2D laser scanners and a digital camera to acquire data to be processed offline, while driving under normal traffic conditions on public roads. Unlike previous approaches to urban modeling, this approach acquires data in a continuous "drive by scanning" way, rather than "stop and go" fashion. Associated with the ground based data set, is a set of algorithms we have developed in order to process the data and reconstruct the model in a fast, automated way; at the heart of these algorithms are Monte Carlo localization schemes that determine the position of our acquisition vehicle fairly accurately over long driving distances. Our airborne model is constructed from airborne laser data acquired with a flying airplane over the region of interest, and aerial images obtained from a helicopter at oblique angels. We have developed merging algorithms to combine the ground based and airborne models into one fused model which can then be used for virtual walk throughs, drive throughs, and fly throughs. I will show a 3D interactive model of downtown Berkeley. I will also briefly discuss related projects on recovering building floor plans from the exterior and urban landscape classification from airborne Lidar data.

Biography: **Avideh Zakhor** joined the faculty at UC Berkeley in 1988 where she is currently a Professor of Electrical Engineering and Computer Sciences. Her areas of interest include theories and applications of signal, image and video processing, 3D computer vision, and multimedia networking. She has won a number of best paper awards, including the IEEE Signal Processing Society in 1997 and 2009, IEEE Circuits and Systems Society in 1997 and 1999, international conference on image processing in 1999, Packet Video Workshop in 2002, and IEEE Workshop on Multimodal Sentient Computing in 2007. She holds 6 U.S. patents, and is the co-author of three books with her students. She has been a PI or co-PI of four different MURI projects.

Prof. Zakhor received the B. S. degree from California Institute of Technology, Pasadena, and the S. M. and Ph. D. degrees from Massachusetts Institute of Technology, Cambridge, all in electrical engineering, in 1983, 1985, and 1987 respectively. She was a General Motors scholar from 1982 to 1983, was a Hertz fellow from 1984 to 1988, received the Presidential Young Investigators (PYI) award, and Office of Naval Research (ONR) young investigator award in 1992. In 2001, she was elected as IEEE fellow and received the Okawa Prize in 2004.

She co-founded OPC technology in 1996, which was later acquired by Mentor Graphics (Nasdaq: MENT) in 1998, Truvideo in 2000, and UrbanScan Inc. in 2005 which was acquired by Google in 2007.

Award Announcements and Plenary Presentation II

Marriott Ballroom

Wednesday 20 January. . . . . 8:00 to 9:15 am

Hey! What Is That In Your Pocket? The Mobile Device Future

Edward J. Delp III, Purdue Univ.

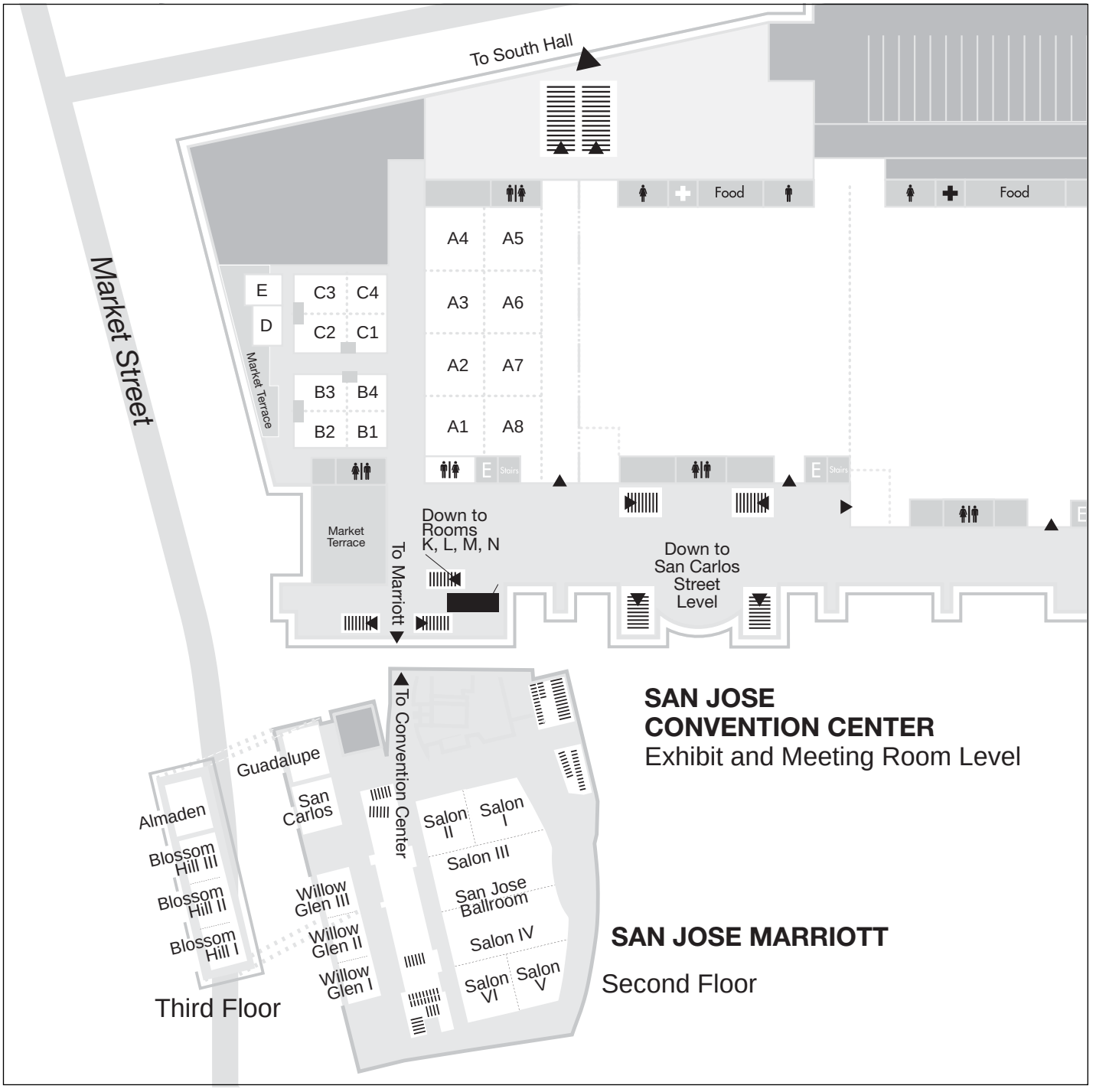
Abstract: This talk will describe a view of the future using new mobile connected devices. It is obvious that in a very short time your mobile device may be your principle, if not only, way to communicate. I will describe new applications that will include the use of context based information. A simple example of this is geo-location and other information relating to how a user is "using" the mobile device. I will also describe other applications including language translation, health delivery, and the use of on-board sensors. The use of the imaging sensor (i.e. the camera) for non-imaging applications will be overviewed. This talk will describe my view of where this mobile future is going and how it will be "good" for users but I will also address problems of privacy. One could envision a mobile device that would spy on its users. I will also describe innovative uses of the off switch.

Biography: **Edward J. Delp** was born in Cincinnati, Ohio. He received the B.S.E.E. (cum laude) and M.S. degrees from the Univ. of Cincinnati, and the Ph.D. degree from Purdue Univ. In May 2002 he received an Honorary Doctor of Technology from the Tampere Univ. of Technology in Tampere, Finland. From 1980-1984, Dr. Delp was with the Dept. of Electrical and Computer Engineering at The Univ. of Michigan, Ann Arbor. Since August 1984, he has been with the School of Electrical and Computer Engineering and the School of Biomedical Engineering at Purdue Univ. In 2008 he was named a Distinguished Professor and is currently The Charles William Harrison Distinguished Professor of Electrical and Computer Engineering and Professor of Biomedical Engineering. In 2007 he received a Distinguished Professor appointment from the Academy of Finland as part of the Finland Distinguished Professor Program (FiDiPro). This appointment is at the Tampere International Center for Signal Processing at the Tampere Univ of Technology.

His research interests include image and video compression, multimedia security, medical imaging, multimedia systems, communication and information theory. He has published and presented more than 400 papers.

Dr. Delp is a Fellow of the IEEE, a Fellow of SPIE, a Fellow of the Society for Imaging Science and Technology (IS&T), and a Fellow of the American Institute of Medical and Biological Engineering. In 2004 he received the Technical Achievement Award from the IEEE Signal Processing Society for his work in image and video compression and multimedia security. In 2008 Dr. Delp received the Society Award from IEEE Signal Processing Society (SPS). This is the highest award given by SPS and it cited his work in multimedia security and image and video compression. In 2009 he received the Purdue College of Engineering Faculty Excellence Award for Research. Since 2008 he has been a member of the Scientific Advisory Board of Nokia Research Center's Media Laboratory.

Meeting Room Locations



Electronic Imaging 2010

San Jose Convention Center
408 S. Almaden Boulevard, San Jose, CA 95110

San Jose Marriott Hotel
301 S. Market Street, San Jose, CA 95113

Registration Hours

San Jose Convention Center, Concourse 1 Lobby

Course Attendees Only:
Sunday 17 January . . . . . 7:00 am to 10:00 am

Conference + Course Registration and Badge Pickup:
Sunday 17 January . . . . . 10:00 am to 4:00 pm
Monday 18 January. . . . . 7:00 am to 4:00 pm
Tuesday 19 January . . . . . 7:30 am to 4:00 pm
Wednesday 20 January. . . . . 7:30 am to 4:00 pm
Thursday 21 January. . . . . 7:30 am to Noon

Registration

Full conference registration includes: Admittance to all symposium conferences, the Interactive Paper and Demonstration Session, the exhibit, coffee breaks, All-Conference Reception, and applicable EI proceedings.

Speaker AV Prep Room and Hours

San Jose Convention Center, Room E

Sunday 17 January. . . . . 7:00 am to 5:00 pm
Monday 18 January . . . . . 7:00 am to 5:00 pm
Tuesday 19 January. . . . . 7:30 am to 4:30 pm
Wednesday 20 January . . . . . 7:30 am to 4:30 pm
Thursday 21 January . . . . . 7:30 am to 2:00 pm

Speakers are encouraged to preview their materials in the Audio Visual Prep Room prior to their presentation. Speakers who have requested special equipment beyond an LCD projector that will work with their laptop are asked to report to the AV Prep Room upon arrival at the symposium to confirm equipment requests.

Short Courses and Notes

Short courses will take place in various meeting rooms at the San Jose Marriott Hotel. Room assignments are noted on the course admission tickets and distributed with registration materials. Short course registrants exchange course tickets for course notes in the classroom where the course is held.

Video/Digital Recording Policy

For copyright reasons, audio or video recording of any technical session, short course, or the Interactive Paper/Demonstration session is strictly prohibited without the prior written consent of each presenter recorded. Individuals not complying with this policy will be asked to leave a given session and to surrender their film or disc. It is the responsibility of the presenter to notify the conference sponsors if such consent is given.

Message Board

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

Business Services

At the San Jose Marriott, attendees may use their hotel room key to access the on-site Business Center which offers use of a free on-line computer. Copies are free for the first 20 copies, 15 cents per page after. The fax machine is $1.00 per page for outgoing domestic usage and $3.00 per page for international usage. Incoming faxes are charged a $3.00 flat fee for anything over 20 pages.

Internet Access

IS&T/SPIE are pleased to provide complimentary wireless access for all conference attendees with wireless-enabled laptop computers or PDAs. SSID: EI2010, WEP: Disabled, Network card settings: DHCP

The San Jose Marriott offers its Wired for Business™ services in each guest room. For a daily charge of $12.95 you receive unlimited local and domestic long-distance calls and unlimited high-speed Internet access.

Properly secure your computer before accessing the public wireless network. Failure to do so may allow unauthorized access to your laptop as well as potentially introduce viruses to your computer and/or presentation.

IS&T Bookstore and Membership Booth

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.

Cash Cart: Breakfast Breads, Snacks, and Quick Lunch

San Jose Convention Center, Concourse 1 Lobby

Monday-Thursday . . . . . 7:30 am to 2:30 pm

The Cash Cart will offer breakfast breads, yogurt, fruit, coffee, juice, and other beverages each morning of the conference. Luncheon and snack service will include deli-style sandwiches, salads, snacks, pastries, and beverages.

Child Care Services

A few child sitting services available in San Jose are as follows.

1. Sitters Unlimited: Toll Free Phone: (408) 452-0225, E-mail: info@bayareasittersunlimited.com or www.bayareasittersunlimited.com

2. Miny's Child Care, 408-923-6876

Note: 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.

Car Rental

Hertz Car Rental has been selected as the official car rental agency for 2010. To reserve a car, identify yourself as an Electronic Imaging Conference attendee using the Hertz Meeting Code CV# 029B0014. Note: When booking from International Hertz locations, the CV # must be entered with the letters CV before the number, i.e. CV029B0014. Call 1-800-654-2240.

Course Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY

3D Imaging, Interaction, and Measurement

SC060 **Stereoscopic Display Application Issues** *(Merritt, Woods)* 8:30 am to 5:30 pm, $530 / $630		SC927 **3D Imaging** *(Agam)* 8:30 am to 12:30 pm, $325 / $375		

Digital Imaging Sensors and Applications

SC762 **Device Simulation for Image Quality Evaluation** *(Farrell, Catrysse, Wandell)* 8:30 am to 5:30 pm, $530 / $630	SC504 **Introduction to CCD and CMOS Imaging Sensors and Applications** *(Janesick)* 8:30 am to 5:30 pm, $620 / $720	SC916 **Digital Camera and Sensor Evaluation Using Photon Transfer** *(Janesick)* 8:30 am to 5:30 pm, $575 / $675	SC807 **Digital Camera and Scanner Performance Evaluation: Science, Standards and Software** *(Burns)* 8:30 am to 5:30 pm, $530 / $630	
SC967 **High Dynamic Range Imaging: Sensors and Architectures** *(Darmont)* 1:30 to 5:30 pm, $325 / $375			**NEW** SC964 **HD Photo/ JPEG XR in the Context of Modern Image Compression** *(Pollak)* 8:30 am to 12:30 pm, $325 / $375	
SC871 **Noise, Image Processing, and their Influence on Resolution** *(Matherson, Wueller)* 1:30 to 5:30 pm, $325 / $375			**NEW** SC980 **Theory and Methods of Lightfield Photography** *(Georgiev, Lumsdaine)* 1:30 to 5:30 pm, $325 / $375	
SC812 **Perceptual Metrics for Image Quality Evaluation** *(Pappas, Hemami)* 1:30 to 5:30 pm, $325 / $375				

Image Processing

NEW SC970 **Computational Optical Imaging** *(Brady)* 8:30 am to 5:30 pm, $530 / $630	SC928 **FPGA Design of Video and Image Processing Algorithms** *(Choo)* 8:30 am to 5:30 pm, $530 / $630		SC807 **Digital Camera and Scanner Performance Evaluation: Science, Standards and Software** *(Burns)* 8:30 am to 5:30 pm, $530 / $630	
SC965 **Joint Design of Optics and Image Processing for Imaging Systems** *(Stork)* 8:30 am to 12:30 pm, $325 / $375	SC468 **Image Enhancement and Deblurring** *(Rabbani)* 8:30 am to 5:30 pm, $530 / $630			
SC871 **Noise, Image Processing, and their Influence on Resolution** *(Matherson, Wueller)* 1:30 to 5:30 pm, $325 / $375	SC930 **Optimizing Color Reproduction Systems** *(Marcu)* 8:30 am to 12:30 pm, $325 / $375			
SC812 **Perceptual Metrics for Image Quality Evaluation** *(Pappas, Hemami)* 1:30 to 5:30 pm, $325 / $375				

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY

Imaging, Visualization, and Perception

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
SC762 **Device Simulation for Image Quality Evaluation** *(Farrell, Catrysse, Wandell)* 8:30 am to 5:30 pm, $530 / $630	SC468 **Image Enhancement and Deblurring** *(Rabbani)* 8:30 am to 5:30 pm, $530 / $630	SC927 **3D Imaging** *(Agam)* 8:30 am to 12:30 pm, $325 / $375	SC807 **Digital Camera and Scanner Performance Evaluation: Science, Standards and Software** *(Burns)* 8:30 am to 5:30 pm, $530 / $630	
NEW SC969 **Perception, Cognition, and Next Generation Imaging** *(Rogowitz)* 8:30 am to 12:30 pm, $325 / $375	SC930 **Optimizing Color Reproduction Systems** *(Marcu)* 8:30 am to 12:30 pm, $325 / $375			
SC060 **Stereoscopic Display Application Issues** *(Merritt, Woods)* 8:30 am to 5:30 pm, $530 / $630	**NEW** SC968 **Principles of Digital Color Management** *(Madden)* 1:30 to 5:30 pm, $325 / $375			
SC871 **Noise, Image Processing, and their Influence on Resolution** *(Matherson, Wueller)* 1:30 to 5:30 pm, $325 / $375				
SC812 **Perceptual Metrics for Image Quality Evaluation** *(Pappas, Hemami)* 1:30 to 5:30 pm, $325 / $375				

Multimedia Processing and Applications

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
NEW SC966 **Video Streaming** *(Civanlar)* 8:30 am to 5:30 pm, $530 / $630				
SC812 **Perceptual Metrics for Image Quality Evaluation** *(Pappas, Hemami)* 1:30 to 5:30 pm, $325 / $375				

Visual Information Processing and Communication

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
SC060 **Stereoscopic Display Application Issues** *(Merritt, Woods)* 8:30 am to 5:30 pm, $530 / $630	SC468 **Image Enhancement and Deblurring** *(Rabbani)* 8:30 am to 5:30 pm, $530 / $630			
NEW SC966 **Video Streaming** *(Civanlar)* 8:30 am to 5:30 pm, $530 / $630				
SC812 **Perceptual Metrics for Image Quality Evaluation** *(Pappas, Hemami)* 1:30 to 5:30 pm, $325 / $375				

Register for Courses at the Cashier desk.

Conference Daily Schedule

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY

3D Imaging, Interaction, and Measurement

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7525 **The Engineering Reality of Virtual Reality 2010** (McDowall/Dolinsky), p. 16

7526 **3D Image Processing (3DIP) and Applications** (Baskurt), p. 17

Imaging, Visualization, and Perception

7527 **Human Vision and Electronic Imaging XV** (Rogowitz/Pappas), p. 19

7528 **Color Imaging XV: Displaying, Hardcopy, Processing, and Applications** (Eschbach/Marcu/Tominaga/Rizzi), p. 23

7529 **Image Quality and System Performance VI**I (Farnand/Gaykema), p. 26

7530 **Visualization and Data Analysis 2010** (Chen/Park/ Hao/Wong), p. 28

7531 **Computer Vision and Image Analysis of Art** (Stork/Coddington/Bentkowska-Kafel), p. 30

Image Processing

7535 **Wavelet Applications in Industrial Processing VII** (Truchetet, Laligant), p. 38

7532 **Image Processing: Algorithms and Systems VIII** (Astola/Egiazarian), p. 32

7534 **Document Recognition and Retrieval XVII** (Likforman-Sulem/Agam), p. 36

7533 **Computational Imaging VIII** (Bouman/Pollak/Wolfe), p. 34

Digital Imaging Sensors and Applications

7536 **Sensors, Cameras, and Systems for Industrial/Scientific Applications XI** (Bodegom/Nguyen), p. 40

7537 **Digital Photography VI** (Imai/Sampat/Xiao), p. 42

7538 **Image Processing: Machine Vision Applications III** (Fofi/Niel), p. 44

7539 **Intelligent Robots and Computer Vision XXVII: Algorithms and Techniques** (Casasent/Hall/Röning), p. 46

Multimedia Processing and Applications

7540A **Imaging and Printing in a Web 2.0 World** (Lin/Fan), p. 48

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7541 **Media Forensics and Security XII** (Memon/Dittmann/Alattar/Delp), p. 52

7542 **Multimedia on Mobile Devices 2010** (Akopian/Creutzburg), p. 55

Visual Information Processing and Communication

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Stereoscopic Displays and Applications XXI

Conference Chairs: **Andrew J. Woods,** Curtin Univ. of Technology (Australia); **Nicolas S. Holliman,** Durham Univ. (United Kingdom); **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom)

Program Committee: **Gregg E. Favalora,** Optics for Hire; **Takashi Kawai,** Waseda Univ. (Japan); **Janusz Konrad,** Boston Univ.; **Shojiro Nagata,** Japan 3D Forum/InterVision (Japan); **Vivian K. Walworth,** StereoJet, Inc.; **Chris Ward,** Lightspeed Design, Inc.; **Michael A. Weissman,** TrueVision Systems; **Samuel Z. Zhou,** IMAX Corp. (Canada)

Founding Chair: **John O. Merritt,** the Merritt Group

Cosponsored by: IMAX NVIDIA

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room A8 . . . . . .Mon. 8:30 to 10:10 am

Applications of Stereoscopy

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

8:30 am: **"What every surgeon wants": practical aspects on the use of stereoscopic applications in operative theatres**, Justus F. R. Ilgner, Slavomir Biedron, Martin Westhofen, Univ. Hospital Aachen (Germany) . . . . . .[7524-01]

8:50 am: **A new AS-display as part of the MIRO light weight robot for surgical applications**, Christoph M. Grossmann, SeeFront GmbH (Germany) . . . . . .[7524-02]

9:10 am: **Application of integral imaging autostereoscopic display to medical training equipment**, Hiroyuki Nagatani, Toshiba Corp. (Japan). . . . . .[7524-03]

9:30 am: **Stereo 3D upgrade kit for TALON robot system**, Brad Pettijohn, Andrew Bodenhamer, Army Research Lab. (United States); Richard P. Edmondson, J. Larry Pezzaniti, David Chenault, Justin Vaden, Jim Morris, Brian Hyatt, Polaris Sensor Technologies, Inc. (United States); Joe Tchon, Tracy Barnidge, Rockwell Collins, Inc. (United States); Seth Kaufman, Foster-Miller, Inc. (United States); David Kingston, Scott Newell, Concurrent Technologies Corp. (United States) . . . . . .[7524-04]

9:50 am: **Stereoscopic filming for an accurate sense of depth and scale: an application to sports science**, Marcus J. C. Lee, Paul Bourke, Jacqueline A. Alderson, David Lloyd, Brendan Lay, The Univ. of Western Australia (Australia) . . . . . .[7524-05]

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

SESSION 2

Room: Conv. Ctr. Room A8 . . Mon. 10:40 am to 12:00 pm

Stereoscopic Standards

Session Chair: **Michael A. Weissman,** TrueVision Systems

10:40 am: **Standardization based on human factors for 3D display: performance characteristics and measurement methods**, Hiroyasu Ujike, Shin-ichi Uehara, Goro Hamagishi, Kazuki Taira, Takafumi Koike, Chiaki Kato, Toshio Nomura, Tsutomu Horikoshi, Ken Mashitani, Akimasa Yuuki, Kuniaki Izumi, Yuzo Hisatake, Naoko Watanabe, Yosh Nakano, Japanese Ergonomics National Committee (Japan) . . . . . .[7524-06]

11:00 am: **A historical look at research in the human visual system and its current application toward 3D video distribution**, Keith Elliott, Screen's Edge, LLC (United States) . . . . . .[7524-07]

11:20 am: **Comparison of stereoscopic image formats for 3D video services**, Jeong-Hyu Yang, Jin-Seok Im, Seung-Jong Choi, LG Electronics Inc. (Korea, Republic of) . . . . . .[7524-08]

11:40 am: **Performance of scalable coding in depth domain**, Mårten Sjöström, Linda S. Karlsson, Mid Sweden Univ. (Sweden). . . . . .[7524-09]

Lunch Break . . . . . 12:00 to 1:30 pm

SESSION 3

Room: Marriott Ballroom . . . . . .Mon. 1:30 to 3:30 pm

Digital 3D Stereoscopic Entertainment

Session Chair: **Chris Ward,** Lightspeed Design, Inc.

1:30 pm: **Beauty and the Beast: from 2D to 3D**, Tara H. Turner, Walt Disney Animation Studios (United States). . . . . .[7524-10]

1:50 pm: **Cosmic origins: experiences making a stereoscopic scientific movie**, Nicolas S. Holliman, Durham Univ. (United Kingdom) . . .[7524-11]

2:10 pm: **Matte painting in stereoscopic synthetic imagery**, Jonathan A. Eisenmann, Rick Parent, The Ohio State Univ. (United States) . .[7524-12]

2:30 pm: **What do people look at when they watch stereoscopic movies?**, Jukka P. Häkkinen, Nokia Research Ctr. (Finland) and Univ. of Helsinki (Finland); Takashi Kawai, Waseda Univ. (Japan); Jari M. Takatalo, Univ. of Helsinki (Finland); Reiko Mitsuya, Waseda Univ, (Japan); Göte Nyman, Univ. of Helsinki (Finland). . . . . .[7524-13]

2:50 pm: **A study on correlation between stereographic cinematography and storytelling: through a documentary film about Ho-Quyen-UNESCO World heritage in Vietnam**, Yang Hyun Choi, Jae Hong Ahn, Korea Advanced Institute of Science and Technology (Korea, Republic of) . . . . . .[7524-14]

3:10 pm: **Student production: making a realistic stereo CG short film in six months**, Celambarasan Ramasamy, Clemson Univ. (United States) . . . . . .[7524-15]

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

SESSION 4

Room: Marriott Ballroom . . . . . .Mon. 4:00 to 5:00 pm

Keynote Presentation

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

Three-dimensional storytelling

Bob Whitehill, Stereoscopic Supervisor, Pixar Animation Studios

Since the advent of the visual arts, artists have developed techniques to imbue their images with emotion and story-telling. Renaissance painters used amber hued lighting to evoke intimacy and warmth. Photographers use different lens lengths to expand or constrict the space around a subject creating a feeling of freedom or confinement. Filmmakers move characters and objects in different directions or at various speeds to reflect a character's state of mind. These tools that affect our connection to and interpretation of a subject are innumerable.

Now, with the growing base of equipped theaters, we've expanded the reach of another powerful tool in the visual storytelling aresenal - 3D. How can we use it, like color, composition, and movement as a visual storytelling device? How do we bring it beyond the 3D genre experience of roller-coaster shots and objects flying off screen into a subtler yet palpable addition to the art form? Will it become an expected and indispensible addition to almost all filmmaking, or continue to play a role on a smaller subset of films.

Using examples from "Up", "Toy Story" and "Toy Story 2", Pixar's Stereoscopic Supervisor Bob Whitehill will discuss these questions and the use of 3D as a visual storytelling device in Pixar's films.

Biography: **Bob Whitehill** began his career at Pixar Animation Studios in April 2004. Brought on as a Layout Artist on the Golden Globe winning *Cars*, he continued in this role on Pixar's animated short film *Lifted*, and the Academy Award winning feature *WALL•E*. Whitehill served as Layout Supervisor for *Mater* and *Ghostlight* and three Cars Toons, *Rescue Squad Mater, El Materdor* and *Mater the Greater*. Currently, Whitehill is working as Stereoscopic Supervisor on the 3D production of Disney•Pixar's feature film *Toy Story 3*. He worked as the Stereoscopic Supervisor on Disney•Pixar's recently released feature film *Up* and on the remastering of the original *Toy Story* and *Toy Story 2* in 3D.

Prior to joining Pixar, Whitehill worked as a Layout Artist and Supervisor at PDI/Dreamworks on various projects including *Antz, Shrek* and *Shrek 2*. One of Whitehill's earliest influences in 3D work was Peter Anderson, a 30-year veteran of 3D-filmmaking. Whitehill worked with Anderson on the Universal Studios theme park attraction, *Shrek 4D*. John Lasseter's passion for and interest in 3D has also been a great influence on Whitehill's creative use of 3D in Pixar's films.

Room: Marriott Ballroom . . . . . Mon. 5:20 to 7:20 pm

3D Theatre

Session Chairs: **Andrew J. Woods,** Curtin Univ. of Technology (Australia); **Chris Ward,** Lightspeed Design, Inc.

See large-screen examples of 3D video content from around the world. Program announced at the conference. 3D glasses provided.

SD&A 21st Birthday Banquet

Mon. 7:40 pm to late

A celebration of 21 years of the SD&A conference to be held at a local San Jose restaurant. Details available at the conference.

Tuesday 19 January

Room: Marriott Ballroom . . . . . .Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 5

Room: Conv. Ctr. Room A8 . . . . . Tues. 9:30 to 10:30 am

DIBR and FTV (Depth Image Based Rendering and Free Viewpoint Television)

Session Chair: **Janusz Konrad,** Boston Univ.

9:30 am: **Quality improving techniques for free-viewpoint DIBR**, Luat Do, Svitlana Zinger, Technische Univ. Eindhoven (Netherlands); Peter H. N. de With, Cyclomedia Technology B.V. (Netherlands) and Technische Univ. Eindhoven (Netherlands) . . . . . .[7524-17]

9:50 am: **Structured light-based high-accuracy depth imaging applied for DIBR in multiview 3DTV**, Roger Blanco Ribera, Taeone Kim, Jinwoong Kim, Namho Hur, Electronics and Telecommunications Research Institute (Korea, Republic of). . . . . .[7524-18]

10:10 am: **Novel view synthesis with residual error feedback for FTV**, Hisayoshi Furihata, Mehrdad P. Tehrani, Tomohiro Yendo, Nagoya Univ. (Japan); Toshiaki Fujii, Tokyo Institute of Technology (Japan); Masayuki Tanimoto, Nagoya Univ. (Japan) . . . . . .[7524-19]

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

Room: Conv. Ctr. Room A8. . Tues. 11:00 am to 12:00 pm

Discussion Forum I

3D Video Standards: At Last!!

Panel Moderator: **Michael A. Weissman,** Chief Scientist, TrueVision Systems

Panel members: **David Broberg,** Society of Cable Telecommunications Engineers (SCTE) and Vice President, Consumer Video Technology, CableLabs; **Pete Ludé,** Executive Vice President, SMPTE; Senior Vice President, Engineering, Sony Electronics; and reporting on Blu-ray Disk Association (BDA); **Mark Stockfisch,** Consumer Electronics Association (CEA) and CTO, Quantum Data, Inc.; **Steve Venuti,** President, HDMI LLC

With the rapid growth of the 3D industry, there is an urgent need for the development of relevant and useful standards to support connections between movies, television, cable, editing/storage systems, Blu-ray/DVD, displays, home systems, telecommunication channels, and so on. This need is being met with a high level of activity among the various standards bodies. In this forum, the current status of this activity will be presented by a panel of industry leaders from important standards groups.

Lunch/Exhibition Break . . . . . 12:00 to 1:30 pm

SESSION 6

Room: Conv. Ctr. Room A8 . . . . . Tues. 1:30 to 3:10 pm

3D Displays

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

1:30 pm: **Scalable large format 3D displays**, Nelson L. Chang, Niranjan Damera-Venkata, Hewlett-Packard Labs. (United States) . . . . . .[7524-20]

1:50 pm: **Generation of circularly polarized stereoscopic transparencies and prints**, Vivian K. Walworth, StereoJet, Inc. (United States); Warren D. Slafer, MicroContinuum, Inc. (United States) .[7524-21]

2:10 pm: **Volumetric display using a roof mirror grid array**, Daisuke Miyazaki, Noboru Hirano, Yuuki Maeda, Keisuke Ohno, Osaka City Univ. (Japan); Satoshi Maekawa, National Institute of Information and Communications Technology (Japan). . . . . .[7524-22]

2:30 pm: **2D/3D convertible display with enhanced 3D viewing angle based on integral imaging**, Soon-gi Park, Byoung-Sub Song, Sung-Wook Min, Kyung Hee Univ. (Korea, Republic of). . . . . .[7524-23]

2:50 pm: **A multilayer liquid crystal display for autostereoscopic 3D viewing**, Hironobu Gotoda, National Institute of Informatics (Japan). . . . . .[7524-24]

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

SESSION 7

Room: Conv. Ctr. Room A8 . . . . . Tues. 3:40 to 5:20 pm

Stereoscopic Image Quality and Metrics

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

3:40 pm: **Comparing levels of crosstalk with red/cyan, blue/yellow, and green/magenta anaglyph 3D glasses**, Andrew J. Woods, Christopher Harris, Curtin Univ. of Technology (Australia) . . . . . .[7524-25]

4:00 pm: **Multispectral polarization viewing angle analysis of circular polarized stereoscopic 3D displays**, Pierre M. Boher, Thierry R. Leroux, Thibault Bignon, Véronique Collomb-Patton, ELDIM (France) . . .[7524-26]

4:20 pm: **Methods for computing color anaglyphs**, David F. McAllister, North Carolina State Univ. (United States); Za Zhou, Beijing Institute of Technology (China) . . . . . .[7524-27]

4:40 pm: **No reference stereoscopic image quality assessment**, Roushain Akhter, Univ. of Manitoba (Canada); Z. M. Parvez Sazzad, Yuukou Horita, Univ. of Toyama (Japan); Jacky Baltes, Univ. of Manitoba (Canada) . . . . . .[7524-28]

5:00 pm: **System-crosstalk effect on stereopsis human factor study for 3D displays,** Kuo-Chung Huang, Jinn-Cherng Yang, Chou-Lin Wu, Kuen Lee, Industrial Technology Research Institute (Taiwan); Sheue-Ling Hwang, National Tsing Hua Univ. (Taiwan). . . . . .[7524-29]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.

Perception of absolute and relative distance in stereoscopic image, Kazunori Shidoji, Masakazu Funakoshi, Masahiko Ogawa, Kyushu Univ. (Japan). . . . . .[7524-44]

Optical alignment technique of 3D-geometric camera system for 3D imaging, Sabri Gurbuz, Sumio Yano, Advanced Telecommunications Research Institute International (Japan) . . . . . .[7524-45]

Geometry based prediction structure for multiview video coding, Seok Lee, Ho-Cheon Wey, Du-Sik Park, Samsung Advanced Institute of Technology (Korea, Republic of). . . . . .[7524-46]

Increased depth perception with sharpness enhancement for stereo video, Mahesh M. Subedar, Lina J. Karam, Arizona State Univ. (United States) . . . . . .[7524-47]

Removing the cardboard effect in stereoscopic images using smoothed depth maps, Koichi Shimono, Tokyo Univ. of Marine Science and Technology (Japan); Wa James Tam, Carlos Vazquez, Filippo Speranza, Ron Renaud, Communications Research Ctr. Canada (Canada) . . . . . .[7524-48]

2D/3D switchable LCD display with chromatic separation, Evgeny Gaskevich, Teralink (Russian Federation) . . . . . .[7524-49]

Stereoscopic video quality evaluation, Z. M. Parvez Sazzad, Shouta Yamanaka, Yuukou Horita, Univ. of Toyama (Japan) . . . . . .[7524-50]

Human factors issues in the design of stereo-rendered photorealistic objects: a stereoscopic Turing test, Collin D. Brack, The Univ. of Texas Medical Branch (United States); John Clewlow, Ivan Kessel, The Univ. of Texas Medical Branch at Galveston (United States). . . . . .[7524-51]

360-degree dense multiview image acquisition system using time multiplexing, Tomohiro Yendo, Nagoya Univ. (Japan); Toshiaki Fujii, Tokyo Institute of Technology (Japan); Mehrdad Panahpour Tehrani, Masayuki Tanimoto, Nagoya Univ. (Japan). . . . . .[7524-52]

Effect of accommodation training by stereoscopic movie presentation on myopic youth, Akihiro Sugiura, Hiroki Takada, Tetuya Yamamoto, Gifu Univ. of Medical Science (Japan); Masaru Miyao, Nagoya Univ. (Japan). . . . . .[7524-54]

Analysis of depth-of-field of stereoscopic cameras in lens-tilt configurations, Naoki Kaneko, Shiro Suyama, Hirotsugu Yamamoto, Univ. of Tokushima (Japan) . . . . . .[7524-55]

A tool for automatic preprocessing stereoscopic video, Norbert Blenn, Niels V. Festenberg, Stefan Gumhold, Technische Univ. Dresden (Germany) . . . . . .[7524-56]

Imaging polarization for characterization of polarized based 3D displays and 3D projectors, Pierre M. Boher, Thierry R. Leroux, Véronique Collomb-Patton, Thibault Bignon, David Glinel, ELDIM (France) . . . . . .[7524-57]

Autostereoscopic display optical properties evaluation, Chou-Lin Wu, Kuo-Chung Huang, Ching-Chiu Liao, Yi-hen Chen, Kuen Lee, Industrial Technology Research Institute (Taiwan) . . . . . .[7524-58]

Study of subjective paradigms for the evaluation of stereoscopic images, Rafik Bensalma, Mohamed-Chaker Larabi, Univ. de Poitiers (France) . . . . . .[7524-60]

Occlusion size aware multi-viewpoint images generation from 2D plus depth images, An-Chun Luo, Wen-Chao Chen, De-Jin Shau, Chung-Wei Lin, Industrial Technology Research Institute (Taiwan). . . . . .[7524-61]

A point cloud based pipeline for depth reconstruction from autostereoscopic sets, Cédric Niquin, Univ. de Reims Champagne-Ardenne (France) and TéléRelief (France); Stéphanie Prevost, Univ. de Reims Champagne-Ardenne (France); Yannick Renion, Univ. de Reims Champagne-Ardenne (France) and TéléRelief (France) . . . . . .[7524-62]

A new near-lossless scheme for multiview image compression, Benjamin Battin, IUT de Reims-Châlons-Charleville (France) and TéléRelief (France); Philippe Vautrot, IUT de Reims-Châlons-Charleville (France); Didier Debons, TéléRelief (France); Laurent Lucas, IUT de Reims-Châlons-Charleville (France) . . . . . .[7524-63]

Integral imaging using pupil modulation and depth-control processing, Jun Arai, Masahiro Kawakita, Makoto Okui, Eisuke Nakasu, Fumio Okano, NHK Science & Technical Research Labs. (Japan)[7524-64]

Multiview display by directional illumination of a digital micromirror device light modulator, Lawrence P. Bogaert, Youri Meuret, Hugo Thienpont, Vrije Univ. Brussel (Belgium); Aykut Avci, Univ. Gent (Belgium); Herbert De Smet, Univ. Gent (Belgium) and IMEC vzw (Belgium) [7524-65]

SMV256: super multiview display with 256 viewpoints using multiple projections of lenticular displays, Yasuhiro Takaki, Nichiyo Nago, Yohei Shinozaki, Tokyo Univ. of Agriculture and Technology (Japan) . .[7524-66]

Three-dimensional pickup and display for microscopic object using microscopy and integral imaging, Quang D. Pham, Jae-Hyeung Park, Nam Kim, Chungbuk National Univ. (Korea, Republic of); Jae-jeong Eun, Changwon National Univ. (Korea, Republic of). . . . . .[7524-67]

Automatic detection of stereoscopic video format for 3DTV, Jung E. Lim, JinSeok Im, Seung Jong Choi, LG Electronics Inc. (Korea, Republic of) . . . . . .[7524-68]

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 8

Room: Conv. Ctr. Room A8 . . . . . .Wed. 9:30 to 10:30 am

Stereoscopic Cameras and Image Rectification

Session Chair: **Vivian K. Walworth,** StereoJet, Inc.

9:30 am: **Adaptive 3D rendering based on region-of-interest**, Christel Chamaret, Sylvain Godeffroy, Patrick Lopez, Olivier Le Meur, Thomson R&D France (France) . . . . . .[7524-59]

9:50 am: **Local color correction of stereo pairs**, Davide Gadia, Dario Villa, Cristian Bonanomi, Alessandro Rizzi, Daniele Marini, Univ. degli Studi di Milano (Italy) . . . . . .[7524-31]

10:10 am: **Design issues for stereo vision systems used on tele-operated robotic systems**, Richard P. Edmondson, J. Larry Pezzaniti, David Chenault, Justin Vaden, Jim Morris, Brian Hyatt, Polaris Sensor Technologies, Inc. (United States); Joe Tchon, Tracy Barnidge, Rockwell Collins, Inc. (United States); Seth Kaufman, Foster-Miller, Inc. (United States); David Kingston, Scott Newell, Concurrent Technologies Corp. (United States); Andrew Bodenhamer, Brad Pettijohn, Army Research Lab. (United States). . . . . .[7524-32]

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

Room: Conv. Ctr. Room A8 . . Wed. 11:00 am to 12:00 pm

Discussion Session II

The Business of 3D: Building Successful Business Models

Panel Moderator: **Chris Chinnock,** Owner, Insight Media

Panel Members: **Jim Calverley,** Senior Manager, Marketing, FujiFilm USA; **Chris Ward,** President, Lightspeed Design, Inc.; **Sunil Jain,** Architecture Manager, PC Client Group, Intel Corp.; **Lenny Lipton**, President and Chief Science Officer, Oculus3D

The 3D world is expanding rapidly from the 3D cinema experience, into the home and also industry. But for the new 3D technologies and services to be a success, there must be a value proposition, a successful business model, and ultimately someone willing to pay for it. The fast growth of 3D in Cinema has shown that there is great potential for the entire 3D ecosystem, but will everyone in the value chain find a way to make money? In this new world, there are many possible 3D business opportunities but in all cases a sound business model must exist. This panel will explore some of these new business scenarios and invite questions from the audience.

Lunch/Exhibition Break . . . . . 12:00 to 1:30 pm

SESSION 9

Room: Conv. Ctr. Room A8 . . . . . Wed. 1:30 to 2:50 pm

Multi-view 3D Content and Displays

Session Chair: **Gregg E. Favalora,** Optics for Hire

1:30 pm: **Real 3D video capturing for multiscopic rendering with controlled distortion**, Jessica Prevoteau, Univ. de Reims Champagne-Ardenne (France) and TéléRelief (France); Sylvia Chalençon-Piotin, Univ. de Reims Champagne-Ardenne (France); Didier Debons, TéléRelief (France); Laurent Lucas, Yannick Remio, Univ. de Reims Champagne-Ardenne (France) . . . . . .[7524-36]

1:50 pm: **Multiview image coding scheme transformations: artefact characteristics and effects on perceived 3D quality**, Roger Olsson, Mårten Sjöström, Mid Sweden Univ. (Sweden). . . . . .[7524-37]

2:10 pm: **Virtual-view adaptation for 3D multiview video streaming**, Goran Petrovic, Luat Do, Sveta Zinger, Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) . . . . . .[7524-38]

2:30 pm: **Electronic realization of coarse integral volumetric imaging with wide viewing angle**, Hideki Kakeya, Tomoya Kurokawa, Yuichiro Mano, Univ. of Tsukuba (Japan) . . . . . .[7524-39]

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

SESSION 10

Room: Conv. Ctr. Room A8 . . . . . .Wed. 3:20 to 4:20 pm

2D to 3D Conversion and Depth Mapping

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

3:20 pm: **2D-to-3D conversion using visual attention analysis**, Jiwon Kim, Yong Ju Jung, Aron Baik, Young Ju Jeong, Dusik Park, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . .[7524-40]

3:40 pm: **An automatic no-reference and provably necessary and sufficient metric for video frame and stereo view interpolation**, Vikas Ramachandra, Truong Nguyen, Univ. of California, San Diego (United States) . . . . . .[7524-41]

4:00 pm: **Improving depth maps by little human assistance**, Rene B. M. Klein Gunnewiek, Patrick Vandewalle, Philips Research Nederland B.V. (Netherlands) . . . . . .[7524-42]

Session Break . . . . . 4:20 to 4:30 pm

SESSION 11

Room: Conv. Ctr. Room A8 . . . . . .Wed. 4:30 to 5:30 pm

Stereoscopic Human Factors

Session Chair: **John O. Merritt,** The Merritt Group

4:30 pm: **Monocular zones in stereoscopic scenes: a useful source of information for human binocular vision?**, Julie M. Harris, Univ. of St. Andrews (United Kingdom) . . . . . .[7524-33]

4:50 pm: **The influence of autostereoscopic 3D displays on subsequent task performance**, Marcus Barkowsky, Patrick Le Callet, Univ. de Nantes (France) . . . . . .[7524-34]

5:10 pm: **Eliminating accommodation-convergence conflicts in stereoscopic displays: multiple-focal-plane displays can elicit continuous and consistent vergence and accommodation responses,** Kevin J. MacKenzie, Simon J. Watt, Bangor Univ. (United Kingdom) . . . . . .[7524-35]

Room: Conv. Ctr. Room A8 . . . . . .Wed. 5:30 to 5:40 pm

Closing Remarks

Make sure to attend the EI Reception and 3D Gaming Experience: Experience some 3D gaming fun on some high-quality stereoscopic displays. *See page 3 for details.*

Further information is available from the SD&A conference website: www.stereoscopic.org

Course of Related Interest

Register for Courses at the Cashier desk.

SC060 Stereoscopic Display Application Issues (Merritt, Woods) Sunday, 8:30 am to 5:30 pm

The Engineering Reality of Virtual Reality 2010

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

Tuesday 19 January

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.

Thursday 21 January

SESSION 1

Room: Conv. Ctr. Room A3 . . . . . .Thurs. 8:50 to 9:50 am

Color Me Beautiful: Putting Your Best Image Forward

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

8:50 am: **Hotspot mitigation in the StarCAVE**, Jordan Rhee, Jurgen Schulze, Thomas DeFanti, Univ. of California, San Diego (United States) . . . . . .[7525-02]

9:10 am: **A turning cabin driving simulator to reduce simulator sickness**, Ronald R. Mourant, Zhishuai Yin, Northeastern Univ. (United States) . . . . . .[7525-03]

9:30 am: **A high dynamic range pipeline for virtual reality**, Josselin Petit, Lab. Central des Ponts et Chaussées (France) and LIRIS (France); Roland Brémond, Lab. Central des Ponts et Chaussées (France) . . . . . .[7525-04]

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

SESSION 2

Room: Conv. Ctr. Room A3 . Thurs. 10:20 am to 12:00 pm

Work It Out: Using Interfaces for Facilitating Ableness

Session Chair: **Margaret Dolinsky,** Indiana Univ.

10:20 am: **Virtual reality welder training**, Dirk Reiners, Christoph Borst, Terrence L. Chambers, Steven White, Mores Prachyabrued, Univ. of Louisiana at Lafayette (United States). . . . . .[7525-05]

10:40 am: **Development of virtual reality simulation for regional anesthesia training**, Vassilis Charissis, Univ. of Glasgow (United Kingdom); Christian R. Zimmer, Golden Jubilee Hospital (United Kingdom); Sophia Sakellariou, Aberdeen Royal Infirmary (United Kingdom).[7525-06]

11:00 am: **Let them move: introducing real walking into a CAVE**, Carolina Cruz-Neira, Dirk Reiners, Jan Springer, Univ. of Louisiana at Lafayette (United States). . . . . .[7525-07]

11:20 am: **Using commodity accelerometers and gyroscopes to improve speed and accuracy of JanusVF**, Malcolm Hutson, Dirk Reiners, Univ. of Louisiana at Lafayette (United States) . . . . . .[7525-08]

11:40 am: **A case study of collaborative facilities use in engineering design**, Laura Monroe, Los Alamos National Lab. (United States); David Pugmire, Oak Riadge National Lab. (United States) . . . . . .[7525-09]

Lunch Break . . . . . .12:00 to 1:30 am

SESSION 3

Room: Conv. Ctr. Room A3 . . . . . Thurs. 1:20 to 2:40 pm

Artful Realities and Engineering Experience

Session Chair: **Margaret Dolinsky,** Indiana Univ.

1:20 pm: **Dissociation in virtual reality: depersonalization and derealization**, Gregory P. Garvey, Quinnipiac Univ. (United States) . . . . . .[7525-10]

1:40 pm: **The interplays between technology and content, and immersant and VE**, Meehae Song, Diane Gromala, Simon Fraser Univ. (Canada) . . . . . .[7525-11]

2:00 pm: **Ambient clumsiness in virtual environments**, Silvia P. Ruzanka, Indiana Univ. (United States); Katherine Behar, Hunter College (United States). . . . . .[7525-12]

2:20 pm: **Body parts**, Elif E. Ayiter, Sabanci Univ. (Turkey) . . . . .[7525-13]

SESSION 4

Room: Conv. Ctr. Room A3 . . . . . Thurs. 2:40 to 5:10 pm

Virtual Environments in Action

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

2:40 pm: **The social computing room: a multipurpose collaborative visualization environment**, David Borland, Michael Conway, Renaissance Computing Institute (United States) and Univ. of North Carolina at Chapel Hill (United States); Jason Coposky, Warren Ginn, Ray Idaszak, Renaissance Computing Institute (United States) . . . . .[7525-14]

3:00 pm: **Experiments in mixed reality**, Mark T. Bolas, The Univ. of Southern California (United States). . . . . .[7525-15]

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

3:50 pm: **Immersive interfaces for improving the scientific inquiry and engineering design process**, William R. Sherman, Indiana Univ. (United States); Patrick O'Leary, Idaho National Lab. (United States) . . .[7525-16]

4:10 pm: **Interactive augmented reality system for product design review**, Giandomenico Caruso, Guido M. Re, Politecnico di Milano (Italy) . . . . . .[7525-17]

4:30 pm: **Art in virtual reality 2010**, Benjamin Chang, The Art Institute of Chicago (United States) . . . . . .[7525-18]

4:50 pm: **Dream Home: a multiview stereoscopic interior design system**, Fu-Jen Hsiao, Chih-Jen Teng, Chung-Wei Lin, Jinn-Cherng Yang, Industrial Technology Research Institute (Taiwan) . . . . . .[7525-19]

Course of Related Interest

Register for Courses at the Cashier desk.

SC060 Stereoscopic Display Application Issues (Merritt, Woods) Sunday, 8:30 am to 5:30 pm

Monday-Tuesday 18-19 January 2010 • Proceedings of SPIE Vol. 7526

3D Image Processing (3DIP) and Applications

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

Program Committee: **Mongi A. Abidi,** The Univ. of Tennessee; **Hugues Benoit-Cattin,** Univ. of Lyon (France); **Adrian G. Bors,** The Univ. of York (United Kingdom); **Saida Bouakaz,** Univ. of Lyon (France); **Mohamed Daoudi,** Institut Télécom (France); **Jean-Luc E. Dugelay,** Institut Eurécom (France); **Florent Dupont,** Univ. of Lyon (France); **Afzal Godil,** National Institute of Standards and Technology; **Benoît 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,** Univ. of North Carolina/Chapel Hill and ETH Zürich; **Bülent Sankur,** Bogaziçi Üniv. (Turkey); **Peter Schelkens,** Vrije Univ. Brussel (Belgium); **Robert Sitnik,** Warsaw Univ. of Technology (Poland); **Michela Spagnuolo,** IMATI (Italy); **Frédéric Truchetet,** Univ. de Bourgogne (France); **Stefano Tubaro,** Politecnico di Milano (Italy)

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room A7 . . . . . .Mon. 8:50 to 10:10 am

3D Analysis, Feature Extraction, Segmentation

8:50 am: **Symmetry analysis with multiscale descriptor**, David Cailliere, France Telecom R&D (France) and LIRIS/INSA de Lyon (France); Florence Denis, LIRIS CNRS (France); Danielle Pele, France Telecom R&D (France) . . . . . .[7526-01]

9:10 am: **A novel 3D anisotropic diffusion filter**, Sorin Pop, Romulus Terebes, Technical Univ. of Cluj-Napoca (Romania); Cosmin Ludusan, Technical Univ. of Cluj-Napoca (Romania) and Univ. Bordeaux I (France); Monica Borda, Technical Univ. of Cluj-Napoca (Romania); Christian Germain, Olivier Lavialle, Univ. Bordeaux 1 (France) . . . . . .[7526-02]

9:30 am: **A feature-preserving remeshing scheme for surface meshes**, Aymen Kammoun, Frédéric Payan, Marc Antonini, Lab. d'Informatique, Signaux et Systèmes de Sophia-Antipolis (France) . . . . . .[7526-04]

9:50 am: **Developable slice extraction from dicom volumes**, Marco Paluszny, Jose Fernando Ramirez, Univ. Nacional de Colombia Sede Medellín (Colombia). . . . . .[7526-05]

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

SESSION 2

Room: Conv. Ctr. Room A7 . . . . . .Mon. 10:40 to 11:40 am

3D Face Recognition

10:40 am: **Realistic and animatable face models for expression simulations in 3D**, Nesli Erdogmus, Remy Etheve, Jean-Luc E. Dugelay, EURECOM (France). . . . . .[7526-06]

11:00 am: **3D surface reconstruction and feature extraction of human faces based on wavelet representation**, Qun Wang, Vijayan K. Asari, Mohammad A. Karim, Old Dominion Univ. (United States). . . . . .[7526-07]

11:20 am: **3D BSM for face segmentation and landmarks detection**, Augusto E. Salazar Jiménez, Flavio A. Prieto Ortiz, Univ. Nacional de Colombia Sede Manizales (Colombia) . . . . . .[7526-08]

Lunch Break . . . . . 11:40 am to 1:00 pm

SESSION 3

Room: Conv. Ctr. Room A7 . . . . . .Mon. 1:00 to 2:00 pm

Multiview Coding, 3D TV

1:00 pm: **Efficient disparity vector coding for multiview 3D displays**, Aykut Avci, Univ. Gent (Belgium); Lawrence P. Bogaert, Vrije Univ. Brussel (Belgium); Roel Beernaert, Jelle De Smet, Univ. Gent (Belgium); Youri Meuret, Hugo Thienpont, Vrije Univ. Brussel (Belgium); Herbert De Smet, Univ. Gent (Belgium) and Interuniv. MicroElectronics Ctr. (Belgium) . . . . . .[7526-09]

1:20 pm: **Looking for an adequate quality criterion for depth coding**, Paul Kerbiriou, Guillaume Boisson, Thomson R&D France (France) . . . . . .[7526-10]

1:40 pm: **Virtual view image synthesis for eye-contact in TV conversation system**, Daisuke Murayama, Keiichi Kimura, Tadaaki Hosaka, Takayuki Hamamoto, Tokyo Univ. of Science (Japan); Nao Shibuhisa, Seiichi Tanaka, Shunichi Sato, Sakae Saito, Sharp Corp. (Japan). . . . . .[7526-11]

SESSION 4

Room: Conv. Ctr. Room A7 . . . . . .Mon. 2:00 to 3:20 pm

3D Reconstruction from 2D Views, Videos, and Point Clouds I

2:00 pm: **3D polygonal representation of dense point clouds by triangulation, segmentation, and texture projection**, Touraj Tajbakhsh, Silicon Image GmbH (Germany) . . . . . .[7526-14]

2:20 pm: **A 2D to 3D video and image conversion technique based on a bilateral filter**, Ludovic J. Angot, Wei-Jia Huang, Kai-Che Liu, Industrial Technology Research Institute (Taiwan) . . . . . .[7526-15]

2:40 pm: **Robust 3D object localization and pose estimation for random bin picking with the 3DMaMa algorithm**, Jens T. Thielemann, Øystein Skotheim, Arne Sommerfelt, SINTEF (Norway) . . . . . .[7526-16]

3:00 pm: **Object/image relations in full perspective and 3D reconstruction**, Peter F. Stiller, Texas A&M Univ. (United States)[7526-18]

Tuesday 19 January

Room: Marriott Ballroom . . . . . .Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 5

Room: Conv. Ctr. Room A7 . . . . . Tues. 9:30 to 11:20 am

3D Compression and Watermarking

9:30 am: **Compression of 3D mesh sequences based on an adaptive 3D wavelet transform**, Kian Jafari, Supélec (France); Florent Dupont, Univ. of Lyon (France) . . . . . .[7526-19]

9:50 am: **Sensitivity analysis of euclidean minimum spanning tree**, Nicolas Tournier, Univ. of Montpellier (France); William Puech, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France); Gerard Subsol, Univ. of Montpellier (France); Jean-Pierre Pedeboy, Stratégies S.A., (France) . . . . . .[7526-20]

10:10 am: **A polygon soup representation for free viewpoint video**, Thomas Colleu, Stéphane Pateux, France Telecom R&D (France); Luce Morin, Institut National des Sciences Appliquées de Rennes (France); Claude Labit, INRIA Rennes (France) . . . . . .[7526-21]

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

11:00 am: **Efficient compression scheme by use of the region division of elemental images on MALT in three-dimensional integral imaging**, Ho-Hyun Kang, Kwangwoon Univ. (Korea, Republic of); Dong-Hak Shin, Dongseo Univ. (Korea, Republic of); Eun-Soo Kim, Kwangwoon Univ. (Korea, Republic of). . . . . .[7526-22]

SESSION 6

Room: Conv. Ctr. Room A7 . . Tues. 11:20 am to 12:40 pm

3D Shape Matching, Indexing, and Retrieval

11:20 am: **Index spaces for 3D retrieval: toward a better understanding of their geometry and probability distribution**, Eric Paquet, National Research Council Canada (Canada); Herna L. Viktor, Univ. of Ottawa (Canada) . . . . . .[7526-23]

11:40 am: **Correspondence-free alignment of 3D object models**, Ceyhun B. Akgul, Philips Research Nederland B.V. (Netherlands); Bülent Sankur, Bogaziçi Üniv. (Turkey); Yucel Yemez, Koc Univ. (Turkey)[7526-24]

12:00 pm: **Sketch-driven mental 3D object retrieval**, Thibault Napoleon, Hichem Sahbi, Telecom ParisTech (France) . . . . . .[7526-25]

12:20 pm: **View subspaces for indexing and retrieval of 3D models**, Helin Dutagaci, Afzal Godil, National Institute of Standards and Technology (United States); Bülent Sankur, Bogazici Univ. (Turkey); Yücel Yemez, Koc Univ. (Turkey). . . . . .[7526-26]

Lunch/Exhibition Break . . . . . 12:40 to 2:10 pm

SESSION 7

Room: Conv. Ctr. Room A7 . . . . . Tues. 2:10 to 4:20 pm

3D and 4D Image Capture, Hardware Implementation

2:10 pm: **Memory efficient belief propagation for high-definition real-time stereo matching systems**, Jesus Perez, Pablo Sanchez, Univ. de Cantabria (Spain). . . . . .[7526-27]

2:30 pm: **Robot navigation and obstacle detection in pipelines using time-of-flight imagery**, Jens T. Thielemann, Gøril M. Breivik, Asbjørn Berge, SINTEF (Norway) . . . . . .[7526-28]

2:50 pm: **A four-directional body shape measurement system and its application for pectus excavatum severity assessment**, Marcin Witkowski, Warsaw Univ. of Technology (Poland); Wojciech Glinkowski, Medical Univ. of Warsaw (Poland); Robert Sitnik, Warsaw Univ. of Technology (Poland); Hanna Kocoń, Medical Univ. of Warsaw (Poland); Pawel; Bolewicki, Warsaw Univ. of Technology (Poland); Andrzej Górecki, Medical Univ. of Warsaw (Poland). . . . . .[7526-29]

3:10 pm: **Integrated shape, color, and reflectivity measurement method for 3D digitization of cultural heritage objects**, Robert Sitnik, Grzegorz Maczkowski, Jakub Krzeslowski, Warsaw Univ. of Technology (Poland) . . . . . .[7526-30]

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

4:00 pm: **Crosstalk measurement and mitigation for autostereoscopic displays**, Marcus Barkowsky, Polytech'Nantes (France); Patrizio Campisi, Univ. degli Studi di Roma Tre (Italy); Patrick Le Callet, Polytech'Nantes (France); Vito Rizzo, Univ. degli Studi di Roma Tre (Italy) . . . . . .[7526-31]

SESSION 8

Room: Conv. Ctr. Room A7 . . . . . Tues. 4:20 to 5:20 pm

3D Visualization, 3D Display, Quality Assessment

4:20 pm: **A comprehensive database and subjective evaluation methodology for quality of experience in stereoscopic video**, Lutz Goldmann, Francesca De Simone, Touradj Ebrahimi, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . .[7526-32]

4:40 pm: **Measuring errors for huge semi-regular meshes**, Arnaud Roquel, Anis Meftah, Marc Antonini, Frederic payan, CNRS I3S Lab. (France) . . . . . .[7526-33]

5:00 pm: **A novel 3D hand-area space sharing system,** Akira Morishita, Rieko Fukushima, Hitoshi Kobayashi, Yoshiyuki Kokojima, Sumihiko Yamamoto, Yuzo Hirayama, Toshiba Corp. (Japan) . . . . . .[7526-34]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . .5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.

Universal 4-dimensional multiplexing of layered disparity image sequences for pixel and voxel based display devices, Armin Grasnick, Sunny Ocean Studios (Singapore) . . . . . .[7526-35]

Context-dependent player's movement interpretation: application to adaptive game development, Francois Picard, Pascal Estraillier, Univ. de La Rochelle (France) . . . . . .[7526-36]

Three-dimensional shape construction of pulsatile tissue from ultrasonic movies for assistance of clinical diagnosis, Masayuki Fukuzawa, Hikari Kawaguchi, Masayoshi Yamada, Nobuyuki Nakamori, Kyoto Institute of Technology (Japan); Yoshiki Kitsunezuka, Saiseikai Hyogo-ken Hospital (Japan) . . . . . .[7526-37]

Automation of 3D scan data capturing and processing, Wiktor Jedrzejec, Academy of Fine Arts in Warsaw (Poland); Robert Sitnik, Warsaw Univ. of Technology (Poland); Krzysztof Warmiński, Academy of Fine Arts in Warsaw (Poland) . . . . . .[7526-38]

Feature based evaluation for registration of 3D heterogeneous data, Taha Ridene, Francois Goulette, Ecole des Mines de Paris (France) . . . . . .[7526-39]

Course of Related Interest

Register for Courses at the Cashier desk.

SC927 3D Imaging (Agam) Tuesday, 8:30 am to 12:30 pm

Human Vision and Electronic Imaging XV

Conference Chairs: **Bernice E. Rogowitz,** Visual Perspectives Consulting; **Thrasyvoulos N. Pappas,** Northwestern Univ.

Program Committee: **Albert J. Ahumada,** NASA Ames Research Ctr.; **Jan P. Allebach,** Purdue Univ.; **Erhardt Barth,** Univ. zu Lübeck (Germany); **Walter R. Bender,** MIT Media Lab.; **Michael H. Brill,** Datacolor; **John C. Dalton,** Synthetik Software; **Scott J. Daly,** Sharp Labs of America, Inc.; **Huib de Ridder,** Technische Univ. Delft (Netherlands); **Elena A. Fedorovskaya,** Eastman Kodak Co.; **Jennifer Gille,** Qualcomm Inc.; **Sheila S. Hemami,** Cornell Univ.; **Laurent Itti,** Univ. of Southern California; **Stanley A. Klein,** Univ. of California, Berkeley; **Patrick Le Callet,** Univ. de Nantes (France); **John J. McCann,** McCann Imaging; **Jeffrey B. Mulligan,** NASA Ames Research Ct.; **Karol Myszkowski,** Max-Planck-Institut für Informatik (Germany); **Adar Pelah,** The Univ. of York (United Kingdom); **Eliezer Peli,** Schepens Eye Research Institute; **Hawley K. Rising III,** Consultant; **Sabine E. Süsstrunk,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Christopher W. Tyler,** The Smith-Kettlewell Eye Research Institute; **Andrew B. Watson,** NASA Ames Research Ctr.

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room A6 . . .Mon. 10:30 am to 12:00 pm

Keynote Session 1

Session Chairs: **Bernice E. Rogowitz,** Visual Perspectives Consulting; **Thrasyvoulos N. Pappas,** Northwestern Univ.

10:30 am: **Visualization grand challenges**, Georges G. Grinstein, Univ. of Massachusetts Lowell (United States) . . . . . .[7527-01]

11:15 am: **Music in film and animation: experimental semiotics applied to visual sound and musical structures**, Roger A. Kendall, Univ. of California, Los Angeles (United States). . . . . .[7527-02]

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

SESSION 2

Room: Conv. Ctr. Room A6 . . . . . .Mon. 2:00 to 3:00 pm

Artificial Retina

Session Chair: **Melville R. V. Sahyun,** Consultant

2:00 pm: **Electrical retinal stimulation for the prosthetic vision: Seoul artificial retina project**, Jong-Mo Seo, Seoul National Univ. (Korea, Republic of) and Seoul National Univ. Hospital (Korea, Republic of) and Nano Artificial Vision Research Ctr. (Korea, Republic of); Kyung Hwan Kim, Yonsei Univ. (Korea, Republic of) and Nano Artificial Vision Research Ctr. (Korea, Republic of); Yong Sook Goo, Chungbuk National Univ. (Korea, Republic of) and Nano Artificial Vision Research Ctr. (Korea, Republic of); Kwang Suk Park, Dong-il Cho, Sung June Kim, Seoul National Univ. (Korea, Republic of) and Nano Artificial Vision Research Ctr. (Korea, Republic of); Hum Chung, Seoul National Univ. Hospital (Korea, Republic of) and Nano Artificial Vision Research Ctr. (Korea, Republic of) .[7527-03]

2:20 pm: **In vivo operation of the Boston 15-channel wireless subretinal visual prosthesis**, Douglas Shire, Shawn Kelly, VA Ctr. for Innovative Visual Rehabilitation (United States); Jinghua Chen, Massachusetts Eye and Ear Infirmary (United States); Patrick Doyle, Marcus Gingerich, William Drohan, VA Ctr. for Innovative Visual Rehabilitation (United States); Luke Theogarajan, Univ. of California, Santa Barbara (United States); Stuart F. Cogan, EIC Labs., Inc. (United States); John Wyatt, Joseph F. Rizzo III, VA Ctr. for Innovative Visual Rehabilitation (United States). . . . . .[7527-04]

2:40 pm: **The acute clinical trial of artificial retina by suprachoroidal-transretinal stimulation**, Takashi Fujikado, Osaka Univ. (Japan)[7527-05]

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

SESSION 3

Room: Conv. Ctr. Room A6 . . . . . .Mon. 3:30 to 5:30 pm

Advanced Brain Imaging, Perception, and Cognition

Session Chairs: **Lora T. Likova,** The Smith-Kettlewell Eye Research Institute; **Stanley A. Klein,** Univ. of California, Berkeley

3:30 pm: **Probing the time order error using EEG/MEG source isolation**, Stanley A. Klein, Thom Carney, David Kim, Univ. of California, Berkeley (United States) . . . . . .[7527-07]

3:50 pm: **Cortical networks for drawing in the sighted and the blind: an fMRI study**, Lora T. Likova, The Smith-Kettlewell Eye Research Institute (United States). . . . . .[7527-08]

4:10 pm: **Application of machine learning algorithms to human functional brain imaging**, Srikantan Nagarajan, Univ. of California, San Francisco (United States) . . . . . .[7527-09]

4:30 pm: **Top-down modulation: the crossroads of perception, attention, and memory**, Adam Gazzaley, Univ. of California, San Francisco (United States) . . . . . .[7527-10]

4:50 pm: **Neural circuits mediating voluntary and involuntary attention: a functional MRI coherency study**, Ayelet N. Landau, William Prinzmetal, Lynn C. Robertson, Michael A. Silver, Univ. of California, Berkeley (United States) . . . . . .[7527-11]

5:10 pm: **Training attention: longitudinal changes in cortical activity associated with intensive meditation,** M. Saggar, The Univ. of Texas at Austin (United States); S. R. Aichele, T. L. Jacobs, A. P. Zanesco, Univ. of California, Davis (United States); D. A. Bridwell, Univ. of California, Irvine (United States) and Univ. of California, Davis (United States); K. A. MacLean, B. G. King, B. K. Sahdra, E. L. Rosenberg, P. R. Shaver, E. Ferrer, Univ. of California, Davis (United States); A. C. Tang, The Univ. of New Mexico (United States); B. A. Wallace, Santa Barbara Institute for Consciousness Studies (United States); G. R. Mangun, Univ. of California, Davis (United States); R. Miikkulainen, The Univ. of Texas at Austin (United States); Clifford Saron, Univ. of California, Davis (United States) .[7527-12]

Room: Conv. Ctr. Room A6 . . . . . Mon. 5:30 to 6:30 pm

Discussion Session

Interactive discussion on the Keynote Presentations, Artificial Retina, Perception, and Brain Imaging papers

Human Vision and Electronic Imaging Banquet

Mon. 7:30 to late

Tuesday 19 January

Room: Marriott Ballroom . . . . . .Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 4

Room: Conv. Ctr. Room A6 . . . Tues. 9:30 am to 12:10 pm

Advances in Image Quality

Session Chair: **Eliezer Peli,** Schepens Eye Research Institute

9:30 am: **Toward a comprehensive color image quality metric** *(Invited Paper)*, Sabine Süsstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . .[7527-13]

10:00 am: **Statistical analysis of subjective preferences for video enhancement**, Russell L. Woods, PremNandhini Satgunam, P. Matthew Bronstad, Eliezer Peli, Schepens Eye Research Institute (United States) . . . . . .[7527-14]

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

10:50 am: **Tradeoffs in subjective testing methods for image and video quality assessment**, David M. Rouse, Cornell Univ. (United States); Romuald Pepion, Patrick Le Callet, Univ. de Nantes (France); Sheila S. Hemami, Cornell Univ. (United States) . . . . . .[7527-15]

11:10 am: **Calibration of the visual difference predictor for estimating visibility of JPEG2K compression artifacts in medical CT images**, Kil Joong Kim, Seoul National Univ. (Korea, Republic of); Rafal Mantiuk, Univ. of British Columbia (Canada); Wolfgang Heidrich, The Univ. of British Columbia (Canada); Kyoung Ho Lee, Seoul National Univ. Bundang Hospital (Korea, Republic of). . . . . .[7527-16]

11:30 am: **A subjective study to evaluate video quality assessment algorithms**, Kalpana Seshadrinathan, Intel Corp. (United States); Rajiv Soundararajan, Alan C. Bovik, Lawrence K. Cormack, The Univ. of Texas at Austin (United States) . . . . . .[7527-17]

11:50 am: **Subjective assessment of HDTV content: comparison of quality across HDTV formats**, David S. Hands, Joshan Meenowa, Damien Bayart, British Telecommunications plc (United Kingdom)[7527-18]

Lunch/Exhibition Break . . . . . 12:10 to 1:40 pm

SESSION 5

Room: Conv. Ctr. Room A6 . . . . . Tues. 1:40 to 3:00 pm

New Directions in Image Quality

Session Chair: **Bernice E. Rogowitz,** Visual Perspectives Consulting

1:40 pm: **The medium and the message: a re-visionist view of image quality**, James A. Ferwerda, Rochester Institute of Technology (United States) . . . . . .[7527-19]

2:00 pm: **Quantifying the relationship between visual salience and visual importance**, Junle Wang, South China Univ. of Technology (China); Damon M. Chandler, Oklahoma State Univ. (United States); Patrick Le Callet, Univ. de Nantes (France) . . . . . .[7527-20]

2:20 pm: **Synchronization mismatch: Vernier acuity and perception evaluation for large ultrahigh resolution tiled displays**, Sachin G. Deshpande, Scott J. Daly, Sharp Labs. of America, Inc. (United States) . . . . . .[7527-21]

2:40 pm: **A perceptual similarity measure based on smoothing filters and the normalized compression distance**, Nicholas Tran, Santa Clara Univ. (United States) . . . . . .[7527-22]

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

SESSION 6

Room: Conv. Ctr. Room A6 . . . . . Tues. 3:30 to 4:50 pm

Visual, Auditory, and Tactile Perception

Session Chair: **Thrasyvoulos N. Pappas,** Northwestern Univ.

3:30 pm: **Subband analysis and synthesis of real-world textures for objective and subjective determination of roughness**, Rene van Egmond, Technische Univ. Delft (Netherlands); Thrasyvoulos N. Pappas, Northwestern Univ. (United States); Huib de Ridder, Technische Univ. Delft (Netherlands) . . . . . .[7527-23]

3:50 pm: **Psychoacoustic and cognitive aspects of auditory roughness: definitions, models, and applications**, Pantelis Vassilakis, Columbia College Chicago (United States); Roger A. Kendall, Univ. of California, Los Angeles (United States) . . . . . .[7527-24]

4:10 pm: **Audio-Visual interactions in product sound design,** Elif Özcan, René van Egmond, Technische Univ. Delft, (Netherlands) . . . . . .[7527-62]

4:30 pm: **Tangible display systems: direct interfaces for computer-based studies of surface appearance,** Benjamin A. Darling, James A. Ferwerda, Rochester Institute of Technology (United States). . . .[7527-26]

Room: Conv. Ctr. Room A6 . . . . .Tues. 4:50 to 5:20 pm

Lightning Session: Interactive Paper Preview

Session Chair: **Bernice E. Rogowitz,** Visual Perspectives Consulting

Each author has 2 minutes to present 2 slides previewing their presentation for the Interactive Paper Session.

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.

No-reference image quality assessment based on localized gradient statistics: application to JPEG and JPEG2000, Hantao Liu, Technische Univ. Delft (Netherlands); Judith Redi, Univ. degli Studi di Genova (Italy); Hani Alers, Delft University of Technology (Netherlands); Rodolfo Zunino, Univ. degli Studi di Genova (Italy); Ingrid Heynderickx, Philips Research Nederland B.V. (Netherlands) . . . . . .[7527-52]

Automated videography for residential communications, Andrew F. Kurtz, Carman Neustaedter, Andrew C. Blose, Eastman Kodak Co. (United States) . . . . . .[7527-53]

Evaluation of subjective and objective color difference on color image, Liu Hao Xue, Huang Min, Beijing Institute of Graphic Communication (China) . . . . . .[7527-54]

Efficient motion weighted spatio-temporal video SSIM index, Anush K. Moorthy, Alan C. Bovik, The Univ. of Texas at Austin (United States) . . . . . .[7527-55]

The impact of transmission errors on progressive 720 lines HDTV coded with H.264, Kjell E. Brunnström, Daniel Stålenbring, Acreo AB (Sweden); Martin Pettersson, Jörgen Gustafsson, Ericsson AB (Sweden) . . . . . .[7527-56]

Divisive normalization in channelized Hotelling observer, Tao Luo, Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . .[7527-57]

Perceptual quality assessment of color images using adaptive signal representation, Umesh Rajashekar, New York Univ. (United States); Zhou Wang, Univ. of Waterloo (Canada); Eero P. Simoncelli, New York Univ. (United States). . . . . .[7527-58]

Face image illumination normalization for face recognition, Chung-Lin Huang, National Tsing Hua Univ. (Taiwan) . . . . . .[7527-59]

PCA-based method for recognizing multiple persons' hand gestures from the video sequence acquired by a moving camera, Dan Luo, Jun Ohya, Waseda Univ. (Japan). . . . . .[7527-60]

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 7

Room: Conv. Ctr. Room A6 . . . . . .Wed. 9:30 to 10:50 am

Art and Science Render the High-Dynamic-Range World I

Session Chair: **John J. McCann,** McCann Imaging

9:30 am: **Photographing the range of light: works by Ansel Adams and John Sexton**, John Sexton, John Sexton Photography (United States) . . . . . .[7527-27]

10:10 am: **The Ansel Adams Zone System: HDR capture and range compression by chemical means**, John J. McCann, McCann Imaging (United States). . . . . .[7527-28]

10:30 am: **Ansel Adams: early works** *(Invited Paper),* Jodi Throckmorton, San Jose Museum of Art (United States) . . . . . .[7527-61]

Tour of Ansel Adams: Early Works

Wed. 10:50 am to 12:00 pm

Jodi Throckmorton, San Jose Musuem of Art

Lunch/Exhibition Break . . . . . 12:00 to 1:30 pm

SESSION 8

Room: Conv. Ctr. Room A6 . . . . . .Wed. 1:30 to 4:30 pm

Art and Science Render the High-Dynamic-Range World II

Session Chair: **John J. McCann,** McCann Imaging

1:30 pm: **The drama of illumination: artists' approaches to the creation of high dynamic range in paintings and prints** *(Invited Paper)*, Carinna E. Parraman, Univ. of the West of England (United Kingdom) . . . . .[7527-29]

2:00 pm: **Darkness and depth in early Renaissance painting**, Christopher W. Tyler, The Smith-Kettlewell Eye Research Institute (United States) . . . . . .[7527-30]

2:20 pm: **The luminance of pure black: exploring the effect of surround**, Rafal Mantiuk, The Univ. of British Columbia (Canada) and Sharp Labs. of America, Inc. (United States); Scott J. Daly, Louis J. Kerofsky, Sharp Labs. of America, Inc. (United States) . . . . . .[7527-31]

2:40 pm: **Object size, spatial frequency content, and retinal contrast**, Alessandro Rizzi, Univ. degli Studi di Milano (Italy). . . . . .[7527-32]

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

3:30 pm: **The effect of exposure on MaxRGB color constancy**, Brian V. Funt, Lilong Shi, Simon Fraser Univ. (Canada) . . . . . .[7527-33]

3:50 pm: **Gloss discrimination and eye movements: where do people look?**, Jonathan B. Phillips, James A. Ferwerda, Ann M. Nunziata, Rochester Institute of Technology (United States) . . . . . .[7527-34]

4:10 pm: **Visual maladaptation in contrast domain,** Dawid Pajak, Martin Cadik, Tunc O. Aydin, Karol Myszkowski, Hans-Peter Seidel, Max-Planck-Institut für Informatik (Germany) . . . . . .[7527-35]

Room: Conv. Ctr. Room A6 . . . . . Wed. 4:30 to 6:00 pm

Discussion Session

Interactive discussion on Image Quality, New Directions in Image Quality, Multimodal Texture, and High Dynamic Range.

Thursday 21 January

SESSION 9

Room: Conv. Ctr. Room A6 . . . . . .Thurs. 9:00 to 10:00 am

Perceptual and Cognitive Experiments in Virtual Environments

Session Chair: **Bernice E. Rogowitz,** Visual Perspectives Consulting

9:00 am: **Effect of foreground images on self-motion induced by immersive display**, Tetsuri Inoue, Ryo Kurihara, Kazutake Uehira, Kanagawa Institute of Technology (Japan) . . . . . .[7527-36]

9:20 am: **Synthetic environments as visualization method for product design**, Frank Meijer, Egon L. van den Broek, Univ. Twente (Netherlands); Theo E. Schouten, Radboud Univ. Nijmegen (Netherlands); Roy Damgrave, Univ. Twente (Netherlands) . . . . . .[7527-37]

9:40 am: **Visualization and sonification of human locomotion data for rehabilitative biofeedback**, Philip Jepson, Mathew Gilbert, Ming Zhao, William Lunniss, The Univ. of York (United Kingdom); Adar Pelah, The Univ. of York (United Kingdom) and Department of Engineering, University of Cambridge (United Kingdom) . . . . . .[7527-38]

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

SESSION 10

Room: Conv. Ctr. Room A6 . . . . .Thurs. 10:30 to 11:50 am

Cognition, Attention, and Eye Movements in Image Analysis

Session Chair: **Thrasyvoulos N. Pappas,** Northwestern Univ.

10:30 am: **Interest of perceptive vision for document structure analysis**, Aurélie Lemaitre, Institut National des Sciences Appliquées de Rennes (France); Jean Camillerapp, Bertrand Coüasnon, INSA de Rennes (France) . . . . . .[7527-39]

10:50 am: **Visual recognition of permuted words**, Sheikh Faisal Rashid, Technische Univ. Kaiserslautern (Germany); Faisal Shafait, DFKI GmbH (Germany); Thomas M. Breuel, Technische Univ. Kaiserslautern (Germany) . . . . . .[7527-40]

11:10 am: **Perception enhancement of moving objects by luminance matching algorithm based on human vision system**, Amir Teymourian, Bernd Hillers, Axel Graeser, Univ. Bremen (Germany) . . . . . .[7527-41]

11:30 am: **Effects of stimulus size and velocity on steady-state smooth pursuit induced by realistic images**, Feng Li, Aptina Imaging Corp. (United States); Jeff B. Pelz, Rochester Institute of Technology (United States); Scott J. Daly, Sharp Labs. of America, Inc. (United States) . . . . . .[7527-42]

Lunch Break . . . . . 11:50 am to 1:30 pm

SESSION 11

Room: Conv. Ctr. Room A6 . . . . . .Thurs. 1:30 to 4:40 pm

Art, Aesthetics, and Perception

Session Chairs: **Christopher W. Tyler,** The Smith-Kettlewell Eye Research Institute; **Hawley K. Rising III,** Consultant

1:30 pm: **Preferences for individual colors: WAVEs of color, culture, music, and emotion**, Stephen E. Palmer, Karen B. Schloss, Univ. of California, Berkeley (United States). . . . . .[7527-43]

2:10 pm: **Aesthetics of color combinations**, Karen B. Schloss, Stephen E. Palmer, Univ. of California, Berkeley (United States) . . . . . .[7527-44]

2:30 pm: **Preference and similarity in art**, Daniel J. Graham, Dartmouth College (United States); Jay D. Friedenberg, Manhattan College (United States); Daniel N. Rockmore, Dartmouth College (United States) [7527-45]

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

3:20 pm: **The death of the object: perceiving non-physical art**, Leigh R. Markopoulos, California College of the Arts (United States). . . . .[7527-47]

3:40 pm: **Rendering nothingness: reality and aesthetics in Haboku landscape for understanding cognition and computer interfaces**, Hawley K. Rising III, Consultant (United States) . . . . . .[7527-48]

4:00 pm: **How did Leonardo perceive himself? Metric iconography of Leonardo's self-portraits**, Christopher W. Tyler, The Smith-Kettlewell Eye Research Institute (United States). . . . . .[7527-49]

4:20 pm: **What computer vision reveals about human perception of art,** David G. Stork, Ricoh Innovations, Inc. (United States) . . . . . .[7527-50]

Room: Conv. Ctr. Room A6 . . . . Thurs. 4:40 to 5:40 pm

Discussion Session

Interactive discussion on Virtual Environments, Attention and Eye Movements, Art, Aesthetics, and Perception.

Courses of Related Interest

Register for Courses at the Cashier desk.

SC969 Perception, Cognition, and Next Generation Imaging (Rogowitz) Sunday, 8:30 am to 12:30 pm

SC812 Perceptual Metrics for Image Quality Evaluation (Pappas, Hemami) Sunday, 1:30 to 5:30 pm

SC762 Device Simulation for Image Quality Evaluation (Farrell, Catrysse, Wandell) Sunday, 8:30 am to 5:30 pm

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

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

Program Committee: **Jan P. Allebach,** Purdue Univ.; **Scott J. Daly,** Sharp Labs. of America, Inc.; **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; **Fritz Lebowsky,** STMicroelectronics (France); **Nathan Moroney,** Hewlett-Packard Labs.; **Chris Tuijn,** Agfa-Gevaert Group (Belgium)

Tuesday 19 January

Room: Marriott Ballroom . . . . . .Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 1

Room: Conv. Ctr. Room A5 . . . . . Tues. 9:30 to 10:30 am

Vision

Session Chair: **Reiner Eschbach,** Xerox Corp.

9:30 am: **Artist's colour rendering of HDR scenes in 3D Mondrian colour-constancy experiments**, Carinna E. Parraman, Univ. of the West of England (United Kingdom); John J. McCann, McCann Imaging (United States); Alessandro Rizzi, Univ. degli Studi di Milano (Italy) . . . . .[7528-01]

9:50 am: **Pixel and spatial mechanisms of color constancy**, John J. McCann, McCann Imaging (United States); Carinna Parraman, Univ. of the West of England (United Kingdom); Alessandro Rizzi, Univ. degli Studi di Milano (Italy) . . . . . .[7528-02]

10:10 am: **Investigation and analysis of color terms in modern Japanese**, Shoji Tominaga, Ayaji Ono, Takahiko Horiuchi, Chiba Univ. (Japan). . . . . .[7528-03]

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

SESSION 2

Room: Conv. Ctr. Room A5 . . Tues. 11:00 am to 12:00 pm

Vision and Applications

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

11:00 am: **Color universal design: analysis of color category dependency on color vision type**, Yasuyo G. Ichihara, Kogakuin Univ. (Japan) and NPO Color Universal Design Organization (CUDO) (Japan); Natsuki Kojima, Kogakuin Univ. (Japan); Kei Ito, Univ. of Tokyo (Japan) and NPO Color Universal Design Organization (CUDO) (Japan). .[7528-04]

11:20 am: **An efficient perceived contrast evaluation model for natural images**, Qiao Song Chen, Choon-Woo Kim, Inha Univ. (Korea, Republic of) . . . . . .[7528-05]

11:40 am: **Age, colors, and ISO standards**, Floris L. van Nes, Technische Univ. Eindhoven (Netherlands) and ERGONES (Netherlands) . . .[7528-06]

Coffee Break . . . . . 12:00 to 1:30 pm

SESSION 3

Room: Conv. Ctr. Room A5 . . . . . Tues. 1:30 to 3:10 pm

Color Reproduction and Printing

Session Chair: **Michael A. Kriss,** Consultant

1:30 pm: **Modelling memory colour region for preference colour reproduction**, HuanZhao Zeng, Hewlett-Packard Co. (United States); Ronnier M. Luo, Univ. of Leeds (United Kingdom) . . . . . .[7528-07]

1:50 pm: **Real-time color measurement using active illuminant**, Shoji Tominaga, Takahiko Horiuchi, Akihiko Yoshimura, Chiba Univ. (Japan). . . . . .[7528-08]

2:10 pm: **Font rendering on a GPU-based raster image processor**, John L. Recker, Giordano B. Beretta, I-Jong Lin, Hewlett-Packard Labs. (United States) . . . . . .[7528-09]

2:30 pm: **The development of artists' novel colour palettes for inkjet printing**, Carinna E. Parraman, Univ. of the West of England (United Kingdom) . . . . . .[7528-10]

2:50 pm: **A joint color trapping strategy for raster images**, Haiyin Wang, Mireille Boutin, Jan P. Allebach, Purdue Univ. (United States) . . .[7528-11]

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

SESSION 4

Room: Conv. Ctr. Room A5 . . . . . Tues. 3:40 to 5:00 pm

Image Processing and Applications

Session Chair: **Gabriel G. Marcu,** Apple, Inc.

3:40 pm: **Descreening of scanned images**, Ilya V. Kurilin, Ilia V. Safonov, SAMSUNG Electronics Co., Ltd. (Russian Federation); HoKeun Lee, SangHo Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . .[7528-12]

4:00 pm: **Spectral matching imager with three-phase quadrature detection**, Akira Kimachi, Osaka Electro-Communication Univ. (Japan); Shiegeru Ando, The Univ. of Tokyo (Japan); Motonori Doi, Shogo Nishi, Osaka Electro-Communication Univ. (Japan) . . . . . .[7528-13]

4:20 pm: **Automatic white balance method for cellular phone**, Seul Ki Jang, Choon-Woo Kim, Kyoung Tae Kim, Inha Univ. (Korea, Republic of) . . . . . .[7528-14]

4:40 pm: **A method for wine color characterization for its nuances reproduction,** Bertrand Boisier, Al Amin Mansouri, Pierre Gouton, Philippe Trollat, Univ. de Bourgogne (France). . . . . .[7528-15]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.

Design of transducer structure parameters and materials characteristics analyses for electrical capacitance tomography system, Mei Qin, Harbin Univ. of Science and Technology (China) . . . . . .[7528-38]

Color schemes for encoding information in digital maps, Ruzhu Zeng, Liming Univ. (China); HuanZhao Zeng, Hewlett-Packard Co. (United States) . . . . . .[7528-39]

High-dynamic range image rendering method based on local center-surround response of human eye, Xiaoxia Wan, Dehong Xie, Wuhan Univ. (China) . . . . . .[7528-41]

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 5

Room: Conv. Ctr. Room A5 . . . . . .Wed. 9:30 to 10:30 am

Gamut Mapping

Session Chair: **Choon-Woo Kim,** Inha Univ. (Korea, Republic of)

9:30 am: **The use of spatially based complexity measures toward color gamut mapping and image resizing**, Vishal Monga, The Pennsylvania State Univ. (United States); Raja Bala, Claude S. Fillion, Xerox Corp. (United States). . . . . .[7528-16]

9:50 am: **Filter methods to preserve local contrast and to avoid artifacts in gamut mapping**, Marcel Meili, Dennis Küpper, Zofia Baranczuk, Ursina Caluori, Klaus Simon, EMPA (Switzerland) . . .[7528-17]

10:10 am: **Aspects of computational geometry in gamut mapping implementations**, Dennis Küpper, Klaus Simon, EMPA (Switzerland) . . . . . .[7528-18]

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

SESSION 6

Room: Conv. Ctr. Room A5 . . Wed. 11:00 am to 12:00 pm

Color Science

Session Chair: **Choon-Woo Kim,** Inha Univ. (Korea, Republic of)

11:00 am: **Supplementary dataset for color difference evaluation**, Alain Trémeau, Christoph Godau, Damien Muselet, Univ. Jean Monnet Saint-Etienne (France). . . . . .[7528-19]

11:20 am: **LabRGB: evaluation of the weighting factors**, Fumio Nakaya, Noboru Ohta, Fuji Xerox Co., Ltd. (Japan) . . . . . .[7528-20]

11:40 am: **Evaluation and accommodation of fluorescence in spectral imaging of art materials and historical documents**, William A. Christens-Barry, Equipoise Imaging, LLC (United States); Kenneth Boydston, MegaVision, Inc. (United States); Roger L. Easton, Jr., Rochester Institute of Technology (United States). . . . . .[7528-21]

Lunch Break . . . . . 12:00 to 1:30 pm

SESSION 7

Room: Conv. Ctr. Room A5 . . . . . .Wed. 1:30 to 3:00 pm

Displays

Session Chair: **Gabriel G. Marcu,** Apple Computer, Inc.

1:30 pm: **Display color synthesis in the space-time continuum** *(Invited Paper)*, Louis D. Silverstein, Vcd Sciences Inc (United States). . .[7528-22]

2:00 pm: **Design principles of wide gamut YCC color encoding space for effective signal sub-sampling**, Youngshin Kwak, Ulsan National Institute of Science and Technology (Korea, Republic of) . . . . .[7528-23]

2:20 pm: **Investigating color dependent depth, shape, and motion perception using 3D rendering on monoscopic displays**, Fritz Lebowsky, STMicroelectronics (France) . . . . . .[7528-24]

2:40 pm: **Adaptive color reproduction method to various user's monitor environment in color printer**, Daechul Kim, In-Su Jang, Kyungpook National Univ. (Korea, Republic of); Chang-Hwan Son, Kyeong-Man Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Yeong-Ho Ha, Kyungpook National Univ. (Korea, Republic of) . .[7528-25]

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

SESSION 8

Room: Conv. Ctr. Room A5 . . . . . .Wed. 3:30 to 5:00 pm

The Dark Side of Color

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

3:30 pm: **Mind over matter** *(Invited Paper)*, Jennifer Gille, Qualcomm Inc. (United States). . . . . .[7528-26]

3:45 pm: **Size matters: improved color-difference estimation for small visual targets** *(Invited Paper, Presentation Only)*, Robert C. Carter, U.S. Navy (retired) (United States); Louis D. Silverstein, Vcd Sciences Inc (United States). . . . . .[7528-27]

4:00 pm: **Controlled versus uncontrolled viewing conditions in color evaluation** *(Invited Paper)*, Reiner Eschbach, Xerox Corp. (United States) . . . . . .[7528-28]

4:15 pm: **Globalization of color** *(Invited Paper)*, Paul M. Hubel, Apple Computer, Inc. (United States) . . . . . .[7528-29]

4:30 pm: **Color naming: color scientists do it between Munsell Sheets of Color** *(Invited Paper)*, Giordano B. Beretta, Nathan Moroney, Hewlett-Packard Labs. (United States). . . . . .[7528-30]

4:45 pm: **The appearance of illusions in the delusion of reality** *(Invited Paper)*, John J. McCann, McCann Imaging (United States) . . . . .[7528-31]

Thursday 21 January

SESSION 9

Room: Conv. Ctr. Room A5 . . . . . .Thurs. 9:00 to 10:00 am

Halftoning I

Session Chair: **Jan P. Allebach,** Purdue Univ.

9:00 am: **Memory efficient hierarchical error diffusion**, Zhen He, Zhigang Fan, Xerox Corp. (United States). . . . . .[7528-32]

9:20 am: **Clustered-dot color halftone watermarks using spatial frequency and color separability**, Basak Oztan, Gaurav Sharma, Univ. of Rochester (United States) . . . . . .[7528-33]

9:40 am: **Moiré-based autostereoscopic images by duplex printing on transparencies**, Shen-Ge Wang, Xerox Corp. (United States) . .[7528-34]

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

SESSION 10

Room: Conv. Ctr. Room A5 . . . . .Thurs. 10:30 to 11:30 am

Halftoning II

Session Chair: **Reiner Eschbach,** Xerox Corp.

10:30 am: **Electrophotographic model based halftoning**, Puneet Goyal, Madhur Gupta, Purdue Univ. (United States); Doron Shaked, Carl Staelin, Mani Fischer, Hewlett-Packard Labs. Israel Ltd. (Israel); Omri Shacham, Hewlett-Packard Indigo Ltd. (Israel); Rodolfo Jodra, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) . .[7528-35]

10:50 am: **Halftone moiré due to imager distortion**, Orhan Bulan, Univ. of Rochester (United States); Robert Loce, Beilei Xu, Xerox Corp. (United States) . . . . . .[7528-36]

11:10 am: **Clustered-dot halftoning with direct binary search**, Madhur Gupta, Purdue Univ. (United States); Carl Staelin, Mani Fischer, Hewlett-Packard Labs. Israel Ltd. (Israel); Omri Shacham, Hewlett-Packard Indigo Ltd. (Israel); Rodolfo Jodra, Hewlett-Packard Co. (United States); Jan P. Allebach, Purdue Univ. (United States) . . . . . .[7528-37]

Courses of Related Interest

Register for Courses at the Cashier desk.

SC968 Principles of Digital Color Management (Madden) Monday, 1:30 to 5:30 pm
SC930 Optimizing Color Reproduction Systems (Marcu) Monday, 8:30 am to 12:30 pm
SC871 Noise, Image Processing, and their Influence on Resolution (Wueller, Matherson) Sunday, 1:30 to 5:30 pm
SC060 Stereoscopic Display Application Issues (Merritt, Woods) Sunday, 8:30 am to 5:30 pm

Image Quality and System Performance VII

Conference Chairs: **Susan P. Farnand,** Rochester Institute of Technology; **Frans Gaykema,** Océ Technologies B.V. (Netherlands)

Program Committee: **Peter D. Burns,** Carestream Health, Inc.; **Majed Chambah,** Univ. de Reims Champagne-Ardenne (France); **Luke C. Cui,** Lexmark International, Inc.; **Mark D. Fairchild,** Rochester Institute of Technology; **Dirk W. Hertel,** Melexis USA; **Robin B. Jenkin,** Aptina Imaging; **Sang Ho Kim,** Samsung Electronics Co., Ltd. (Korea, Republic of); **Lindsay William MacDonald,** London College of Communication (United Kingdom); **Yoichi Miyake,** Chiba Univ. (Japan); **Göte S. Nyman,** Univ. of Helsinki (Finland); **D. René Rasmussen,** Xerox Corp.; **Sophie Triantaphillidou,** Univ. of Westminster (United Kingdom); **Eric K. Zeise,** Kodak Graphic Communications Group

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room B2 . . . . . .Mon. 9:00 to 10:20 am

Image Quality Evaluation I

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

9:00 am: **Comparison of subjective assessment protocols for digital cinema applications**, Mohamed-Chaker Larabi, Univ. de Poitiers (France) . . . . . .[7529-01]

9:20 am: **Comparing subjective image quality measurement methods for the creation of public databases**, Judith A. Redi, Univ. degli Studi di Genova (Italy); Hantao Liu, Hani Alers, Technische Univ. Delft (Netherlands); Rodolfo Zunino, Univ. degli Studi di Genova (Italy); Ingrid Heynderickx, Technische Univ. Delft (Netherlands) and Philips Research Nederland B.V. (Netherlands) . . . . . .[7529-02]

9:40 am: **Validating a texture metric for camera phone images using a texture-based softcopy attribute ruler**, Jonathan B. Phillips, Douglas W. Christoffel, Eastman Kodak Co. (United States) . . . . . .[7529-03]

10:00 am: **Qualitative evaluation of the visual performance of image processing pipes**, Göte S. Nyman, Univ. of Helsinki (Finland); Jukka Häkkinen, Nokia Research Ctr. (Finland); Eero-Matti Koivisto, Tuomas Leisti, Toni Virtanen, Univ. of Helsinki (Finland); Tero Vuori, Nokia Research Ctr. (Finland) . . . . . .[7529-04]

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

SESSION 2

Room: Conv. Ctr. Room B2 . . .Mon. 10:50 am to 12:30 pm

Image Quality Evaluation II

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

10:50 am: **Videospace: using context information for classification**, Timo S. Säämänen, Toni Virtanen, Göte Nyman, Univ. of Helsinki (Finland) . . . . . .[7529-05]

11:10 am: **Studying the risks of optimizing the image quality in saliency regions at the expense of background content**, Hani Alers, Hantao Liu, Technische Univ. Delft (Netherlands); Judith A. Redi, Univ. degli Studi di Genova (Italy); Ingrid Heynderickx, Philips Research Nederland B.V. (Netherlands) . . . . . .[7529-06]

11:30 am: **Scene classification with respect to image quality measurements**, Kyung-Hoon Oh, Sophie Triantaphillidou, Ralph E. Jacobson, Univ. of Westminster (United Kingdom) . . . . . .[7529-07]

11:50 am: **Development and measurement of the goodness of test images for visual print quality evaluation**, Raisa Halonen, Mikko Nuutinen, Reijo Asikainen, Pirkko T. Oittinen, Helsinki Univ. of Technology (Finland) . . . . . .[7529-08]

12:10 pm: **Multidimensional image selection and classification system based on visual feature extraction and scaling**, Francesco Mancusi, Sophie Triantaphillidou, Elizabeth Allen, Univ. of Westminster (United Kingdom) . . . . . .[7529-09]

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

SESSION 3

Room: Conv. Ctr. Room B2 . . . . . .Mon. 2:00 to 3:20 pm

Image Quality Metrics

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

2:00 pm: **Comparison of image quality assessment algorithms on compressed images**, Christophe M. Charrier, Univ. de Cherbourg (France); Kenneth Knoblauch, INSERM (France); Anush K. Moorthy, Alan C. Bovik, The Univ. of Texas at Austin (United States); Laurence T. Maloney, New York Univ. (United States) . . . . . .[7529-10]

2:20 pm: **No-reference metrics for jpeg: analysis and refinement using wavelets**, Fabrizio Marini, Claudio Cusano, Raimondo Schettini, Univ. degli Studi di Milano-Bicocca (Italy) . . . . . .[7529-11]

2:40 pm: **Perceptually optimal compression for heterogeneous image content in the context of medical networked applications**, Geert Braeckman, Vrije Univ. Brussel (Belgium); Cédric Marchessoux, Quentin J. A. Besnehard, Barco N.V. (Belgium); Joeri Barbarien, Peter Schelkens, Vrije Univ. Brussel (Belgium) . . . . . .[7529-12]

3:00 pm: **The use of vision-based image quality metrics to predict low-light performance of camera phones**, Bror O. Hultgren, Image Integration, Inc. (United States); Dirk W. Hertel, Melexis USA (United States) . . . . . .[7529-13]

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

SESSION 4

Room: Conv. Ctr. Room B2 . . . . . .Mon. 3:50 to 5:20 pm

Print Quality Metrics

Session Chair: **D. René Rasmussen,** Xerox Corp.

3:50 pm: **Development of ISO/IEC 29112: test charts and methods for measuring monochrome printer resolution** *(Invited Paper)*, Eric K. Zeise, Kodak Graphic Communications Group (United States) . . . . . .[7529-14]

4:20 pm: **Relating electrophotographic printing model and ISO13660 standard attributes**, Elisa H. Barney Smith, Boise State Univ. (United States) . . . . . .[7529-15]

4:40 pm: **New measurement method of banding using spatial features for laser printer**, Ki-Youn Lee, Bang Yousun, Choh Heui-Keun, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . .[7529-16]

5:00 pm: **Reduced-reference quality metrics for measuring the image quality of digitally printed natural images**, Mikko Nuutinen, Raisa Halonen, Helsinki Univ. of Technology (Finland); Tuomas M. Leisti, Univ. of Helsinki (Finland); Pirkko T. Oittinen, Helsinki Univ. of Technology (Finland) . . . . . .[7529-18]

Tuesday 19 January

Room: Marriott Ballroom . . . . . .Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 5

Room: Conv. Ctr. Room B2 . . . . . Tues. 9:30 to 10:30 am

System Performance: Image Capture I

Session Chair: **Robin B. Jenkin,** Aptina Imaging Corp.

9:30 am: **The Uncertainty of Scanner Illumination**, Luke C. Cui, Lexmark International, Inc. (United States) . . . . . .[7529-19]

9:50 am: **Evaluating the quality of EDOF in camera phones**, Kalin Atanassov, Sergio R. Goma, Qualcomm, Inc. (United States) . . .[7529-20]

10:10 am: **Differences of digital camera resolution metrology to describe noise reduction artifacts**, Uwe Artmann, Dietmar Wueller, Image Engineering Dietmar Wüller (Germany) . . . . . .[7529-21]

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

SESSION 6

Room: Conv. Ctr. Room B2 . . Tues. 11:00 am to 12:20 pm

System Performance: Image Capture II

Session Chair: **Dirk W. Hertel,** Sensata Technologies, Inc.

11:00 am: **Estimating the noise influence on recovering reflectances**, Mikiya Hironaga, Noriyuki Shimano, Kinki Univ. (Japan). . . . . .[7529-22]

11:20 am: **Objective measures for quality assessment of automatic skin enhancement algorithms**, Mihai Ciuc, Adrian Capata, Corneliu Florea, Tessera (FotoNation) Romania SRL (Romania). . . . . .[7529-23]

11:40 am: **Remote sensing image enhancement integrating its local statistical characteristics**, Qiang He, Mississippi Valley State Univ. (United States); Henry Chu, Univ. of Louisiana at Lafayette (United States) . . . . . .[7529-24]

12:00 pm: **A wavelet-based quality measure for evaluating the degradation of pan-sharpened images due to local contrast inversion**, Vladimir Buntilov, Mahidol Univ. (Thailand). . . . . .[7529-25]

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

SESSION 7

Room: Conv. Ctr. Room B2 . . . . . Tues. 1:50 to 3:10 pm

System Performance: Image Display I

Session Chair: **Luke C. Cui,** Lexmark International, Inc.

1:50 pm: **Quantifying performance of overlapped displays**, Robert A. Ulichney, Hewlett-Packard Co. (United States); Ali Ghajarnia, AG Consultants (United States); Niranjan Damera-Venkata, Hewlett-Packard Co. (United States) . . . . . .[7529-27]

2:10 pm: **Influence of color and details in image content on flicker visibility in a scanning backlight LCD**, Lili Wang, Yan Tu, Li Chen, Ling Xia, Xuefei Zhong, Southeast Univ. (China). . . . . .[7529-28]

2:30 pm: **HVS-based image quality assessment for digital cinema**, Junyong You, Fitri N. Rahayu, Ulrich Reiter, Andrew Perkis, Norwegian Univ. of Science and Technology (Norway) . . . . . .[7529-29]

2:50 pm: **Automatic quality verification of the TV sets**, Dusica Marijan, Vladimir Zlokolica, Nikola Teslic, Vukota Pekovic, Miodrag Temerinac, Univ. of Novi Sad (Serbia) . . . . . .[7529-30]

Coffee Break . . . . . 3:10 to 4:00 pm

SESSION 8

Room: Conv. Ctr. Room B2 . . . . . Tues. 3:40 to 5:00 pm

System Performance: Image Display II

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

3:40 pm: **Maximizing inpainting efficiency without sacrificing quality**, Paul A. Ardis, Christopher M. Brown, Univ. of Rochester (United States) . . . . . .[7529-31]

4:00 pm: **Loss of interpretability due to compression effects as measured by the new video NIIRS**, Darrell L. Young, Raytheon Intelligence & Information Systems (United States); Tariq Bakir, Harris Corp. (United States); Robert Butto, Jr., Photon Research Associates, Inc. (United States); Charles Duffield, Moriarty and Associates (United States); Frederick V. Petitti, Raytheon Intelligence & Information Systems (United States) . . . . . .[7529-32]

4:20 pm: **Characteristic of color gamut related with MPEG2 compression**, Tae-Hyoung Lee, Yeong-Ho Ha, Kyungpook National Univ. (Korea, Republic of). . . . . .[7529-33]

4:40 pm: **Evaluation of AL-FEC performance for IP television services QoS,** Elena Mammi, Univ. degli Studi di Roma Tre (Italy); Giuseppe Russo, Fondazione Ugo Bordoni (Italy); Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) . . . . . .[7529-34]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.

A fast method for video deblurring based on a combination of gradient methods and denoising algorithms in Matlab and C environments, Zeinab Mirzadeh, Razieh Mehri, Hossein Rabbani, Isfahan Univ. (Iran, Islamic Republic of). . . . . .[7529-35]

Camera characterization for face recognition under active near-infrared illumination, Thorsten Gernoth, Rolf-Rainer Grigat, Technische Univ. Hamburg-Harburg (Germany) . . . . . .[7529-36]

Image quality assessment using singular vectors, Chin-Ann Yang, Mostafa Kaveh, Univ. of Minnesota, Twin Cities (United States) .[7529-38]

No-reference metrics for demosaicing, Fabrizio Marini, Raimondo Schettini, Francesca Gasparini, Univ. degli Studi di Milano-Bicocca (Italy); Mirko Guarnera, STMicroelectronics (Italy). . . . . .[7529-39]

Visually lossless compression of digital hologram sequences, Emmanouil Darakis, National Univ. of Ireland, Maynooth (Ireland); Marcin Kowiel, Risto Näsänen, Univ. of Oulu (Finland); Thomas Naughton, National Univ. of Ireland, Maynooth (Ireland) and Univ. of Oulu (Finland). .[7529-40]

Courses of Related Interest

Register for Courses at the Cashier desk.

SC812 Perceptual Metrics for Image Quality Evaluation (Pappas, Hemami) Sunday, 1:30 to 5:30 pm
SC762 Device Simulation for Image Quality Evaluation (Farrell, Catrysse, Wandell) Sunday, 8:30 am to 5:30 pm
SC871 Noise, Image Processing, and their Influence on Resolution (Wueller, Matherson) Sunday, 1:30 to 5:30 pm

Visualization and Data Analysis 2010

Conference Chairs: **Jinah Park,** Korea Advanced Institute of Science and Technology (Korea, Republic of); **Ming C. Hao,** Hewlett-Packard Labs.; **Pak Chung Wong,** Pacific Northwest National Lab.; **Chaomei Chen,** Drexel Univ.*Conference Co-Chairs:* **Katy Börner,** Indiana Univ.; **Matti T. Gröhn,** Ctr. for Scientific Computing (Finland); **Jonathan C. Roberts,** Bangor Univ. (United Kingdom)

Program Committee: **Uwe Brinkschulte,** Johann Wolfgang Goethe-Univ. Frankfurt am Main (Germany); **Paul Craig,** Napier Univ. (United Kingdom); **Steve Eick,** Visual Insights; **Robert F. Erbacher,** Utah State Univ.; **Daniel Keim,** Univ. Konstanz (Germany); **Zhanping Liu,** Mississippi State Univ.; **Joerg Meyer,** Univ. of California, Irvine; **Chris North,** Virginia Polytechnic Institute and State Univ.; **Hans-Georg Pagendarm,** Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); **Alex T. Pang,** Univ. of California, Santa Cruz; **Aaron J. Quigley,** Univ. College Dublin (Ireland); **William Ribarsky,** The Univ. of North Carolina at Charlotte; **Tobias Schreck,** Technische Univ. Darmstadt (Germany); **Deborah E. Silver,** Rutgers Univ.; **Kalpathi R. Subramanian,** The Univ. of North Carolina at Charlotte; **Yinlong Sun,** Purdue Univ.; **J. Edward Swan II,** Naval Research Lab.; **Matthew O. Ward,** Worcester Polytechnic Institute; **Yingcai Xiao,** Univ. of Akron; **William J. Yurcik,** Univ. of Illinois at Urbana-Champaign

Co-Sponsored by: Hewlett Packard

Monday 18 January

Room: . . . . . Mon. 10:40 to 11:00 am

Introduction

SESSION 1

Room: Conv. Ctr. Room B1 . . . Mon. 11:00 am to 12:30 pm

Uncertain Data Exploration and Coloring

Session Chair: **Robert F. Erbacher,** Utah State Univ.

11:00 am: **Interactive visualization of fuzzy set operations**, Yeseul Park, Korea Advanced Institute of Science and Technology (Korea, Republic of) . . . . . .[7530-01]

11:30 am: **Tile-based parallel coordinates and its application in financial visualization**, Jamal M. Alsakran, Ye Zhao, Xinlei Zhao, Kent State Univ. (United States) . . . . . .[7530-02]

11:50 am: **Linked exploratory visualizations for uncertain MR spectroscopy data**, David Feng, Lester Kwock, Yueh Lee, Russell M. Taylor II, The Univ. of North Carolina at Chapel Hill (United States) . . . . . .[7530-03]

12:10 pm: **Experiments on effective color combinations in map-based information visualization**, Sussan Einakian, The Univ. of Alabama in Huntsville (United States) . . . . . .[7530-04]

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

SESSION 2

Room: Conv. Ctr. Room B1 . . . . . Mon. 2:00 to 3:30 pm

Techniques for Binning Clustering and Ontology Visualization

Session Chair: **Pak Chung Wong,** Pacific Northwest National Lab.

2:00 pm: **Visual analytics of large multidimensional data using variable binned scatter plots**, Ming C. Hao, Umeshwar Dayal, Ratnesh K. Sharma, Hewlett-Packard Labs. (United States); Daniel A. Keim, Halldór Janetzko, Univ. Konstanz (Germany). . . . . .[7530-05]

2:30 pm: **Different geometries in ontology visualization**, Julia Dmitrieva, Fons J. Verbeek, Leiden Univ. (Netherlands) . . . . . .[7530-06]

2:50 pm: **Critical region analysis of scalar fields in arbitrary dimensions**, Madjid Allili, Bishop's Univ. (Canada); Marc Ethier, Tomasz Kaczynski, Univ. de Sherbrooke (Canada) . . . . . .[7530-07]

3:10 pm: **A visual approach to improve clustering based on cluster ensembles**, Jianping Zhou, Shawn Konecni, Kenneth A. Marx, Georges G. Grinstein, Univ. of Massachusetts Lowell (United States) . . . . . .[7530-08]

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

SESSION 3

Room: Conv. Ctr. Room B1 . . . . . Mon. 4:00 to 5:10 pm

Visual Exploration

Session Chair: **Zaixian Xie,** Worcester Polytechnic Institute

4:00 pm: **Multichannel transfer function with dimensionality reduction**, Han Suk Kim, Jurgen P. Schulze, Angela C. Cone, Gina E. Sosinsky, Maryann E. Martone, Univ. of California, San Diego (United States) . . . . . [7530-09]

4:30 pm: **Visual discovery in multivariate binary data**, Boris Kovalerchuk, Florian Delizy, Logan Riggs, Central Washington Univ. (United States); Evgenii Vityaev, Institute of Mathematics (Russian Federation) . .[7530-10]

4:50 pm: **Vide: an editor for the visual exploration of raw data**, Michael Wörner, Guido Reina, Sebastian Grottel, Thomas Ertl, Univ. Stuttgart (Germany) . . . . . .[7530-11]

Tuesday 19 January

Room: . . . . . Tues. 9:30 to 9:40 am

Introduction

Room: Marriott Ballroom . . . . . Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 4

Room: Conv. Ctr. Room B1 . . . . . Tues. 9:40 to 10:20 am

Invited Presentation

Session Chair: **Tobias Schreck,** Technische Univ. Darmstadt (Germany)

9:40 am: **Visual analytics for operational business intelligence** *(Invited Paper)*, Umeshwar Dayal, Hewlett-Packard Labs. (United States)[7530-12]

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

SESSION 5

Room: Conv. Ctr. Room B1 . . Tues. 10:50 am to 12:00 pm

Evaluation and Visual Design

Session Chair: **Pak Chung Wong,** Pacific Northwest National Lab.

10:50 am: **Techniques for precision-based visual analysis of projected data**, Tobias Schreck, Tatiana von Landesberger, Sebastian Bremm, Technische Univ. Darmstadt (Germany) . . . . . .[7530-13]

11:20 am: **Flow Web: a graph based user interface for 3D flow field exploration**, Lijie Xu, Han-wei Shen, The Ohio State Univ. (United States) . . . . . .[7530-14]

11:40 am: **Visualizing search results: evaluating an iconic visualization**, M. Erfani Joorabchi, A. Dalvandi, H. Seifi, L. Bartram, C. D. Shaw, Simon Fraser Univ. (Canada) . . . . . .[7530-15]

Lunch Break . . . . . 12:00 to 1:30 pm

SESSION 6

Room: Conv. Ctr. Room B1 . . . . . Tues. 1:30 to 3:00 pm

Visualization of Framework and Methodology

Session Chair: **Robert F. Erbacher,** Utah State Univ.

1:30 pm: **Cognitive task analysis of network analysts and managers for network situational awareness**, Robert F. Erbacher, Utah State Univ. (United States); Deborah A. Frincke, Pacific Northwest National Lab. (United States). . . . . .[7530-16]

2:00 pm: **Applying the metro map to software development management**, Amaia Aguirregoitia, Javier Dolado, Concepcion Presedo, Univ. del País Vasco (Spain) . . . . . .[7530-17]

2:20 pm: **Operator-centric design patterns for information visualization software**, Zaixian Xie, Zhenyu Guo, Matthew O. Ward, Elke A. Rundensteiner, Worcester Polytechnic Institute (United States) .[7530-18]

2:40 pm: **Distributed visualization framework architecture**, Oleg Mishchenko, Sundaresan Raman, Roger Crawfis, The Ohio State Univ. (United States). . . . . .[7530-19]

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

Room: Conv. Ctr. Room B1 . . . . . Tues. 3:30 to 4:20 pm

Poster Pop Session

Session Chair: **Ming C. Hao,** Hewlett-Packard Labs.Authors will have 10 minutes each to preview their presentation for the Interactive Paper Session Tuesday evening.

MTVis: tree exploration using a multitouch interface, Soon Tee Teoh, David Andrews, San José State Univ. (United States) . . . . . .[7530-20]

Visualizing multidimensional data through granularity-dependent spatialization, Sofia Kontaxaki, Eleni Tomai, Margarita Kokla, Marinos Kavouras, National Technical Univ. of Athens (Greece) . . . . . .[7530-21]

Multi-variate visualization of 3D turbulent flow data, Sheng-Wen Wang, Victoria Interrante, Ellen Longmire, Univ. of Minnesota (United States) . . . . . .[7530-22]

Lifting business process diagrams to 2.5 dimensions, Philip J. Effinger, Johannes Spielmann, Eberhard Karls Univ. Tübingen (Germany) [7530-23]

Room: Conv. Ctr. Room B1 . . . . . Tues. 4:20 to 5:20 pm

Discussion Session

Room: Conv. Ctr. Room B1 . . . . . Tues. 5:20 to 5:30 pm

Closing Remarks

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.

Computer Vision and Image Analysis of Art

Conference Chairs: **David G. Stork,** Ricoh Innovations, Inc. and Stanford Univ.; **Jim Coddington,** Museum of Modern Art; **Anna Bentkowska-Kafel,** King's College London (United Kingdom)

Program Committee: **Ingrid Daubechies,** Princeton Univ.; **Charles R. Dyer,** Univ. of Wisconsin-Madison; **Roger L. Easton, Jr.,** Rochester Institute of Technology; **Daniel J. Graham,** Dartmouth College; **Shannon Hughes,** Princeton Univ.; **Mohammad Tanvir Irfan,** Stony Brook Univ.; **Siwei Lyu,** SUNY Albany; **Daniel N. Rockmore,** Dartmouth College; **Robert Sablatnig,** Technische Univ. Wien (Austria)

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room A5 . . . . . .Mon. 8:30 to 10:00 am

Digital Imaging and Art History

Session Chair: **Ron Spronk,** Queen's Univ. (Canada)

8:30 am: **What art historians want to know from computer vision scientists, but were afraid to ask** *(Invited Paper, Presentation Only)*, David M. Stone, Univ. of Delaware (United States). . . . . .[7531-01]

9:00 am: **Experimental study of canvas characterization for paintings**, Bruno Cornelis, Ann Dooms, Peter Schelkens, Jan Cornelis, Vrije Univ. Brussel (Belgium). . . . . .[7531-02]

9:20 am: **Uncovering a lost painting of Vincent van Gogh**, Andrei F. Brasoveanu, Ingrid Daubechies, Shannon Hughes, Princeton Univ. (United States); Joris Dik, Delft Univ. of Technology (Netherlands); Koen Janssens, Univ. of Antwerp (Belgium) . . . . . .[7531-03]

9:40 am: **Inferring Caravaggio's studio lighting and praxis in "The Calling of St. Matthew" by computer graphics modeling**, Gabor Nagy, Sony Computer Entertainment America Inc. (United States); David G. Stork, Ricoh Innovations, Inc. (United States). . . . . .[7531-04]

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

SESSION 2

Room: Conv. Ctr. Room A5 . . . . . .Mon. 10:30 to 11:50 am

Image Reconstruction and 3D Imaging of Works of Art

Session Chair: **David G. Stork,** Ricoh Innovations, Inc.

10:30 am: **Recognizing characters of ancient manuscripts**, Markus Diem, Robert Sablatnig, Technische Univ. Wien (Austria) . . . . . .[7531-05]

10:50 am: **Document reconstruction by layout analysis of snippets**, Florian Kleber, Markus Diem, Robert Sablatnig, Technische Univ. Wien (Austria) . . . . . .[7531-06]

11:10 am: **3D acquisition of historical coins and its application area in numismatics**, Sebastian Zambanini, Technische Univ. Wien (Austria); Mario Schlapke, Thüringisches Landesamt für Archäologische Denkmalpflege (Germany); Martin Kampel, Andreas Müller, Vienna Univ. of Technology (Austria) . . . . . .[7531-07]

11:30 am: **Text recovery from the ultraviolet-fluorescence spectrum for a treatise in the Archimedes palimpsest**, Kevin Bloechl, Roger L. Easton, Jr., Rochester Institute of Technology (United States) . .[7531-08]

Lunch Break . . . . . 11:50 am to 1:20 pm

SESSION 3

Room: Conv. Ctr. Room A5 . . . . . .Mon. 1:20 to 3:00 pm

Digital Imaging and Style

Session Chair: **Anna Bentkowska-Kafel,** King's College London (United Kingdom)

1:20 pm: **Digital analysis and restoration of Daguerreotypes**, Xiaoqing Tang, Paul A. Ardis, Ross Messing, Christopher M. Brown, Randal C. Nelson, Univ. of Rochester (United States); Patrick Ravines, Ralph Wiegandt, George Eastman House (United States) . . . . . .[7531-09]

1:40 pm: **Discovering salient characteristics of authors of artworks**, Maryam Moslemi, Peter Bajcsy, Univ. of Illinois at Urbana-Champaign (United States). . . . . .[7531-10]

2:00 pm: **Stylometrics of artwork: uses and limitations**, James M. Hughes, Daniel J. Graham, Daniel Rockmore, Dartmouth College (United States) . . . . . .[7531-11]

2:20 pm: **Standardized system for multispectral imaging of palimpsests**, Roger L. Easton, Jr., Rochester Institute of Technology (United States); Keith T. Knox, Boeing LTS Inc. (United States); William A. Christens-Barry, Equipoise Imaging, LLC (United States); Kenneth Boydston, Megavision Inc. (United States); Michael B. Toth, R. B. Toth Associates (United States); Douglas Emery, EmeryIT (United States); William G. Noel, Walters Art Museum (United States) . . . . . .[7531-12]

2:40 pm: **Advanced image analysis for the preservation of cultural heritage**, Fenella G. France, The Library of Congress (United States); William A. Christens-Barry, Equipoise Imaging, LLC (United States); Michael B. Toth, R. B. Toth Associates (United States); Kenneth Boydston, Megavision Inc. (United States). . . . . .[7531-13]

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

SESSION 4

Room: Conv. Ctr. Room A5 . . . . . .Mon. 3:30 to 5:30 pm

Applied Art History and Image Analysis

Session Chair: **James Coddington,** Museum of Modern Art

3:30 pm: **Analysis of painting materials on multimodal microscopic level**, Barbara Zitova, Miroslav Bene?, Institute of Information Theory and Automation (Czech Republic); Janka Hradilova, Academy of Fine Arts (Czech Republic); David Hradil, Institute of Inorganic Chemistry of the ASCR, v.v.i. (Czech Republic) . . . . . .[7531-14]

3:50 pm: **Inferring compositional style in the neo-plastic paintings of Piet Mondrian by machine learning**, David Andrzejewski, Univ. of Wisconsin-Madison (United States); David G. Stork, Ricoh Innovations, Inc. (United States) and Stanford Univ. (United States); Jerry Zhu, Univ. of Wisconsin-Madison (United States); Ron Spronk, Queen's Univ. (Canada) . . . . . .[7531-15]

4:10 pm: **Multiple visual features, regularization, and machine learning for the authentication of Jackson Pollock's drip painting**, Mohammad T. Irfan, Stony Brook Univ. (United States); David G. Stork, Ricoh Innovations, Inc. (United States); Jim Coddington, Museum of Modern Art (United States). . . . . .[7531-16]

4:30 pm: **Documentation instead of visualization: applications of 3D scanning in works of art analysis**, Eryk Bunsch, Museum Palace at Wilanów (Poland); Robert Sitnik, Warsaw Univ. of Technology (Poland) . . . . . .[7531-21]

4:50 pm: **Reflections on Parmigianino's "Self Portrait in a Convex Mirror": a computer graphics reconstruction of the artist's studio**, David G. Stork, Ricoh Innovations, Inc. (United States) . . . . . .[7531-18]

5:10 pm: **Pigment identification based on spectral reflectance reconstructed from RGB images for cultural heritage investigations**, Jay Arre O. Toque, Yusuke Murayama, Ari Ide-Ektessabi, Kyoto Univ. (Japan). . . . . .[7531-19]

Tuesday 19 January

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

Demonstrations . . . . . 5:30 to 8:00 pm

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Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.

Integration of high-resolution spatial and spectral data acquisition systems to provide complementary datasets for cultural heritage application, Camille Simon, Univ. de Bourgogne (France) and Mainz Univ. of Applied Sciences (Germany); Uwe Huxhagen, Mainz Univ. of Applied Sciences (Germany); Al Amin Mansouri, Univ. de Bourgogne (France); Adrian Heritage, Cologne Univ. of Applied Sciences (Germany); Frank Boochs, Mainz Univ. of Applied Sciences (Germany); Franck S. Marzani, Univ. de Bourgogne (France). . . . . .[7531-20]

Color and texture signatures in Amorsolo paintings, Maricor N. Soriano, Cherry May Palomero, Univ. of the Philippines (Philippines); Larry Cruz, National Historical Institute (Philippines); Clod Marlan Krister Yambao, Julie Mae Dado, Janice May Salvador-Campaner, Univ. of the Philippines (Philippines) . . . . . .[7531-22]

Analytical imaging of cultural heritage paintings using digitally archive images, Jay Arre O. Toque, Yuji Sakatoku, Ari Ide-Ektessabi, Kyoto Univ. (Japan). . . . . .[7531-23]

Multifractal and statistical comparison of the painting techniques of adults and children, Jonas R. Mureika, Loyola Marymount Univ. (United States); Richard P. Taylor, Matthew Fairbanks, Univ. of Oregon (United States) . . . . . .[7531-24]

Computational inter-painting search by cross-correlation for evidence of counterproofing in the works of Jan van der Heyden, Xu Liu, David G. Stork, Ricoh Innovations, Inc. (United States); Petria Noble, Royal Picture Gallery Mauritshuis (Netherlands) . . . . . .[7531-25]

Image Processing: Algorithms and Systems VIII

Conference Chairs: **Jaakko T. Astola,** Tampere Univ. of Technology (Finland); **Karen O. Egiazarian,** Tampere Univ. of Technology (Finland)

Program Committee: **Til Aach,** RWTH Aachen (Germany); **Sos S. Agaian,** The Univ. of Texas at San Antonio; **Junior Barrera,** Univ. de São Paulo (Brazil); **Reiner Creutzburg,** Fachhochschule Brandenburg (Germany); **Paul D. Gader,** Univ. of Florida; **Atanas P. Gotchev,** Tampere Univ. of Technology (Finland); **John C. Handley,** Xerox Corp.; **Vladimir Vasilyevich Lukin,** National Aerospace Univ. (Ukraine); **Stephen Marshall,** Univ. of Strathclyde (United Kingdom); **Alessandro Neri,** Univ. degli Studi di Roma Tre (Italy); **Françoise J. Prêteux,** Institut National des Télécommunications (France); **Giovanni Ramponi,** Univ. degli Studi di Trieste (Italy); **Jagath K. Samarabandu,** The Univ. of Western Ontario (Canada); **Ivan W. Selesnick,** Polytechnic Institute of NYU; **Akira Taguchi,** Musashi Institute of Technology (Japan)

Tuesday 19 January

Room: Marriott Ballroom . . . . . .Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 1

Room: Conv. Ctr. Room B3 . . . . . Tues. 9:30 to 10:10 am

Imaging Filtering

9:30 am: **Latent common origin of bilateral filter and non-local means filter**, Masayuki Tanaka, Masatoshi Okutomi, Tokyo Institute of Technology (Japan) . . . . . .[7532-01]

9:50 am: **One-dimensional and two-dimensional signal denoising using modified spectral subtraction algorithm**, Amjad Odetallah, Univ. of Texas at San Antonio (United States) . . . . . .[7532-02]

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

SESSION 2

Room: Conv. Ctr. Room B3 . . Tues. 10:40 am to 12:00 pm

Image Processing Algorithms I

10:40 am: **A new edge detection algorithm in image processing based on LIP-ratio approach**, Sos S. Agaian, Ali Almuntashri, The Univ. of Texas at San Antonio (United States) . . . . . .[7532-03]

11:00 am: **An evaluation of automated contrast enhancement algorithms**, Alin Brindusescu, Arsalan Malik, Bernd Hillers, Friedrich Wilhelm Bessel Institute (Germany); Axel Graeser, Univ. Bremen (Germany) . . . . . .[7532-04]

11:20 am: **Edge-detected detail enhancement through synthesis of multilight images**, Jinghong Zheng, Zhengguo Li, Susanto Rahardja, Susu Yao, A*STAR Institute for Infocomm Research (Singapore) . . . . .[7532-05]

11:40 am: **Blurriness estimation in video frames: a study on smooth objects and textures**, Leonardo Abate, Francesca Dardi, Giovanni Ramponi, Univ. degli Studi di Trieste (Italy). . . . . .[7532-06]

Lunch/Exhibition Break . . . . . 12:00 to 1:30 pm

SESSION 3

Room: Conv. Ctr. Room B3 . . . . . Tues. 1:30 to 5:00 pm

Image Processing Algorithms II

1:30 pm: **A method for blind estimation of spatially correlated noise characteristics**, Nikolay N. Ponomarenko, Vladimir V. Lukin, National Aerospace Univ. (Ukraine); Karen O. Egiazarian, Jaakko T. Astola, Tampere Univ. of Technology (Finland) . . . . . .[7532-07]

1:50 pm: **A robust and fast approach for multiple image components stitching**, Mustafa Jaber, Eli Saber, Rochester Institute of Technology (United States); Mark Shaw, Jim Hewitt, Hewlett-Packard Co. (United States) . . . . . .[7532-08]

2:10 pm: **Color-to-grayscale conversion with color clustering and significance criteria**, Peter Majewicz, Hewlett-Packard Co. (United States) . . . . . .[7532-09]

2:30 pm: **A voting decision strategy for image registration under affine transformation**, Yasser Almehio, Samia Bouchafa, Institut d'Electronique Fondamentale (France) . . . . . .[7532-11]

2:50 pm: **Key points selection by using Zernike polynomials**, Luca Costantini, Univ. degli Studi di Roma Tre (Italy); Federica Mangiatordi, Licia Capodiferro, Fondazione Ugo Bordoni (Italy); Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) . . . . . .[7532-12]

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

3:40 pm: **Array set addressing: making the world safe for hexagonal imaging**, Nicholas I. Rummelt, Air Force Research Lab. (United States); Joseph N. Wilson, Univ. of Florida (United States) . . . . . .[7532-13]

4:00 pm: **Low complexity implementation of kurtosis based image quality metrics**, Rony Ferzli, Microsoft Corp. (United States); Lakshmi Girija, SirF Technology, Inc. (United States); Walid Ali, Microsoft Corp. (United States). . . . . .[7532-14]

4:20 pm: **Exploiting DCT masking effect to improve the perceptual quality of data hiding**, Giulia Boato, Univ. degli Studi di Trento (Italy); Marco Carli, Univ. degli Studi di Roma Tre (Italy); Davide Molteni, Paolo Rota, Univ. degli Studi di Trento (Italy) . . . . . .[7532-15]

4:40 pm: **The self-similarity methods for analyzing biometric systems,** Vladimir N. Dvornychenko, National Institute of Standards and Technology (United States). . . . . .[7532-16]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

An image fusion algorithm based on lucidity decision parameters, Nasrulla Nazir, Muhammad Younus Javed, National Univ. of Sciences and Technology (Pakistan) . . . . . .[7532-23]

An improved framework for automatic image mosaic, Jie Lei, Jingting Ding, Jilin Liu, Zhejiang Univ. (China) . . . . . .[7532-24]

A fuzzy logic application in clustering process on mammographic images, Rosario Magro, Donato Cascio, Francesco Fauci, Giuseppe Raso, Salvatore Sorce, Univ. degli Studi di Palermo (Italy); Maria S. Vasile, Medicad S.r.l. (Italy); Letizia Vivona, Univ. degli Studi di Palermo (Italy) . . . . . .[7532-25]

Morphological rational multi-scale algorithm for color contrast enhancement, Hayde Peregrina-Barreto, Univ. Autónoma de Querétaro (Mexico); Ivan R. Terol-Villalobos, CIDETEQ (Mexico) . . . . . .[7532-26]

Human visual system-based contrast enhancement for x-ray CT images using alpha weighted quadratic filter, Yicong Zhou, Karen Panetta, Tufts Univ. (United States); Sos S. Agaian, Univ. of Texas at San Antonio (United States) . . . . . .[7532-27]

Estimation of circularly symmetric point spread function for digital auto-focusing, Younguk Park, Jaehwan Jeon, Jinhee Lee, Joonki Paik, Chung-Ang Univ. (Korea, Republic of) . . . . . .[7532-28]

Hierarchical representation of objects using shock graph methods, Shubhalaxmi P. Hingway, G.H. Raisoni College of Engineering (India) . . . . . .[7532-29]

Hand-movement-based in-vehicle driver/front-seat passenger discrimination for centre console controls, Enrico Herrmann, Andrey Makrushin, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany); Claus Vielhauer, Univ. of Applied Sciences Brandenburg (Germany); Mirko Langnickel, Technische Univ. Berlin (Germany); Christian Kraetzer, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . .[7532-30]

The feasibility test of state-of-the-art face detection algorithms for vehicle occupant detection, Andrey Makrushin, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany); Claus Vielhauer, Univ. of Applied Sciences Brandenburg (Germany); Mirko Langnickel, Technische Univ. Berlin (Germany); Christian Kraetzer, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . .[7532-31]

Novel medical image enhancement algorithms, Stephen A. McClendon, Sos S. Agaian, Univ. of Texas at San Antonio (United States) . . .[7532-32]

Use of satellite image enhancement procedures for global cloud identification, Jules R. Dim, Hiroshi Murakami, Masahiro Hori, Japan Aerospace Exploration Agency (Japan) . . . . . .[7532-33]

Robust steganographic method based on center-weighted median algorithm, Blanca E. Carvajal-Gamez, Francisco J. Gallegos-Funes, Jose L. Lopez-Bonilla, Volodymyr I. Ponomaryov, Instituto Politécnico Nacional (Mexico) . . . . . .[7532-35]

Median M-type radial basis function (MMRBF) neural network for automatic pap test screening process, Margarita E. Gomez-Mayorga, Francisco J. Gallegos-Funes, Volodymyr Ponomaryov, Instituto Politécnico Nacional (Mexico) . . . . . .[7532-36]

A new smoothing deformable model based on normalized wavelet diffusion for ultrasound image segmentation, Shengwen Guo, Alcorn State Univ. (United States) and South China Univ. of Technology (China); Jinshan Tang, Alcorn State Univ. (United States) . . . . . .[7532-37]

Anisotropic diffusion with monotonic edge sharpening, Wenhua Ma, Guangdong Univ. of Foreign Studies (China); Yu-Li You, Mostafa Kaveh, Univ. of Minnesota, Twin Cities (United States) . . . . . .[7532-38]

A fast image inpainting model based on gradient and curvature, Huahua Su, Sheng-rong Gong, Chun-Ping Liu, Soochow Univ. (China) . . . . . .[7532-39]

Speckle and impulsive noise suppression by use the rank M-type L-filter in the wavelet domain, Maria G. Beltran-Campos, Francisco J. Gallegos-Funes, Volodymyr I. Ponomaryov, Instituto Politécnico Nacional (Mexico) . . . . . .[7532-40]

Research on detecting and tracking algorithm of ground target based on integrated information measurement in IR images, Degui Yang, Jiantao Han, National Univ. of Defense Technology (China). . . . .[7532-41]

Multiple description video coding technique based on data hiding in the tree structured Haar transform domain, Michela Cancellaro, Marco Carli, Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) . . . . .[7532-42]

Reversible data hiding in the Fibonacci-Haar transform domain, Federica Battisti, Marco Carli, Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) . . . . . .[7532-43]

A memory-efficient and time-consistent filtering of depth map sequences, Sergey Smirnov, Atanas P. Gotchev, Karen O. Egiazarian, Tampere Univ. of Technology (Finland). . . . . .[7532-45]

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 4

Room: Conv. Ctr. Room B3 . . . . . .Wed. 9:30 to 10:30 am

Image and Video Compression

9:30 am: **Multispectral image compression for spectral and color reproduction based on lossy to lossless coding**, Kazuma Shinoda, Yuri Murakami, Masahiro Yamaguchi, Nagaaki Ohyama, Tokyo Institute of Technology (Japan) . . . . . .[7532-18]

9:50 am: **Inter-bit prediction based on maximum likelihood estimate for distributed video coding**, Robert Klepko, Demin Wang, Grégory Huchet, Communications Research Ctr. Canada (Canada) . . . . .[7532-19]

10:10 am: **Efficient error frame loss recovery model for scalable video coding (SVC)**, Walid S. Ibrahim Ali, Rony Ferzli, Microsoft Corp. (United States) . . . . . .[7532-44]

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

SESSION 5

Room: Conv. Ctr. Room B3 . . Wed. 11:00 am to 12:00 pm

Image Recognition

11:00 am: **An unsupervised learning approach to facial expression recognition using semi-definite programming and generalized principal component analysis**, Behnood Gholami, Wassim M. Haddad, Allen R. Tannenbaum, Georgia Institute of Technology (United States) . . . . . .[7532-20]

11:20 am: **The spectrum enhancement algorithm for feature extraction and pattern recognition: a review**, Giovanni F. Crosta, Univ. degli Studi di Milano-Bicocca (Italy) . . . . . .[7532-21]

11:40 am: **Gabor feature based class-dependence feature analysis for face recognition**, Zhongkai Han, Chi Fang, Xiaoqing Ding, Tsinghua Univ. (China) . . . . . .[7532-22]

Courses of Related Interest

Register for Courses at the Cashier desk.

SC965 Joint Design of Optics and Image Processing for Imaging Systems (Stork) Sunday, 8:30 am to 12:30 pm
SC928 FPGA Design of Video and Image Processing Algorithms (Choo) Monday, 8:30 am to 5:30 pm
SC468 Image Enhancement and Deblurring (Rabbani) Monday, 8:30 am to 5:30 pm

Monday-Tuesday 18-19 January 2010 • Proceedings of SPIE Vol. 7533

Computational Imaging VIII

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

Program Committee: **Samit Basu,** GE Security; **Thomas S. Denney, Jr.,** Auburn Univ.; **Maya R. Gupta,** Univ. of Washington; **Eric L. Miller,** Tufts Univ.; **Joseph A. O'Sullivan,** Washington Univ. in St. Louis; **Zygmunt Pizlo,** Purdue Univ.; **Stanley J. Reeves,** Auburn Univ.; **Yongyi Yang,** Illinois Institute of Technology

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room C4 . . . . . Mon. 8:40 to 10:20 am

Image Analysis

8:40 am: **A regions of confidence based approach to enhance segmentation with shaper priors,** Vikram Appia, Balaji Ganapathy, Georgia Institute of Technology (United States); Amer Abufadel, Khoury Group LLP (United States); Anthony J. Yezzi, Georgia Institute of Technology (United States); Tracy L. Faber, Emory Univ. (United States) . . . . . .[7533-20]

9:00 am: **Human pose tracking from monocular video by traversing an image motion mapped body pose manifold**, Saurav Basu, Joshua Poulin, Scott T. Acton, Univ. of Virginia (United States) . . . . . .[7533-02]

9:20 am: **Semi-automatic object geometry estimation for image personalization**, Hengzhou Ding, Purdue Univ. (United States); Raja Bala, Zhigang Fan, Reiner Eschbach, Xerox Corp. (United States); Charles A. Bouman, Jan P. Allebach, Purdue Univ. (United States). . . . . .[7533-03]

9:40 am: **A method for recognizing the shape of a Gaussian mixture from a sparse sample set**, Hector J. Santos-Villalobos, Mireille Boutin, Purdue Univ. (United States) . . . . . .[7533-04]

10:00 am: **Extraction of arbitrarily shaped objects using stochastic multiple birth-and-death dynamics and active contours**, Maria Kulikova, Ian H. Jermyn, Xavier Descombes, INRIA Sophia Antipolis (France); Elena Zhizhina, Institute for Information Transmission Problems Moscow (Russian Federation); Josiane Zerubia, INRIA Sophia Antipolis (France) . . . . . .[7533-05]

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

SESSION 2

Room: Conv. Ctr. Room C4 . . . Mon. 10:50 am to 12:10 pm

Remote Sensing I

10:50 am: **Symmetrized local co-registration optimization for anomalous change detection**, Brendt E. Wohlberg, James Theiler, Los Alamos National Lab. (United States) . . . . . .[7533-06]

11:10 am: **High-resolution SAR-image classification by Markov random fields and finite mixtures**, Gabriele Moser, Univ. degli Studi di Genova (Italy); Vladimir Krylov, Lomonosov Moscow State Univ. (Russian Federation); Sebastiano B. Serpico, Univ. degli Studi di Genova (Italy); Josiane Zerubia, INRIA Sophia Antipolis (France). . . . . .[7533-07]

11:30 am: **Randomized group testing for acoustic source localization**, William E. Mantzel, Jr., Justin K. Romberg, Karim G. Sabra, Georgia Institue of Technology (United States) . . . . . .[7533-08]

11:50 am: **Bayesian data fusion in synthetic aperture radar imaging**, Ali Mohammad-Djafari, Sha Zhu, Lab. des signaux et systèmes (France); Franck Daout, SATIE, Ecole Normale Supérieure de Cachan, Univ. Paris X-Nanterre (France); Philippe Fargette, DEMR, ONERA (France) .[7533-38]

Lunch Break . . . . . 12:10 to 1:40 pm

SESSION 3

Room: Conv. Ctr. Room C4 . . . . . Mon. 2:00 to 2:40 pm

Remote Sensing II

2:00 pm: **Blind deconvolution of depth-of-field limited full-field lidar data by determination of focal parameters**, John P. Godbaz, Michael J. Cree, Adrian A. Dorrington, The Univ. of Waikato (New Zealand).[7533-10]

2:20 pm: **Multi-static synthetic aperture image formation**, Venky Krishnan, Rensselaer Polytechnic Institute (United States); John Swoboda, MITRE Corp. (United States); Can-Evren Yarman, WesternGeco-Schlumberger (United States); Birsen Yazici, Rensselaer Polytechnic Institute (United States) . . . . . .[7533-11]

SESSION 4

Room: Conv. Ctr. Room C4 . . . . . Mon. 2:40 to 4:30 pm

Biomedical Imaging I

2:40 pm: **Compressive inverse scattering using ultrashort pulses**, Kyungwhan Jin, Jong Chul Ye, Korea Advanced Institute of Science and Technology (Korea, Republic of) . . . . . .[7533-13]

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

3:30 pm: **Implementation and evaluation of a penalized alternating minimization algorithm for computational DIC microscopy**, Chrysanthe Preza, The Univ. of Memphis (United States); Joseph A. O'Sullivan, Washington Univ. in St. Louis (United States). . . . . .[7533-14]

3:50 pm: **Virtual surgical modification for planning tetralogy of Fallot repair**, Jonathan Plasencia, Arizona State Univ. (United States); John Nigro, Randy Richardson, David Cleveland, St. Joseph's Hospital and Medical Ctr. (United States); David H. Frakes, Arizona State Univ. (United States) . . . . . .[7533-15]

4:10 pm: **Numerical observer for cardiac motion quality assessment**, Jovan G. Brankov, Thibault Marin, Yongyi Yang, Miles Wernick, Illinois Institute of Technology (United States) . . . . . .[7533-37]

SESSION 5

Room: Conv. Ctr. Room C4 . . . . . Mon. 4:30 to 5:30 pm

Inverse Problems

4:30 pm: **Imaging for wireless sensor networks in random media**, Ray Sun, George Papanicolaou, Stanford Univ. (United States); Miguel Moscoso, Univ. Carlos III de Madrid (Spain); Gregoire Derveaux, Institut National de Recherche en Informatique et en Automatique (France) . . . . . .[7533-16]

4:50 pm: **Fast matrix vector multiplication using the sparse matrix transform**, Jianing Wei, Leonardo Bachega, Charles A. Bouman, Purdue Univ. (United States) . . . . . .[7533-17]

5:10 pm: **Construction and exploitation of a 3D model from 2D image features**, Nadya T. Bliss, Karl Ni, Zachary Sun, MIT Lincoln Lab. (United States) . . . . . .[7533-18]

Tuesday 19 January

Room: Marriott Ballroom . . . . . Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 6

Room: Conv. Ctr. Room C4 . . . . . Tues. 9:40 to 11:50 am

Consumer Imaging

9:40 am: **An optimal algorithm for reconstructing images from binary measurements,** Feng Yang, Yue M. Lu, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Luciano Sbaiz, Google Zurich (Switzerland); Martin Vetterli, Ecole Polytechnique Fédérale de Lausanne (Switzerland) [7533-01]

10:00 am: **Digital neutral density filter for moving picture cameras**, Michael Schöberl, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Alexander Oberdörster, Siegfried Fößel, Fraunhofer-Institut für Integrierte Schaltungen (Germany); André Kaup, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . .[7533-21]

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

10:50 am: **Faithful quality representation of high-resolution images at low resolutions for user preview**, Noha A. El-Yamany, Southern Methodist Univ. (United States); Marius Tico, Natasha Gelfand, Nokia Research Ctr. (United States) . . . . . .[7533-22]

11:10 am: **An adaptive show-through artifact removal method with histogram analyzer**, Jinkyung Hong, Kimin Kang, Sangho Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . .[7533-23]

11:30 am: **Automatic portion estimation and visual refinement in mobile dietary assessment**, Karl Otsmo, Insoo Woo, SungYe Kim, David S. Ebert, Edward J. Delp III, Carol J. Boushey, Purdue Univ. (United States) . . . . . .[7533-24]

Lunch/Exhibition Break . . . . . 11:50 am to 1:40 pm

SESSION 7

Room: Conv. Ctr. Room C4 . . . . . Tues. 1:40 to 3:00 pm

Denoising and Filtering

1:40 pm: **Motion blur removal in nonlinear sensors**, Tomer Faktor, Tomer Michaeli, Yonina C. Eldar, Technion-Israel Institute of Technology (Israel) . . . . . .[7533-25]

2:00 pm: **Rewiring filterbanks for interpolation and denoising: theory and applications**, Patrick J. Wolfe, Harvard Univ. (United States); Keigo Hirakawa, Univ. of Dayton (United States) . . . . . .[7533-26]

2:20 pm: **Sparse Poisson intensity reconstruction algorithms**, Zachary T. Harmany, Duke Univ. (United States); Roummel F. Marcia, Univ. of California, Merced (United States); Rebecca M. Willett, Duke Univ. (United States) . . . . . .[7533-27]

2:40 pm: **Novel integro-differential equations in image processing and its applications**, Eitan Tadmor, Univ. of Maryland, College Park (United States); Prashant Athavale, Univ. of California, Los Angeles (United States) . . . . . .[7533-28]

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

SESSION 8

Room: Conv. Ctr. Room C4 . . . . . Tues. 3:30 to 4:30 pm

Biomedical Imaging II

3:30 pm: **Fast automatic segmentation of MRI liver images using subspace learning**, Dan Wang, Ahmed H. Tewfik, Univ. of Minnesota (United States); Daniel J. Blezek, Bradley J. Erickson M.D., Mayo Clinic (United States) . . . . . .[7533-39]

3:50 pm: **Bayesian estimation with Gauss-Markov-Potts priors in optical diffraction tomography**, Hacheme Ayasso, Bernard Duchene, Ali Mohammad-Djafari, Lab. des signaux et systèmes (France) . . . .[7533-40]

4:10 pm: **Registration of patch optical and MRI or CT scan imagery for real time 3D organ tracking,** Dan Wang, Ahmed H. Tewfik, Univ. of Minnesota (United States) . . . . . .[7533-41]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

Demonstrations . . . . . 5:30 to 8:00 pm

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Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Band reduction for hyperspectral imagery processing, Stefan A. Robila, Montclair State Univ. (United States) . . . . . .[7533-29]

Identifying a walking human by a tensor decomposition-based approach and tracking the human across discontinuous fields-of-view of multiple cameras, Takayuki Hori, Jun Ohya, Waseda Univ. (Japan); Jun Kurumisawa, Chiba Univ. of Commerce (Japan) . . . . . .[7533-30]

Restitution of multiple overlaid components on extremely long series of solar corona images, Antoine Llebaria, Jean Loirat, Philippe Lamy, Observatoire Astronomique de Marseille-Provence (France) . . . .[7533-31]

Several approaches to solve the rotation illusion with wheel effect, Cheng Zhang, Rick Parent, The Ohio State Univ. (United States) [7533-32]

Restoring the spatial resolution of refocus image on 4D light field data, Jaeguyn Lim, Jooyoung Kang, ByungKwan Park, Seong-Deok Lee, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . .[7533-33]

OASIS: a simulator to prepare and interpret remote imaging of solar system bodies, Laurent Jorda, Antoine Llebaria, Observatoire Astronomique de Marseille-Provence (France); Sofie Spjuth, Max-Planck-Institut fuer Sonnensystemforschung (Germany) . . . . . .[7533-34]

Robust joint photometric and geometric registration of images, Noha A. El-Yamany, Scott C. Douglas, Johannes Tausch, Southern Methodist Univ. (United States) . . . . . .[7533-35]

Courses of Related Interest

Register for Courses at the Cashier desk.

SC970 Computational Optical Imaging (Brady) Sunday, 8:30 am to 5:30 pm

SC468 Image Enhancement and Deblurring (Rabbani) Monday, 8:30 am to 5:30 pm

Tuesday-Thursday 19-21 January 2010 • Proceedings of SPIE Vol. 7534

Document Recognition and Retrieval XVII

Conference Chairs: **Laurence Likforman-Sulem,** Telecom ParisTech (France); **Gady Agam,** Illinois Institute of Technology

Program Committee: **Apostolos Antonacopoulos,** Univ. of Salford (United Kingdom); **Elisa H. Barney Smith,** Boise State Univ.; **Kathrin Berkner,** Ricoh Innovations, Inc.; **Xiaoqing Ding,** Tsinghua Univ. (China); **David S. Doermann,** Univ. of Maryland, College Park; **Oleg D. Golubitsky,** The Univ. of Western Ontario (Canada); **Jianying Hu,** IBM Thomas J. Watson Research Ctr.; **Xiaofan Lin,** Vobile, Inc.; **Marcus Liwicki,** Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); **Daniel P. Lopresti,** Lehigh Univ.; **Hiroshi Sako,** Hitachi, Ltd. (Japan); **Lambert R. B. Schomaker,** Univ. of Groningen (Netherlands); **Sargur N. Srihari,** Univ. at Buffalo; **Venkata Subramaniam,** IBM India Research Lab. (India); **Kazem Taghva,** Univ. of Nevada, Las Vegas; **George R. Thoma,** National Library of Medicine; **Christian Viard-Gaudin,** Univ. de Nantes (France); **Alessandro Vinciarelli,** Idiap Research Institute (Switzerland); **Berrin Yanikoglu,** Sabanci Univ. (Turkey); **Jie Zou,** National Library of Medicine

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Tuesday 19 January

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Evaluation of human perception of degradation in document images, Tayo Obafemi-Ajayi, Gady Agam, Ophir Frieder, Illinois Institute of Technology (United States) . . . . . .[7534-28]

Naïve bayes and SVM classifiers for classifying databank accession number sentences from online biomedical articles, Jongwoo Kim, Daniel X. Le, George R. Thoma, National Library of Medicine (United States) . . . . . .[7534-29]

Biomedical article retrieval using multimodal features and image annotations in region-based CBIR, Daekeun You, Univ. of Buffalo (United States); Sameer K. Antani, Dina Demner-Fushman, National Library of Medicine (United States); Venu Govindaraju, Univ. of Buffalo (United States) and CUBS (United States); George R. Thoma, National Library of Medicine (United States) . . . . . .[7534-30]

Trainable multiscript orientation detection, Joost Van Beusekom, Yves Rangoni, Thomas M. Breuel, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany) . . . . . .[7534-31]

Improved CHAID algorithm for document structure modeling, Abdel Belaid, Th. Moinel, Yves Rangoni, LORIA (France) . . . . . .[7534-32]

Ant colony optimization with selective evaluation for feature selection in character recognition, Il-Seok Oh, Chonbuk National Univ. (Korea, Republic of); Jin-Seon Lee, Woosuk Univ. (Korea, Republic of) . .[7534-33]

Analysis of line structure in handwritten documents using the Hough transform, Gregory R. Ball, Aswin Narayanan, Sargur N. Srihari, Univ. at Buffalo (United States) . . . . . .[7534-34]

A hybrid classifier for handwritten mathematical expression recognition, Ahmad Montaser M. Awal, Harold Mouchère, Christian Viard-Gaudin, Univ. of Nantes (France) . . . . . .[7534-35]

A combined recognition system for online handwritten Pinyin input, Meng Zhu, Tsinghua OCR lab (China); Changsong Liu, Tsinghua Univ. (China) . . . . . .[7534-36]

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 1

Room: Conv. Ctr. Room A7 . . . . . .Wed. 9:30 to 10:10 am

Invited Presentation I

9:30 am: **A general approach to discovering, registering, and extracting features from raster maps** *(Invited Paper)*, Craig A. Knoblock, Univ. of Southern California (United States); Ching-Chien Chen, Geosemble Technologies (United States); Yao-Yi Chiang, Aman Goel, Univ. of Southern California (United States); Matthew Michelson, Fetch Technologies (United States); Cyrus Shahabi, Univ. of Southern California (United States) . . . . . .[7534-01]

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

SESSION 2

Room: Conv. Ctr. Room A7 . . Wed. 10:40 am to 12:00 pm

Information Retrieval

10:40 am: **Combining approaches to on-line handwriting information retrieval**, Sebastian Peña Saldarriaga, Christian Viard-Gaudin, Emmanuel Morin, Univ. of Nantes (France) . . . . . .[7534-02]

11:00 am: **A stacked sequential learning method for investigator name recognition from web-based medical articles**, Xiaoli Zhang, Jie Zou, Daniel X. Le, George R. Thoma, National Library of Medicine (United States) . . . . . .[7534-03]

11:20 am: **Numbered sequence detection in documents**, Hervé Déjean, Xerox Research Ctr. Europe (France) . . . . . .[7534-04]

11:40 am: **Date of birth extraction using precise shallow parsing**, Ray Pereda, Kazem Taghva, Univ. of Nevada, Las Vegas (United States) . . . . . .[7534-05]

Lunch/Exhibition Break . . . . . 12:00 to 1:40 pm

SESSION 3
Room: Conv. Ctr. Room A7 . . . . . .Wed. 1:40 to 3:00 pm

Content Analysis

1:40 pm: **The aware toolbox for the detection of law infringements on web pages**, Asif Shahab, Thomas Kieninger, Andreas R. Dengel, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany) . . . . . .[7534-06]

2:00 pm: **On the usability and security of pseudo-signatures**, Jin Chen, Daniel P. Lopresti, Lehigh Univ. (United States) . . . . . .[7534-07]

2:20 pm: **Time and space optimization of document content classifiers**, Dawei Yin, Henry Baird, Chang An, Lehigh Univ. (United States) . . . . . .[7534-08]

2:40 pm: **Detecting modifications in paper documents: a coding approach**, Yogesh Sankarasubramaniam, Badri Narayanan, Kapali Viswanathan, Anjaneyulu Kuchibhotla, Hewlett-Packard Labs. India (India) . . . . . .[7534-09]

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

SESSION 4
Room: Conv. Ctr. Room A7 . . . . . .Wed. 3:30 to 4:30 pm

Text Line and Segmentation

3:30 pm: **General text line extraction approach based on locally orientation estimation**, Nazih Ouwayed, Abdel Belaïd, LORIA (France); François Auger, IREENA (France) . . . . . .[7534-10]

3:50 pm: **Semi-supervised learning for detecting text-lines in noisy document images**, Zongyi Liu, Hanning Zhou, Amazon.com (United States) . . . . . .[7534-11]

4:10 pm: **Touching character segmentation method for Chinese historical documents**, Xiaolu Sun, Liangrui Peng, Xiaoqing Ding, Tsinghua Univ. (China) . . . . . .[7534-12]

Thursday 21 January

SESSION 5
Room: Conv. Ctr. Room A7 . . . . . .Thurs. 8:30 to 9:10 am

Invited Presentation II

8:30 am: **Technologies for developing an advanced intelligent ATM with self-defence capabilities** *(Invited Paper)*, Hiroshi Sako, Hitachi, Ltd. (Japan) . . . . . .[7534-13]

SESSION 6
Room: Conv. Ctr. Room A7 . . . . . .Thurs. 9:10 to 10:10 am

Document Image Processing

9:10 am: **Learning shape features for document enhancement**, Tayo Obafemi-Ajayi, Gady Agam, Ophir Frieder, Illinois Institute of Technology (United States) . . . . . .[7534-14]

9:30 am: **Enhancement of camera-based whiteboard images**, Yuan He, Jun Sun, Satoshi Naoi, Fujitsu Research and Development Center Co., Ltd. (China); Akihiro Minagawa, Yoshinobu Hotta, Fujitsu Labs., Ltd. (Japan) . . . . . .[7534-15]

9:50 am: **Effect of pre-processing on binarization**, Elisa H. Barney Smith, Boise State Univ. (United States); Laurence Likforman-Sulem, Telecom-ParisTech (France); Jérôme Darbon, Univ. of California, Los Angeles (United States) . . . . . .[7534-16]

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

SESSION 7
Room: Conv. Ctr. Room A7 . Thurs. 10:40 am to 12:00 pm

Recognition I

10:40 am: **Context-dependent HMM modeling using tree-based clustering for the recognition of handwritten words**, Anne-Laure Bianne, Telecom ParisTech (France) and A2iA SA (France); Christopher Kermorvant, A2iA SA (France); Laurence Likforman-Sulem, Telecom ParisTech (France) . . . . . .[7534-17]

11:00 am: **Font adaptation of an HMM-based OCR system**, Kamel Ait-Mohand, Thierry Paquet, Laurent Heutte, Univ. de Rouen (France); Nicolas Ragot, Univ. de Tours (France) . . . . . .[7534-18]

11:20 am: **A new pre-classification method based on associative matching method**, Yutaka Katsuyama, Akihiro Minagawa, Yoshinobu Hotta, Fujitsu Labs. (Japan); Shinichiro Omachi, Nei Kato, Tohoku Univ. (Japan) . . . . . .[7534-19]

11:40 am: **A neural-linguistic approach for the recognition of a wide Arabic word lexicon**, Imen Ben Cheikh, Afef Kacem, Ecole Supérieure des Sciences et Techniques de Tunis (Tunisia); Abdel Belaïd, LORIA (France) . . . . . .[7534-20]

Lunch Break . . . . . 12:00 to 1:40 pm

SESSION 8
Room: Conv. Ctr. Room A7 . . . . . .Thurs. 1:40 to 3:00 pm

Recognition II

1:40 pm: **Incorporating linguistic post-processing into whole-book recognition**, Pingping Xiu, Henry Baird, Lehigh Univ. (United States) . . . . . .[7534-21]

2:00 pm: **A word language model based contextual language processing on Chinese character recognition**, Chen Huang, Xiaoqing Ding, Yan Chen, Tsinghua Univ. (China) . . . . . .[7534-22]

2:20 pm: **Efficient automatic OCR word validation using word partial format derivation and language model**, Siyuan Chen, Dharitri Misra, George R. Thoma, National Library of Medicine (United States) .[7534-23]

2:40 pm: **Comparison of historical documents for writership**, Gregory R. Ball, Danjun Pu, Univ. at Buffalo (United States); Roger Stritmatter, Coppin State Univ. (United States); Sargur N. Srihari, Univ. at Buffalo (United States) . . . . . .[7534-24]

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

SESSION 9
Room: Conv. Ctr. Room A7 . . . . . .Thurs. 3:30 to 4:30 pm

Document Structure Recognition

3:30 pm: **Interactive-predictive detection of handwritten text blocks**, Oriol Ramos Terrades, Nicolás Serrano, Instituto Tecnologico de Informática (Spain); Albert Gordó, Ernest Valveny, Univ. Autònoma de Barcelona (Spain); Alfons Juan, Instituto Tecnologico de Informática (Spain) . . . . . .[7534-25]

3:50 pm: **Using definite clause grammars to build a global system for analyzing collections of documents**, Joseph Chazalon, Institut National des Sciences Appliquées de Rennes (France) and UMR IRISA (France) and Univ. Européenne de Bretagne (France); Bertrand Coüasnon, Institut National des Sciences Appliquées de Rennes (France) and Univ. Européenne de Bretagne (France) and UMR IRISA (France) . . . .[7534-26]

4:10 pm: **Detection of figure and caption pairs based on disorder measurements**, Claudie Faure, Telecom ParisTech (France); Nicole Vincent, Univ. René Descartes (France) . . . . . .[7534-27]

Course of Related Interest

Register for Courses at the Cashier desk.

SC468 Image Enhancement and Deblurring (Rabbani) Monday, 8:30 am to 5:30 pm

Wavelet Applications in Industrial Processing VII

Conference Chairs: **Frédéric Truchetet,** Univ. de Bourgogne (France); **Olivier Laligant,** Univ. de Bourgogne (France)

Program Committee: **Patrice Abry,** École Normale Supérieure de Lyon (France); **Akram Aldroubi,** Vanderbilt Univ.; **Jean-Pierre Antoine,** Univ. Catholique de Louvain (Belgium); **Radu V. Balan,** Univ. of Maryland, College Park; **Atilla M. Baskurt,** Univ. Claude Bernard Lyon 1 (France); **Amel Benazza-Benyahia,** Ecole Supérieure des Communications de Tunis (Tunisia); **Albert Bijaoui,** Observatoire de la Côte d'Azur (France); **Laurent C. Duval,** Institut Français du Pétrole (France); **Wilfried R. Philips,** Univ. Gent (Belgium); **Aleksandra Pizurica,** Univ. Gent (Belgium); **Guoping Qiu,** The Univ. of Nottingham (United Kingdom); **Hamed Sari-Sarraf,** Texas Tech Univ.; **Peter Schelkens,** Vrije Univ. Brussel (Belgium); **Paul Scheunders,** Univ. Antwerpen (Belgium); **Ivan W. Selesnick,** Polytechnic Institute of NYU; **Kenneth W. Tobin, Jr.,** Oak Ridge National Lab.; **Günther K. G. Wernicke,** Humboldt-Univ. zu Berlin (Germany); **Gerald Zauner,** Fachhochschule Wels (Austria)

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room A4 . . . . . .Mon. 9:10 to 9:50 am

Image Compression

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

9:10 am: **Kolmogorov superposition theorem and wavelets for image compression**, Pierre-Emmanuel Leni, Yohan D. Fougerolle, Frédéric Truchetet, Univ. de Bourgogne (France) . . . . . .[7535-02]

9:30 am: **Lossless compression of 3D seismic data using a horizon displacement compensated 3D lifting scheme**, Anis Meftah, Marc Antonini, Lab. d'Informatique, Signaux et Systèmes de Sophia-Antipolis (France); Chokri Ben Amar, Ecole Nationale d'Ingénieurs de Sfax (Tunisia) . . . . . .[7535-03]

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

SESSION 2

Room: Conv. Ctr. Room A4 . . .Mon. 10:20 am to 12:00 pm

Signal and Image Analysis

Session Chair: **Abhijith Sreenivasan,** IBS Software Services (P) Ltd. (India)

10:20 am: **Performances comparison of pulse pair and wavelets methods for the pulse Doppler weather radar spectrum**, Mohand Lagha, Mohammed Tikhemirine, Said Bergheul, Tahar Rezoug, Univ. of Blida (Algeria); Maamar Bettayeb, Univ. of Sharjah (United Arab Emirates) . . . . . .[7535-04]

10:40 am: **Adaptive edge orientation analysis**, Eric Van Reeth, STMicroelectronics (France); Pascal Bertolino, Gipsa-Lab (France); Marina Nicolas, STMicroelectronics (France); Jean-Marc Chassery, Gipsa-Lab (France) . . . . . .[7535-05]

11:00 am: **Singularity detection by wavelet approach: with an application to electrocardiogram signal**, Bushra Jalil, Beya Ouadi, Eric Fauvet, Olivier Laligant, Univ. de Bourgogne (France) . . . . . .[7535-06]

11:20 am: **The minimum Sobolev norm interpolation scheme and its applications in image processing**, Shivkumar Chandrasekaran, Karthik Jayaraman Raghuram, Univ. of California, Santa Barbara (United States); Hrushikesh N. Mhaskar, California State Univ., Los Angeles (United States) . . . . . .[7535-07]

11:40 am: **Wavelet packets for multi- and hyperspectral imagery**, Martin Ehler, Univ. of Maryland, College Park (United States) and National Institutes of Health (United States); John J. Benedetto, Wojciech Czaja, J. Christopher Flake, Matthew Hirn, Univ. of Maryland, College Park (United States) . . . . . .[7535-08]

Lunch Break . . . . . 12:00 to 1:30 pm

SESSION 3

Room: Conv. Ctr. Room A4 . . . . . .Mon. 1:30 to 3:30 pm

Blur and Noise Estimation and Restoration

Session Chair: **Sergio E. Zarantonello,** Algorithmica LLC

1:30 pm: **An evidence segmentation scheme for asthma detection using a priori wavelet respiratory sound information** *(Invited Paper)*, Christophe Collet, Univ. de Strasbourg (France). . . . . .[7535-09]

2:10 pm: **Wavelet-based blotch restoration exploiting interscale dependency**, Heyfa Ammar-Badri, Amel Benazza-Benyahia, Ecole Supérieure des Communications de Tunis (Tunisia) . . . . . .[7535-10]

2:30 pm: **Application of the empirical modal decomposition to analyze cardiac's signals**, Ouadi B. Beya, Sr., Eric Fauvet, Bushra Jalil, Olivier Laligant, Univ. de Bourgogne (France) . . . . . .[7535-11]

2:50 pm: **Real-time wavelet-based blur estimation on cell BE platform**, Nemanja A. Lukic, Novi Sad Univ. (Serbia); Ljiljana Platiša, Aleksandra Pižurica, Wilfried R. Philips, Univ. Gent (Belgium); Miodrag Temerinac, Novi Sad Univ. (Serbia) . . . . . .[7535-12]

3:10 pm: **Video deblurring in complex wavelet domain using local Laplace prior for enhancement and anisotropic spatially adaptive denoising for PSF detection**, Hossein Rabbani, Amirkabir Univ. of Technology (Iran, Islamic Republic of) and Isfahan Univ. (Iran, Islamic Republic of) . . . . . .[7535-13]

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

SESSION 4

Room: Conv. Ctr. Room A4 . . . . . .Mon. 4:00 to 5:20 pm

Watermarking, Image Retrieval, and 3D Meshes Analysis

Session Chair: **Christophe Collet,** Univ. de Strasbourg (France)

4:00 pm: **Speeding-up the hybrid video watermarking techniques in the DWT domain**, Mihai P. Mitrea, Afef Chammem, Francoise Preteux, TELECOM & Management SudParis (France). . . . . .[7535-14]

4:20 pm: **Digital watermarking using wavelet transform**, Abhijith Sreenivasan, IBS Software Services (India) . . . . . .[7535-15]

4:40 pm: **Laguerre Gauss analysis for image retrieval based on color texture**, Luca Costantini, Univ. degli Studi di Roma Tre (Italy); Paolo Sita', Licia Capodiferro, Fondazione Ugo Bordoni (Italy); Alessandro Neri, Univ. degli Studi di Roma Tre (Italy) . . . . . .[7535-16]

5:00 pm: **Recent advances in multiresolution analysis of 3D meshes and their applications**, Michael Roy, Univ. de Bourgogne (France). . . . . .[7535-17]

Tuesday 19 January

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Characterization of objects from their motion blurred images by the method of wavelet moments, Carina Toxqui-Quitl, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico) and Univ. Politecnica de Tulanicngo (Mexico); Alfonso Padilla-Vivanco, Univ. Politecnica de Tulanicngo (Mexico) . . . . . .[7535-18]

Tuesday-Thursday 19-21 January 2010 • Proceedings of SPIE Vol. 7536

Sensors, Cameras, and Systems for Industrial/Scientific Applications XI

Conference Chairs: **Erik Bodegom,** Portland State Univ.; **Valerie Nguyen,** CEA Leti MINATEC (France)

Program Committee: **Morley M. Blouke,** Ball Aerospace & Technologies Corp.; **Terrence S. Lomheim,** The Aerospace Corp.; **Kevin J. Matherson,** Hewlett-Packard Co.; **Gloria G. Putnam,** Eastman Kodak Co.; **Alice L. Reinheimer,** e2v; **Nobukazu Teranishi,** Panasonic Corp. (Japan); **Bruce True,** Intevac Photonics, Inc.; **Penny G. Warren,** Ball Aerospace & Technologies Corp.; **Ralf Widenhorn,** Portland State Univ.

Tuesday 19 January

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Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Terahertz photometer for medical and biological investigations and THz spectroscopy of some biotissues, Yaroslav Grachev, Olga A. Smolyanskaya, St. Petersburg State Univ. of Information Technologies, Mechanics and Optics (Russian Federation). . . . . .[7536-25]

Electron-multiplying CCD astronomical photometry, Alejandro Ferrero, Riccardo Felletti, Lorraine Hanlon, Univ. College Dublin (Ireland); Joaquin Campos, Alicia Pons, Consejo Superior de Investigaciones Cientificas (Spain) . . . . . .[7536-26]

High-speed charge transfer pinned-photodiode for a CMOS time-of-flight range image sensor, Hiroaki Takeshita, Tetsuya Iida, Keita Yasutomi, Shoji Kawahito, Shizuoka Univ. (Japan). . . . . .[7536-27]

A three-phase time-correlation image sensor using pinned photodiode active pixels, Sangman Han, Tomonari Sawada, Tomohiro Iwahori, Shoji Kawahito, Shizuoka Univ. (Japan); Shigeru Ando, The Univ. of Tokyo (Japan). . . . . .[7536-28]

Dynamic range extension of an active pixel sensor by combining output signals from photodiodes with different sensitivities, Jae-Sung Kong, Sung-Hyun Jo, Kyung-Hwa Choi, Sang-Ho Seo, Pyung Choi, Jang-Kyoo Shin, Kyungpook National Univ. (Korea, Republic of) . . . . .[7536-29]

An efficient spectral-based calibration method for RGB white-balancing gains under various illumination conditions for cell-phone camera modules, Reza Safaee-Rad, Qualcomm Inc. (Canada); Milivoje Aleksic, Qualcomm Inc. (United States) . . . . . .[7536-30]

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 1

Room: Conv. Ctr. Room A2 . . . . . Wed. 9:30 to 10:10 am

Color and Multispectral Techniques

Session Chair: **Valerie Nguyen,** Commissariat à l'Énergie Atomique (France)

9:30 am: **Stacked color image sensor using wavelength-selective organic photoconductive films with zinc-oxide thin film transistors as a signal readout circuit**, Hokuto Seo, Satoshi Aihara, NHK Science & Technical Research Labs. (Japan); Masakazu Namba, Toshihisa Watabe, Hiroshi Ohtake, Misao Kubota, Norifumi Egami, NHK Science & Technology Research Labs. (Japan); Takahiro Hiramatsu, Tokiyoshi Matsuda, Mamoru Furuta, Hiroshi Nitta, Takashi Hirao, Kochi Univ. of Technology (Japan) . . . . . .[7536-01]

9:50 am: **Improved sensitivity high-definition interline CCD using the Kodak TRUESENSE color filter pattern**, James A. DiBella, Eastman Kodak Co. (United States); Marco Andreghetti, Kodak Japan Ltd. (Japan); Amy Enge, Doug A. Carpenter, Eastman Kodak Co. (United States); William Chen, Kodak (China) Ltd. (China) . . . . . .[7536-02]

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

SESSION 2

Room: Conv. Ctr. Room A2 . . . . . Wed. 10:40 to 11:40 am

Single Photon Detection

Session Chair: **Morley M. Blouke,** Ball Aerospace & Technologies Corp.

10:40 am: **Development of FOP-HARP imaging device**, Kazunori Miyakawa, Yuji Ohkawa, Tomoki Matsubara, Kenji Kikuchi, Shiro Suzuki, Kenkichi Tanioka, Misao Kubota, Norifumi Egami, NHK Science & Technical Research Labs. (Japan); Takuji Atsumi, Hamamatsu Photonics K.K. (Japan); Shonosuke Matsushita, Taisuke Konishi, Yuzuru Sakakibara, Tsukuba Univ. (Japan); Kazuyuki Hyodo, High Energy Accelerator Research Organization (Japan); Yoshimasa Katori, Yoshiaki Okamoto, Okamoto Optics Co., Ltd. (Japan). . . . . .[7536-03]

11:00 am: **Single-photon camera for high-sensitivity high-speed applications**, Fabrizio Guerrieri, Politecnico di Milano (Italy); Simone Tisa, Micro Photon Devices (Italy); Franco Zappa, Politecnico di Milano (Italy) . . . . . .[7536-04]

11:20 am: **Photon counting with an EMCCD**, Olivier Daigle, Univ. de Montréal (Canada); Sébastien Blais-Ouellette, Photon etc. inc. (Canada) . . . . . .[7536-05]

Lunch Break . . . . . 11:40 am to 1:30 pm

SESSION 3

Room: Conv. Ctr. Room A2 . . . . . .Wed. 1:30 to 2:20 pm

Low-light Level

Session Chair: **Ralf Widenhorn,** Portland State Univ.

1:30 pm: **Wide dynamic range low light level CMOS image sensor** *(Invited Paper)*, Boyd A. Fowler, Xinqiao Liu, Stephen W. Mims, Janusz Balicki, Wang Li, Hung Do, Paul Vu, Fairchild Imaging (United States) . . . . . .[7536-06]

2:00 pm: **StarCam SG100: a high-update rate, high-sensitivity stellar gyroscope for spacecraft**, Anup B. Katake, Christian Bruccoleri, James Ochoa, StarVision Technologies, Inc. (United States). . . . . .[7536-07]

SESSION 4

Room: Conv. Ctr. Room A2 . . . . . .Wed. 2:20 to 4:50 pm

Applications

Session Chair: **Alice L. Reinheimer,** e2v

2:20 pm: **Using the EMVA1288 standard to select an image sensor or camera**, Arnaud Darmont, APHESA SPRL (Belgium). . . . . .[7536-08]

2:40 pm: **High-speed document sensing and misprint detection in digital presses**, Guillaume Leseur, Nicolas Meunier, Georgios Georgiadis, Lily Huang, Peter B. Catrysse, Brian A. Wandell, Stanford Univ. (United States); Jeffrey DiCarlo, Hewlett-Packard Labs. (United States) .[7536-09]

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

3:30 pm: **Limitation of measurable defect thickness of the wall thinned pipe using speckle shearing interferometry**, Hyun-Chul Jung, Kyeongsuk Kim, Dong-Pyo Hong, Chosun Univ. (Korea, Republic of); Manyong Choi, Korea Research Institute of Standards and Science (Korea, Republic of) . . . . . .[7536-10]

3:50 pm: **Fake fingerprint detection based on image analysis**, Sang-il Jin, You-suk Bae, Hyun-ju Maeng, Hyun-suk Lee, Korea Polytechnic Univ. (Korea, Republic of). . . . . .[7536-11]

4:10 pm: **Measurement of surface resistivity/conductivity of metallic alloys in aqueous solutions by optical interferometry techniques**, Khaled J. Habib, Kuwait Institute for Scientific Research (Kuwait)[7536-12]

4:30 pm: **Carotenoid pixels characterization under color space tests and RGB formulas for mesocarp of Mango's fruits cultivars**, Ahmed Y. Hammad, NARSS (Egypt); Farid Saad E. S. Kassim, Horticultural Research Institute (Egypt) . . . . . .[7536-13]

Thursday 21 January

SESSION 5

Room: Conv. Ctr. Room A2 . . . . . .Thurs. 8:30 to 10:10 am

Modeling

Session Chair: **Valerie Nguyen,** Commissariat à l'Énergie Atomique (France)

8:30 am: **Analyzing the impact of ISO on digital imager defects with an automatic defect trace algorithm**, Jenny Leung, Glenn Chapman, Simon Fraser Univ. (Canada); Israel Koren, Zahava Koren, Univ. of Massachusetts (United States). . . . . .[7536-14]

8:50 am: **Enhanced sensitivity achievement using advanced device simulation of multifinger photo gate active pixel sensors**, Phanindra V. R. Kalyanam, Glenn H. Chapman, Ash M. Parameswaran, Simon Fraser Univ. (Canada). . . . . .[7536-15]

9:10 am: **Modeling and measurements of MTF and quantum efficiency of CMOS image sensor**, Ibrahima Djité, Institut Supérieur de l'Aéronautique et de l'Espace (France) . . . . . .[7536-16]

9:30 am: **Light-focusing simulation of photo-sensing devices by using beam propagation method**, Masatomo Nakazato, TCAD International, Inc. (Japan); Kazuhisa Fujita, TCADInternational, Inc. (Japan) . . .[7536-17]

9:50 am: **Characterization and correction of dark current in compact consumer cameras**, Justin C. Dunlap, Erik Bodegom, Ralf Widenhorn, Portland State Univ. (United States) . . . . . .[7536-18]

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

SESSION 6

Room: Conv. Ctr. Room A2 . Thurs. 10:40 am to 12:20 pm

Novel Imaging Devices and Applications

Session Chair: **Erik Bodegom,** Portland State Univ.

10:40 am: **Experiment and device simulation for photo-electron overflow characteristics on a pixel-shared CMOS image sensor using lateral overflow gate**, Shin Sakai, Yoshiaki Tashiro, Lei Hou, Shigetoshi Sugawa, Tohoku Univ. (Japan) . . . . . .[7536-19]

11:00 am: **A new function of the optical-multiplex image-acquisition system**, Tadakuni Narabu, Sony Corp. (Japan) . . . . . .[7536-20]

11:20 am: **A 2.2M CMOS image sensor for high-speed machine vision applications**, Xinyang Wang, Jan Bogaerts, Guido Vanhorebeek, Koen Ruythoren, Bart Ceulemans, Guy Meynants, CMOSIS nv (Belgium) . . . . . .[7536-21]

11:40 am: **Reducing crosstalk in vertically integrated CMOS image sensors**, Orit Skorka, Tyler Lucas, Dileepan Joseph, Univ. of Alberta (Canada) . . . . . .[7536-22]

12:00 pm: **A CMOS vision system on-chip with multicore sensory processing architecture for image analysis above 1,000F/s**, Ángel B. Rodríguez-Vázquez, Ctr. Nacional de Microelectrónica (Spain) . .[7536-23]

Courses of Related Interest

Register for Courses at the Cashier desk.

SC967 High Dynamic Range Imaging: Sensors and Architectures (Darmont) Sunday, 1:30 to 5:30 pm
SC468 Image Enhancement and Deblurring (Rabbani) Monday, 8:30 am to 5:30 pm
SC504 Introduction to CCD and CMOS Imaging Sensors and Applications (Janesick) Monday, 8:30 am to 5:30 pm
SC916 Digital Camera and Sensor Evaluation Using Photon Transfer (Janesick) Tuesday, 8:30 am to 5:30 pm
SC807 Digital Camera and Scanner Performance Evaluation: Science, Standards and Software (Burns) Wednesday, 8:30 am to 5:30 pm

Monday-Tuesday 18-19 January 2010 • Proceedings of SPIE Vol. 7537

Digital Photography VI

Conference Chairs: **Francisco Imai,** Canon Development Americas, Inc.; **Nitin Sampat,** Rochester Institute of Technology; **Feng Xiao,** Fairchild Imaging

Program Committee: **Sebastiano Battiato,** Univ. degli Studi di Catania (Italy); **Donald J. Baxter,** STMicroelectronics (R&D) Ltd. (United Kingdom); **Peter B. Catrysse,** Stanford Univ.; **Ted J. Cooper,** Lens Vector, Inc.; **Jeffrey M. DiCarlo,** Hewlett-Packard Labs.; **Edward R. Dowski, Jr.,** CDM Optics, Inc.; **Alexandru F. Drimbarean,** Tessera (FotoNation) Ireland Ltd. (Ireland); **Joyce E. Farrell,** Stanford Univ.; **Boyd A. Fowler,** Fairchild Imaging; **Frédéric Guichard,** DxO Labs. (France); **George John,** Motorola, Inc.; **Michael A. Kriss,** Consultant; **Jiangtao Kuang,** OmniVision Technologies, Inc.; **J. Dylan Li,** Lifesize Communications, Inc.; **Kevin J. Matherson,** Hewlett-Packard Co.; **Ricardo J. Motta,** Pixim, Inc.; **Seishi Ohmori,** Nikon Corp. (Japan); **Gloria G. Putnam,** Eastman Kodak Co. Venture Capital; **John R. Reinert-Nash,** Lifetouch, Inc.; **Brian G. Rodricks,** Fairchild Imaging; **Todd Sachs,** Aptina Imaging; **Sabine E. Süsstrunk,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Dietmar Wueller,** Image Engineering Dietmar Wüller (Germany); **Weihua Xiong,** OmniVision Technologies, Inc.

Cosponsored by: Fairchild imaging; Canon, Canon Development Americas, Inc.

Monday 18 January

Room: . . . . . Mon. 9:10 to 9:20 am

Opening Remarks

Session Chairs: **Francisco Imai,** Canon Development Americas Inc.; **Nitin Sampat,** Rochester Institute of Technology; **Feng Xiao,** Fairchild Imaging

SESSION 1

Room: Conv. Ctr. Room A2 . . . . . Mon. 9:20 to 10:00 am

Future of Digital Photography

Session Chairs: **Francisco Hideki Imai,** Canon Development Americas Inc.; **Nitin Sampat,** Rochester Institute of Technology; **Feng Xiao,** Fairchild Imaging

9:20 am: **The future of digital photography** *(Invited Paper)*, Ricardo J. Motta, Pixim, Inc. (United States) . . . . . .[7537-01]

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

SESSION 2

Room: Conv. Ctr. Room A2 . . . . . Mon. 10:30 to 11:50 am

Camera and Noise

Session Chair: **Boyd A. Fowler,** Fairchild Imaging

10:30 am: **Visibility of uncorrelated image noise**, Jiajing Xu, Reno Bowen, Stanford Univ. (United States); Jing Wang, Logitech Inc. (United States); Joyce E. Farrell, Stanford Univ. (United States). . . . . .[7537-02]

10:50 am: **Hot pixel reduction in CMOS image sensor pixels**, Jonathan Yu, David Collins, Alireza Yasan, Sanghoon Bae, Shri Ramaswami, Foveon Inc. (United States) . . . . . .[7537-03]

11:10 am: **Signal-dependent raw image denoising using sensor noise characterization via multiple acquisitions**, Angelo Bosco, Arcangelo Bruna, Davide Giacalone, STMicroelectronics (Italy); Sebastiano Battiato, Rosetta Rizzo, Univ. degli Studi di Catania (Italy) . . . . . .[7537-04]

11:30 am: **A self-profiling image noise and edge enhancement filter**, Radu V. Gheorghe, Andrei Tchouprakov, Mark Quadling, D4D Technologies (United States) . . . . . .[7537-05]

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

SESSION 3

Room: Conv. Ctr. Room A2 . . . . . Mon. 2:00 to 3:20 pm

Color Sensing

Session Chair: **Michael A. Kriss,** Consultant

2:00 pm: **Spectral sensitivity optimization of color image sensors considering photon shot noise: four-channel sensor models**, Hideyasu Kuniba, Nikon Corp. (Japan) . . . . . .[7537-06]

2:20 pm: **Evaluation methodology for Bayer demosaic algorithms in camera phones**, Sergio R. Goma, Kalin Atanassov, Qualcomm, Inc. (United States). . . . . .[7537-07]

2:40 pm: **Color calibration of a CMOS digital camera for mobile imaging**, Henrik Eliasson, Sony Ericsson Mobile Communications AB (Sweden) . . . . . .[7537-08]

3:00 pm: **Restoration of a high ISO-sensitivity color image with the shift-invariant Haar wavelet transform**, Takahiro Saito, Daisuke Yamada, Takashi Komatsu, Kanagawa Univ. (Japan) . . . . . .[7537-09]

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

SESSION 4

Room: Conv. Ctr. Room A2 . . . . . Mon. 3:50 to 5:30 pm

Camera Evaluation

Session Chair: **Dietmar Wueller,** Image Engineering Dietmar Wüller (Germany)

3:50 pm: **Direct PSF estimation using a random noise target**, Johannes Brauers, Claude Seiler, Til Aach, RWTH Aachen (Germany). . . . .[7537-10]

4:10 pm: **Using visible SNR (vSNR) to compare the image quality of pixel binning and digital resizing**, Joyce E. Farrell, Stanford Univ. (United States); Michael Okincha, OmniVision Technologies, Inc. (United States); Brian A. Wandell, Stanford Univ. (United States) . . . . . .[7537-11]

4:30 pm: **Texture-based measurement of spatial frequency response using the dead leaves target: extensions, and application to real camera systems**, Jon S. McElvain, Scott P. Campbell, Digital Imaging Systems (United States); Elaine Jin, Aptina LLC (United States); Jonathan Miller, Digital Imaging Systems (United States) . . . . . .[7537-12]

4:50 pm: **Dead leaves model for measuring texture quality on a digital camera**, Frédéric Cao, Frédéric Guichard, Hervé Hornung, DxO Labs. (France) . . . . . .[7537-13]

5:10 pm: **Information capacity: a measure of potential image quality of a digital camera**, Frédéric Cao, Frédéric Guichard, DxO Labs. (France) . . . . . .[7537-14]

Tuesday 19 January

Room: Marriott Ballroom . . . . . Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: Automatic 3D Modeling and Analysis of Large Scale Urban Environments, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 5

Room: Conv. Ctr. Room A2 . . . . . Tues. 10:30 to 11:30 am

Computational Photography

Session Chair: **Peter B. Catrysse,** Stanford Univ.

10:30 am: **On pixel detection threshold in the gigavision camera**, Feng Yang, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Luciano Sbaiz, Google Zurich (Switzerland); Edoardo Charbon, Technische Univ. Delft (Netherlands); Sabine Süsstrunk, Martin Vetterli, Ecole Polytechnique Fédérale de Lausanne (France) . . . . . .[7537-15]

10:50 am: **Defocus techniques for camera dynamic range expansion**, Matthew Trentacoste, Cheryl Lau, Mushfiqur Rouf, Rafal Mantiuk, Wolfgang Heidrich, The Univ. of British Columbia (Canada). . . . .[7537-16]

11:10 am: **Low-cost space-varying FIR filter architecture for computational imaging systems**, Guotong Feng, Ricoh Innovations, Inc. (United States); Mohammed Shoaib, Princeton Univ. (United States); Edward L. Schwartz, M. D. Robinson, Ricoh Innovations, Inc. (United States) . . . . . .[7537-17]

Lunch/Exhibition Break . . . . . 11:30 am to 1:30 pm

SESSION 6

Room: Conv. Ctr. Room A2 . . . . . Tues. 1:30 to 2:30 pm

Camera Scene Analysis

Session Chair: **John R. Reinert-Nash,** Lifetouch, Inc.

1:30 pm: **Memory color assisted illuminant estimation through pixel clustering**, Heng Zhang, Shuxue Quan, Broadcom Corp. (United States) . . . . . .[7537-20]

1:50 pm: **Face detection assisted auto exposure: supporting evidence from a psychophysical study**, Elaine W. Jin, Sheng Lin, Aptina Imaging Corporation (United States); Dhandapani Dharumalingam, Aptina Imaging Corp. (United States). . . . . .[7537-21]

2:10 pm: **A signature analysis based method for elliptical shape**, Ivana Guarneri, Mirko Guarnera, Giuseppe Messina, Valeria Tomaselli, STMicroelectronics (Italy) . . . . . .[7537-22]

SESSION 7

Room: Conv. Ctr. Room A2 . . . . . Tues. 2:30 to 4:20 pm

Image Enhancement

Session Chair: **Sebastiano Battiato,** Univ. degli Studi di Catania (Italy)

2:30 pm: **High-dynamic range imaging techniques based on both color-separation algorithms used in conventional graphic arts and the human visual perception modeling**, Mei-Chun Lo, Shih Hsin Univ. (Taiwan); Tsung-Hsien Hsieh, National Taiwan Univ. (Taiwan); Ruey-Kuen Perng, Providence Univ. (Taiwan) . . . . . .[7537-24]

2:50 pm: **Adaptive recovery of motion blur point spread function from differently exposed images**, Felix Albu, Corneliu Florea, Alexandru Drimbarean, Adrian Zamfir, Tessera (FotoNation) Romania SRL (Romania) . . . . . .[7537-25]

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

3:40 pm: **Removal of blocking and ringing artifacts in JPEG-coded images**, Ekaterina V. Tolstaya, Michael N. Rychagov, Samsung Electronics Co., Ltd. (Russian Federation); SangHo Kim, DonChul Choi, Samsung Electronics Co., Ltd. (Korea, Republic of) . . . . . .[7537-26]

4:00 pm: **Color lens shade compensation achieved by linear regression of piece-wise bilinear spline functions,** Touraj Tajbakhsh, Silicon Image GmbH (Germany) . . . . . .[7537-36]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Hard color-shrinkage for color-image processing of a digital color camera, Takahiro Saito, Yasutaka Ueda, Nobuhiro Fujii, Takashi Komatsu, Kanagawa Univ. (Japan) . . . . . .[7537-28]

Image orientation detection using low-level features and faces, Gianluigi Ciocca, Claudio Cusano, Raimondo Schettini, Univ. degli Studi di Milano-Bicocca (Italy) . . . . . .[7537-29]

Multiple images thumbnailing, Gianluigi Ciocca, Claudio Cusano, Raimondo Schettini, Univ. degli Studi di Milano-Bicocca (Italy) . .[7537-30]

Benefits and limitations using multifeature test charts, Dietmar Wueller, Uwe Artmann, Image Engineering Dietmar Wüller (Germany). . . .[7537-31]

A digital ISO expansion technique for digital cameras, Youngjin Yoo, Kangeui Lee, Wonhee Choe, SungChan Park, Seong-Deok Lee, Chang-Yong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . .[7537-32]

Multidirectional MTF measurement of digital image acquisition devices using a Siemens star, Kenichiro Masaoka, Masayuki Sugawara, Yuji Nojiri, NHK Science & Technology Research Labs. (Japan) .[7537-33]

A novel dynamic optical low-pass filter, Branko Petljanski, Florida Atlantic Univ. (United States) and Panavision (United States) . . .[7537-34]

Reviewing the exposure meter constant: improving the exposure equation, Michael G. Prais, Consultant (United States) . . . . . .[7537-37]

Evaluation of color error and noise on simulated images, Clémence Mornet, Jérôme M. Vaillant, Thomas Decroux, Didier Hérault, STMicroelectronics (France); Isabelle Schanen-Duport, Institut de Microélectronique Électromagnétisme et Photonique (France) . .[7537-38]

Courses of Related Interest

Register for Courses at the Cashier desk.

SC980 Theory and Methods of Lightfield Photography (Georgiev, Lumsdaine) Wednesday, 1:30 to 5:30 pm
SC967 High Dynamic Range Imaging: Sensors and Architectures (Darmont) Sunday, 1:30 to 5:30 pm
SC964 HD Photo/JPEG XR in the Context of Modern Image Compression (Pollak) Wednesday, 8:30 am to 12:30 pm
SC504 Introduction to CCD and CMOS Imaging Sensors and Applications (Janesick) Monday, 8:30 am to 5:30 pm
SC807 Digital Camera and Scanner Performance Evaluation: Science, Standards and Software (Burns) Wednesday, 8:30 am to 5:30 pm
SC916 Digital Camera and Sensor Evaluation Using Photon Transfer (Janesick) Tuesday, 8:30 am to 5:30 pm

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Image Processing: Machine Vision Applications III

Conference Chairs: **David Fofi,** Univ. de Bourgogne (France); **Kurt S. Niel,** Fachhochschule Wels (Austria)

Program Committee: **Philip R. Bingham,** Oak Ridge National Lab.; **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); **Marc M. Ellenrieder,** Carl Zeiss Optronics GmbH (Germany); **Lixin Fan,** Nokia Research Ctr. (Finland); **Ewald Fauster,** vatron GmbH (Austria); **Steven P. Floeder,** 3M Co.; **Luciano F. Fontoura Da Costa,** Univ. de São Paulo (Brazil); **Edmund Y. Lam,** The Univ. of Hong Kong (Hong Kong, China); **Xavier Llado,** Univ. de Girona (Spain); **Fabrice Meriaudeau,** Univ. de Bourgogne (France); **Dinesh Nair,** National Instruments Corp.; **Jeffery R. Price,** Oak Ridge National Lab.; **A. Ravishankar Rao,** IBM Thomas J. Watson Research Ctr.; **Hamed Sari-Sarraf,** Texas Tech Univ.; **Ralph Seulin,** Univ. de Bourgogne (France); **Yvon Voisin,** Univ. de Bourgogne (France)

Tuesday 19 January

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Color and hyperspectral imaging sensors applied to manufactured stone products, Silvia Serranti, Giuseppe Bonifazi, Laura D'Aniello, Univ. degli Studi di Roma La Sapienza (Italy). . . . . .[7538-30]

Hyperspectral sensing techniques applied to olive husks characterization, Silvia Serranti, Giuseppe Bonifazi, Laura D'Aniello, Aldo Gargiulo, Univ. degli Studi di Roma La Sapienza (Italy) . . . . . .[7538-31]

Layer separation for dual-energy material discrimination imaging system, Kenneth Fu, Univ. of California, San Diego (United States); Dale Ranta, SAIC (United States); Clark C. Guest, Pankaj K. Das, Univ. of California, San Diego (United States) . . . . . .[7538-32]

The application of wavelet denoising in cargo material identification imaging system, Kenneth Fu, Univ. of California, San Diego (United States); Dale Ranta, SAIC (United States); Clark C. Guest, Pankaj K. Das, Univ. of California, San Diego (United States). . . . . .[7538-33]

A practical DCT-based blind image watermarking scheme, Jianming Jin, Huiman Hou, Yuhong Xiong, Hewlett-Packard Labs. China (China) . . . . . .[7538-34]

HMM-based online 3D hand gesture recognition, Ruifeng Yuan, Jun Cheng, Pengcheng Li, Guang Chen, Wenchuang Zhao, Shenzhen Institute of Advanced Technology (China) . . . . . .[7538-35]

Synthesis of solid textures based on a 2D example: application to the synthesis of 3D carbon structures observed by transmission electronic microscopy, Christian Germain, Jean-Pierre Da Costa, Univ. Bordeaux 1 (France) . . . . . .[7538-36]

Cigarette smoke detection from captured image sequences, Kentaro Iwamoto, Hironori Inoue, Toru Matsubara, Toshihisa Tanaka, Tokyo Univ. of Agriculture and Technology (Japan) . . . . . .[7538-37]

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 1

Room: Conv. Ctr. Room B1 . . . . . .Wed. 9:30 to 11:10 am

Industrial Inspection and Applications

Session Chair: **Kurt S. Niel,** Fachhochschule Wels (Austria)

9:30 am: **Motion blurred images restoration applied on the surface inspection systems of cold rolled-steel strips**, Hongwei Sun, Institut National Polytechnique de Grenoble (France) and Northeastern Univ. (China); Michel Desvignes, Grenoble Institute of Technology (France); Yunhui Yan, Northeastern Univ. (China); Cao Luo, Grenoble Univ. (France) and Wuhan Univ. (China). . . . . .[7538-01]

9:50 am: **Rotating optical geometry sensor for inner pipe-surface reconstruction**, Moritz Ritter, Christan Frey, Fraunhofer-Institut für Informations- und Datenverarbeitung (Germany) . . . . . .[7538-02]

10:10 am: **Fully automatic leaf characterisation in heterogeneous environment of plant growing automation**, Jérôme Da Rugna, Gaël Chareyron, Darsch Amaury, Pôle Univ. Léonard de Vinci (France)[7538-03]

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

10:50 am: **3D vision for nuclear reactor retrofit tool docking**, Jay Stavnitzky, Frederic Rivollier, ATS Automation Tooling Systems Inc. (Canada) . . . . . .[7538-04]

SESSION 2

Room: Conv. Ctr. Room B1 . . Wed. 11:10 am to 12:50 pm

Active Vision and Robotics I

Session Chair: **David Fofi,** Univ. de Bourgogne (France)

11:10 am: **Analysis of a multipurpose camera and its advantages for autonomous vehicles**, Simon A. Hawe, Ulrich J. Kirchmaier, Klaus Diepold, Technische Univ. München (Germany). . . . . .[7538-05]

11:30 am: **Fully automatic 3D digitization of unknown objects**, Gabriel Falcao Rozenwald, Ralph Seulin, Yohan D. Fougerolle, Univ. de Bourgogne (France) . . . . . .[7538-06]

11:50 am: **Automatic trajectory clustering for generating ground truth data sets**, Julia Moehrmann, Gunther Heidemann, Univ. Stuttgart (Germany) . . . . . .[7538-07]

12:10 pm: **VisNAV 100: a robust, compact imaging sensor for enabling autonomous air-to-air refueling of aircraft and unmanned aerial vehicles**, Anup B. Katake, Heeyoul Choi, StarVision Technologies, Inc. (United States). . . . . .[7538-08]

12:30 pm: **A method of getting relative elevation proportion from UAV images**, Rui Wu, Hongying Zhao, Peking Univ. (China) . . . . . .[7538-09]

Lunch Break . . . . . 12:50 to 2:00 pm

SESSION 3

Room: Conv. Ctr. Room B1 . . . . . Wed. 2:00 to 3:20 pm

Physical Imaging and Microscopy

Session Chair: **Fabrice Meriaudeau,** Univ. de Bourgogne (France)

2:00 pm: **Comparison of the ability of quantitative parameters to differentiate surface texture of Atomic Force Microscope (AFM) images**, Bethany M. Niedzielski, Rensselaer Polytechnic Institute (United States); John S. DaPonte, Christine Broadbridge, Maria Gherasimova, Southern Connecticut State Univ. (United States) . . . . . .[7538-10]

2:20 pm: **Conformity of valuable spikes by ombroscopic imaging**, Fabrice Mairesse, Tadeusz M. Sliwa, Yvon Voisin, Univ. de Bourgogne (France) . . . . . .[7538-11]

2:40 pm: **Segmentation of thermographic images of hands using a genetic algorithm**, Payel Ghosh, Melanie Mitchell, Portland State Univ. (United States); Judith Gold, Temple Univ. (United States) . . . . .[7538-12]

3:00 pm: **A system architecture for online data interpretation and reduction in fluorescence microscopy**, Thorsten Röder, Technische Univ. München (Germany); Matthias Geisbauer, BioImaging Zentrum der LMU (Germany); Yang Chen, Alois Knoll, Technische Univ. München (Germany); Rainer Uhl, Ludwig-Maximilians-Univ. München (Germany) . . . . . .[7538-13]

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

SESSION 4

Room: Conv. Ctr. Room B1 . . . . . Wed. 3:50 to 4:50 pm

Multispectral Imaging

Session Chair: **Hamed Sari-Sarraf,** Texas Tech Univ.

3:50 pm: **Motion estimation accuracy for visible-light/gamma-ray imaging fusion for portable portal monitoring**, Thomas P. Karnowski, Mark F. Cunningham, James S. Goddard, Anil Cheriyadat, Donald Hornback, Lorenzo Fabris, Ryan A. Kerekes, Klaus Ziock, Oak Ridge National Lab. (United States); Timothy Gee, Aldis (United States)[7538-14]

4:10 pm: **A novel region-based approach for the fusion of combined stereo and spectral series**, Ioana Gheta, Sebastian Höfer, Univ. Karlsruhe (Germany); Michael Heizmann, Jürgen Beyerer, Fraunhofer-Institut für Informations- und Datenverarbeitung (Germany) . . . . . .[7538-15]

4:30 pm: **Real-time multiple 3D markers localization and tracking with multispectrum sequences**, Pengcheng Li, Jun Cheng, Ruifeng Yuan, Wenchuang Zhao, Shenzhen Institute of Advanced Technology (China) . . . . . .[7538-16]

Thursday 21 January

SESSION 5

Room: Conv. Ctr. Room B1 . . . . . Thurs. 9:00 to 10:20 am

3D Vision and Range Imaging

Session Chair: **Edmund Lam,** The Univ. of Hong Kong (Hong Kong, China)

9:00 am: **Multiple-range imaging camera operation with minimal performance impact**, Refael Z. Whyte, Andrew D. Payne, Adrian A. Dorrington, Michael J. Cree, The Univ. of Waikato (New Zealand)[7538-17]

9:20 am: **Calibration and control of a robot arm using a range imaging camera**, Cameron Kelly, Adrian A. Dorrington, Michael J. Cree, Andrew D. Payne, The Univ. of Waikato (New Zealand) . . . . . .[7538-18]

9:40 am: **Resolving depth-measurement ambiguity with commercially available range imaging cameras**, Shane H. McClure, Michael J. Cree, Adrian A. Dorrington, Andrew D. Payne, The Univ. of Waikato (New Zealand). . . . . .[7538-19]

10:00 am: **A novel 3D reconstruction approach by dynamic (de)focused light**, Intuon Lertrusdachakul, Yohan D. Fougerolle, Univ. de Bourgogne (France); Florence Denis, Univ. Claude Bernard-Lyon1 (France); Olivier Laligant, Univ. de Bourgogne (France) . . . . . .[7538-20]

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

SESSION 6

Room: Conv. Ctr. Room B1 . .Thurs. 10:50 am to 12:10 pm

Active Vision and Robotics II

Session Chair: **David Fofi,** Univ. de Bourgogne (France)

10:50 am: **1000-fps real-time optical flow detection system**, Idaku Ishii, Taku Taniguchi, Kenkichi Yamamoto, Takeshi Takaki, Hiroshima Univ. (Japan). . . . . .[7538-21]

11:10 am: **Motion based situation recognition in group meetings**, Julia Moehrmann, Xin Wang, Gunther Heidemann, Univ. Stuttgart (Germany) . . . . . .[7538-22]

11:30 am: **Illumination invariant motion detection with level set-based segmentation**, Suk-Ho Lee, Namseok Choi, Dongseo Univ. (Korea, Republic of); Moon Gi Kang, Yonsei Univ. (Korea, Republic of) . .[7538-23]

11:50 am: **Ego-motion estimation from one straight edge in constructed scene**, Saleh Mosaddegh, David Fofi, Univ. de Bourgogne (France); Pascal Vasseur, Univ. de Picardie Jules Verne (France) [7538-24]

Lunch Break . . . . . 12:10 to 1:30 pm

SESSION 7

Room: Conv. Ctr. Room B1 . . . . . .Thurs. 1:30 to 3:30 pm

Image Processing and Algorithms

Session Chair: **Kurt S. Niel,** Fachhochschule Wels (Austria)

1:30 pm: **A line detection and description algorithm based on swarm intelligence**, Ulrich J. Kirchmaier, Simon A. Hawe, Klaus Diepold, Technische Univ. München (Germany) . . . . . .[7538-25]

1:50 pm: **An hybrid an adaptive segmentation method using color and textural information**, Cyril Meurie, Yassine Ruichek, Andréa Cohen, Univ. of Technology of Belfort-Montbeliard (France); Juliette Marais, The French National Institute for Transport and Safety Research (France) . . .[7538-26]

2:10 pm: **Hierarchical feature extraction and object recognition based on biologically inspired filters**, Pankaj Mishra, B. Keith Jenkins, Univ. of Southern California (United States). . . . . .[7538-27]

2:30 pm: **Feature level fusion of face and palmprint biometrics by isomorphic graph-based improved K-medoids partitioning**, Dakshina R. Kisku, BCREC (India); Phalguni Gupta, Indian Institute of Technology Kanpur (India); Jamuna K. Sing, Jadavpur Univ. (India) . . . . . .[7538-28]

2:50 pm: **Blurred face recognition algorithm guided by a no-reference blur metric**, Cécile Fiche, Patricia Ladret, Ngoc-Son Vu, Institut National Polytechnique de Grenoble (France). . . . . .[7538-29]

3:10 pm: **2 x 1D image registration and comparison**, E. Barney Smith, T. Andersen, N. Rafla, G. Zheng, Boise State Univ. (United States) .[7538-38]

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Intelligent Robots and Computer Vision XXVII: Algorithms and Techniques

Conference Chairs: **David P. Casasent,** Carnegie Mellon Univ.; **Ernest L. Hall,** Univ. of Cincinnati; **Juha Röning,** Univ. of Oulu (Finland)

Program Committee: **Peter (Ming) Cao,** Consultant; **Norbert Lauinger,** CORRSYS 3D Sensors AG (Germany); **Dah Jye Lee,** Brigham Young Univ.; **Kurt S. Niel,** Fachhochschule Wels (Austria); **Yoshihiko Nomura,** Mie Univ. (Japan); **Greg Pearly,** BAE Systems; **Wolfgang Pölzleitner,** Sensotech GmbH (Austria); **Daniel Raviv,** Florida Atlantic Univ.; **Neelima Shrikhande,** Central Michigan Univ.; **Oliver Sidla,** SLR Engineering (Austria); **Bernard L. Theisen,** U.S. Army Tank-Automotive Research, Development and Engineering Ctr.; **Dili Zhang,** Monotype Imaging

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room C1 . . . . . .Mon. 8:30 to 10:30 am

Invited Papers on Intelligent Robotics

Session Chair: **Ernest L. Hall,** Univ. of Cincinnati

8:30 am: **Robotics for human exploration** *(Invited Paper, Presentation Only)*, Terrence W. Fong, NASA Ames Research Ctr. (United States) . . . . . .[7539-01]

9:00 am: **Intelligent ground vehicle competition** *(Invited Paper)*, Bernard L. Theisen, U.S. Army Tank-Automotive Research, Development and Engineering Ctr. (United States) . . . . . .[7539-02]

9:30 am: **Engineering robust intelligent robots** *(Invited Paper)*, Ernest L. Hall, Univ. of Cincinnati (United States); Souma A. Ali, The Hashemite Univ. (Jordan); Masoud Ghaffari, Univ. of Cincinnati (United States); Xiaoqun Liao, Peter (Ming) Cao, Consultant (United States). . . . . .[7539-03]

10:00 am: **Different micromanipulation applications based on common modular control architecture** *(Invited Paper)*, Risto Sipola, Tero J. Vallius, Marko Pudas, Juha Röning, Univ. of Oulu (Finland) . . . . . .[7539-04]

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

SESSION 2

Room: Conv. Ctr. Room C1 . . .Mon. 11:00 am to 12:30 pm

Novel People Tracking Approaches

Session Chair: **Oliver Sidla,** SLR Engineering (Austria)

11:00 am: **Object tracking by combining detection, motion estimation, and verification** *(Invited Paper)*, Oliver Sidla, SLR Engineering (Austria) . . . . . .[7539-05]

11:30 am: **Recognizing and tracking humans and vehicles using radar**, David Tahmoush, Army Research Lab. (United States) . . . . . .[7539-06]

11:50 am: **On-line measurement of ski-jumper trajectory: combining stereo vision and shape description**, Thomas Nunner, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); Oliver Sidla, SLR Engineering (Austria); Gerhard M. Paar, Bernhard Nauschnegg, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria) [7539-07]

12:10 pm: **Object tracking by co-trained classifiers and particle filters**, Liang Tang, Shanqing Li, Keyan Liu, Lei Wang, Hewlett-Packard Labs. China (China) . . . . . .[7539-08]

Lunch Break . . . . . 12:30 to 1:40 pm

SESSION 3

Room: Conv. Ctr. Room C1 . . . . . .Mon. 1:40 to 3:20 pm

Autonomous Robotic Systems and Applications

Session Chair: **Juha Röning,** Univ. of Oulu (Finland)

1:40 pm: **Teaching and implementing autonomous robotic lab walkthroughs in a biotech laboratory through model-based visual tracking**, Martin Wojtczyk, Technische Univ. München (Germany) and Bayer HealthCare (United States) . . . . . .[7539-09]

2:00 pm: **Robust pipeline localization for an autonomous underwater vehicle using stereo vision and echo sounder data**, Gøril M. Breivik, Sigurd A. Fjerdingen, Øystein Skotheim, SINTEF (Norway) . . . . .[7539-10]

2:20 pm: **Flexible inline low-cost inspection station**, Chen-Ko Sung, Fraunhofer-Institut für Informations- und Datenverarbeitung (Germany) . . . . . .[7539-11]

2:40 pm: **LandingNav: a precision autonomous landing sensor for robotic platforms on planetary bodies**, Anup B. Katake, Chrisitian Bruccoleri, StarVision Technologies, Inc. (United States); Puneet Singla, Univ. at Buffalo (United States); James Ochoa, StarVision Technologies, Inc. (United States); John L. Junkins, Texas A&M Univ. (United States) . . . . . .[7539-12]

3:00 pm: **Real-time 3D environment model for obstacle detection and collision avoidance with a mobile service robot**, Jens U. Kuehnle, Fraunhofer-Institut für Produktionstechnik und Automatisierung (Germany) . . . . . .[7539-13]

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

SESSION 4

Room: Conv. Ctr. Room C1 . . . . . .Mon. 3:50 to 5:30 pm

Autonomous Robotic Detection, Tracking, and Vehicle Assistance Methods

Session Chair: **Ernest L. Hall,** Univ. of Cincinnati

3:50 pm: **Handling of split-and-merge effects and occlusions using feature-based probabilistic data association**, Michael Grinberg, Florian Ohr, Fraunhofer-Institut für Informations- und Datenverarbeitung (Germany) . . . . . .[7539-14]

4:10 pm: **Real-time object detection and tracking in video sequences**, Fadi Dornaika, Univ. del País Vasco (Spain); Fadi Chakik, Ctr. Univ. de Technologie (Lebanon) . . . . . .[7539-15]

4:30 pm: **Robust obstacles detection and tracking using disparity for car driving assistance**, Michele Gouiffes, Antoine Patri, Marius Vasiliu, Univ. Paris-Sud 11 (France). . . . . .[7539-16]

4:50 pm: **Assessment of image sensor performance with statistical perception performance analysis**, Stefan Franz, Daimler Chrysler AG (Germany); Dieter N. Willersinn, Kristian Kroschel, Fraunhofer-Institut für Informations- und Datenverarbeitung (Germany) . . . . . .[7539-17]

5:10 pm: **Modeling of radial asymmetry in lens distortion facilitated by modern optimization techniques**, Jason P. de Villiers, CSIR Defence, Peace, Safety and Security (South Africa); Friedrich Wilhelm Leuschner, Ronelle Geldenhuys, Univ. of Pretoria (South Africa) . . . . . .[7539-18]

Tuesday 19 January

Room: Marriott Ballroom . . . . . Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 5

Room: Conv. Ctr. Room C1 . . . Tues. 9:30 am to 12:40 pm

Intelligent Ground Vehicle Competition

Session Chair: **Bernard L. Theisen,** U.S. Army Tank-Automotive Research, Development and Engineering Ctr.

9:30 am: **The design and results of an algorithm for intelligent ground vehicles**, Robert N. Riggins, Matthew D. Duncan, Caleb Tote, Justin D. Milam, Bluefield State College (United States) . . . . . .[7539-19]

9:50 am: **Improved single-camera stereo system for mobile robotics**, William P. Lovegrove, Patrick McGary, Kelly Austin, Bob Jones Univ. (United States). . . . . .[7539-20]

10:10 am: **A path planning algorithm for lane-following-based autonomous mobile robot navigation**, Yazan Aljeroudi, Mark Paulik, Mohan Krishnan, Chaomin Luo, Univ. of Detroit Mercy (United States) . . . . . .[7539-21]

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

11:00 am: **Argos: Princeton University's entry in the 2009 Intelligent Ground Vehicle Competition**, Derrick C. Yu, Richard Harris, Alex Tait, Brenton Partridge, Tony Zhu, Princeton Univ. (United States) . . .[7539-22]

11:20 am: **Application of a distributed systems architecture for increased speed in image processing on an autonomous ground vehicle**, Adam Wright, Orko Momin, Kumud Nepal, Rahul Shakya, Young Ho Shin, David J. Ahlgren, Trinity College (United States) . . . . . .[7539-23]

11:40 am: **An enhanced dynamic Delaunay triangulation-based path planning algorithm for autonomous mobile robot navigation**, Jun Chen, Yipeng Tang, Chaomin Luo, Mohan Krishnan, Mark Paulik, Univ. of Detroit Mercy (United States) . . . . . .[7539-24]

12:00 pm: **Auto-preview camera orientation for environment perception on a mobile robot**, Micho Radovnikovich, Pavan K. Vempaty, Ka C. Cheok, Oakland Univ. (United States). . . . . .[7539-25]

12:20 pm: **Predictive vision from stereo video: robust object detection for autonomous navigation using the Unscented Kalman Filter on streaming stereo images**, Donald W. Rosselot, Mark Aull, Ernest L. Hall, Univ. of Cincinnati (United States). . . . . .[7539-26]

Lunch Break . . . . . 12:40 to 2:20 pm

SESSION 6

Room: Conv. Ctr. Room C1 . . . . . Tues. 2:20 to 3:00 pm

Autonomous Robotic Navigation, Scene Content, and Control

Session Chairs: **Ernest L. Hall,** Univ. of Cincinnati; **Juha Röning,** Univ. of Oulu (Finland)

2:20 pm: **Synchronizing real and predicted synthetic video imagery for localization of a robot to a 3D environment**, Damian M. Lyons, Sirhan Chaudhry, Fordham Univ. (United States); David Paul Benjamin, Pace Univ. (United States). . . . . .[7539-27]

2:40 pm: **Comparison of three control methods for an autonomous vehicle**, Anup S. Deshpande, Kovid Mathur, Ernest L. Hall, Univ. of Cincinnati (United States) . . . . . .[7539-28]

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

SESSION 7

Room: Conv. Ctr. Room C1 . . . . . Tues. 3:30 to 4:50 pm

Computer Vision Advances for Intelligent Robots

Session Chair: **Dah Jye Lee,** Brigham Young Univ.

3:30 pm: **N-dimension closeness measurements used in dynamic pattern recognitions**, Chia-Lun J. Hu, Univ. of Colorado at Boulder (United States). . . . . .[7539-29]

3:50 pm: **Color image processing for date quality evaluation**, Dah Jye Lee, James K. Archibald, Brigham Young Univ. (United States). .[7539-30]

4:10 pm: **Fast correspondence of unrectified stereo images using genetic algorithm and spline representation**, Beau J. Tippetts, Dah Jye Lee, James K. Archibald, Brigham Young Univ. (United States). .[7539-31]

4:30 pm: **Improving color image processing performance of the histogram of oriented gradients algorithm,** Spencer G. Fower, Kirt D. Lillywhite, Dah Jye Lee, Doran Wilde, James K. Archibald, Brigham Young Univ. (United States) . . . . . .[7539-32]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Multiview object tracking in smart space, Yahui Liu, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7539-33]

Active visual tracking method self-adapting to illumination based on particle filter pre-location, Jie Su, Harbin Univ. of Science and Technology (China) . . . . . .[7539-34]

Tuesday-Wednesday 19-20 January 2010 • Part of Proceedings of SPIE Vol. 7540

Imaging and Printing in a Web 2.0 World

Conference Chairs: **Qian Lin,** Hewlett-Packard Labs.; **Zhigang Fan,** Xerox Corp.

Program Committee: **Patricia Albanese,** Rochester Institute of Technology; **Kathrin Berkner,** Ricoh Innovations, Inc.; **Guotong Feng,** Ricoh Innovations, Inc.; **Ullas Gargi,** Google, Inc.; **Jerry J. Liu,** Hewlett-Packard Labs.; **Mor Naaman,** Rutgers Univ.; **Stephen Palmer,** Univ. of California, Berkeley; **Robert J. Rolleston,** Xerox Corp.; **Philip Rose,** XMPie, Inc.; **David N. Slatter,** Hewlett-Packard Labs. (United Kingdom); **Wiley Wang,** Shutterfly

Tuesday 19 January

Room: Marriott Ballroom . . . . . Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 1

Room: Conv. Ctr. Room A4 . . . . . Tues. 9:30 to 11:50 am

Web Content Creation and Analysis

Session Chair: **Jerry J. Liu,** Hewlett-Packard Labs.

9:30 am: **Crowd-sourcing, media, and attention** *(Invited Paper)*, Bernardo A. Huberman, Hewlett-Packard Labs. (United States)[7540A-01]

10:00 am: **Contextual advertisement placement in printed media**, Sam J. Liu, Parag Joshi, Hewlett-Packard Labs. (United States) . . . [7540A-02]

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

10:50 am: **Content-based Image retrieval with ontological ranking**, Shen-Fu Tsai, Min-Hsuan Tsai, Thomas S. Huang, Univ. of Illinois at Urbana-Champaign (United States) . . . . . [7540A-03]

11:10 am: **A case study on the rule-based and CRF-based author extraction methods**, Shengwen Yang, Yuhong Xiong, Hewlett-Packard Labs. China (China) . . . . . [7540A-04]

11:30 am: **New performance evaluation models for character detection in images**, Wang Yanwei, Xiaoqing Ding, Changsong Liu, Tsinghua Univ. (China) . . . . . [7540A-05]

Lunch Break . . . . . 11:50 am to 1:30 pm

SESSION 2

Room: Conv. Ctr. Room A4 . . . . . Tues. 1:30 to 3:00 pm

Web Printing and Publishing I

Session Chair: **Patricia Albanese,** Rochester Institute of Technology

1:30 pm: **Xerox Trails: a new web-based publishing technology** *(Invited Paper)*, Venkatesh G. Rao, David Vandervort, Jesse Silverstein, Xerox Corp. (United States). . . . . [7540A-06]

2:00 pm: **WikiPrints: rendering enterprise wiki content for printing**, Kathrin Berkner, Ricoh Innovations, Inc. (United States) . . . . . [7540A-07]

1:20 pm: **Navigating web search results**, Steven J. Harrington, Xerox Corp. (United States). . . . . [7540A-08]

2:40 pm: **Cloud-based printing for mobile devices**, Nina T. Bhatti, Eamonn O'Brien-Strain, Jerry Liu, Hewlett-Packard Labs. (United States) . . . . . [7540A-09]

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

SESSION 3

Room: Conv. Ctr. Room A4 . . . . . Tues. 3:30 to 5:10 pm

Web Printing and Publishing II

Session Chair: **Kathrin Berkner,** Ricoh Innovations, Inc.

3:30 pm: **DIY eBooks: collaborative publishing made easy**, Steve A. Battle, Hewlett-Packard Labs. (United Kingdom); Fabio Vitali, Univ. degli Studi di Bologna (Italy); Matthew Bernius, Tona Henderson, Manu Choudhury, Rochester Institute of Technology (United States) [7540A-10]

3:50 pm: **Emergent printing and publishing technologies in the digital age: a publisher's perspective**, David Blakesley, Purdue Univ. (United States) and Parlor Press (United States). . . . . [7540A-11]

4:10 pm: **Using EPUB as a framework for the automated collection, tagging, and cross-media transformation of web content for re-publication**, Matthew Bernius, Ryan Langille, Guy Paddock, Rochester Institute of Technology (United States); Steve Battle, Hewlett-Packard Labs. (United States). . . . . [7540A-12]

4:30 pm: **MagCloud: magazine self-publishing for the long tail**, Kok-Wei Koh, Ehud Chatow, Hewlett-Packard Co. (United States) . . . . [7540A-13]

4:50 pm: **A web-based rapid assessment tool for production publishing solutions,** Tong Sun, Xerox Corp. (United States). [7540A-14]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

Demonstrations . . . . . 5:30 to 8:00 pm

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Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 4

Room: Conv. Ctr. Room A4 . . . . . .Wed. 9:30 to 11:40 am

Web Design and Content Representation

Session Chair: **Guotong Feng,** Ricoh Innovations, Inc.

9:30 am: **An investigation of document aesthetics for web-to-print repurposing of small-medium business marketing collateral**, Jan P. Allebach, Maria Ortiz Segovia, Purdue Univ. (United States); C. Brian Atkins, Eamonn O'Brien-Strain, Niranjan Damera-Venkata, Nina T. Bhatti, Jerry J. Liu, Qian Lin, Hewlett-Packard Labs. (United States) . [7540A-15]

9:50 am: **Learning from graphic designers: using grids as a scaffolding for automatic print layout**, Eamonn O'Brien-Strain, Jerry J. Liu, Hewlett-Packard Labs. (United States). . . . . [7540A-16]

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

10:40 am: **Ubiquitous picture rich content representation**, Wiley H. Wang, Jennifer Dean, Russ Muzzolini, Shutterfly (United States)[7540A-17]

11:00 am: **A novel XML-based document format with printing quality for web publishing**, Ruiheng Qiu, Zhi Tang, Liangcai Gao, Yinyan Yu, Peking Univ. (China) . . . . . [7540A-18]

11:20 am: **Smart browser: a framework for bringing intelligence into the browser**, Demiao Lin, Jianming Jin, Hewlett-Packard Labs. China (China); Yuhong Xiong, Hewlett-Packard Labs. (United States) [7540A-19]

Lunch Break . . . . . 11:40 am to 1:30 pm

SESSION 5

Room: Conv. Ctr. Room A4 . . . . . .Wed. 1:30 to 3:00 pm

Online Photo Services I

Session Chair: **Wiley H. Wang,** Shutterfly

1:30 pm: **MagicPhotobook: using technology to streamline photobook creation** *(Invited Paper)*, Xuemei Zhang, Yuli Gao, C. Brian Atkins, Hewlett-Packard Labs. (United States); Phil Cheatle, Hewlett-Packard Labs. (United Kingdom); Jun Xiao, Hui Chao, Peng Wu, Daniel Tretter, Hewlett-Packard Labs. (United States); David N. Slatter, Hewlett-Packard Labs. (United Kingdom); Andrew Carter, Roland Penny, Hewlett-Packard Co. (United Kingdom); Chris Willis, Hewlett-Packard Labs. (United States) [7540A-20]

2:00 pm: **Faces from the web: automatic selection and composition of media for casual screen consumption and printed artwork**, Phil Cheatle, David N. Slatter, Darryl Greig, Hewlett-Packard Labs. (United Kingdom). . . . . [7540A-21]

2:20 pm: **Semi-automatic image personalization tool for variable text insertion and replacement**, Hengzhou Ding, Purdue Univ. (United States); Raja Bala, Zhigang Fan, Reiner Eschbach, Xerox Corp. (United States); Charles A. Bouman, Jan P. Allebach, Purdue Univ. (United States) . . . . . [7540A-22]

2:40 pm: **Automatic image cropping for republishing**, Phil Cheatle, Hewlett-Packard Labs. (United Kingdom). . . . . [7540A-23]

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

SESSION 6

Room: Conv. Ctr. Room A4 . . . . . .Wed. 3:30 to 4:50 pm

Online Photo Services II

Session Chair: **David N. Slatter,** Hewlett-Packard Labs. (United Kingdom)

3:30 pm: **Assessing photographer competence using face statistics**, Darryl Greig, Hewlett-Packard Ltd. (United Kingdom); Yuli Gao, Hewlett-Packard Co. (United States) . . . . . [7540A-24]

3:50 pm: **Automatic eye enhancement by sclera whitening**, Changhyung Lee, Purdue Univ. (United States); Morgan Schramm, Hewlett-Packard Co. (United States); Mireille Boutin, Jan P. Allebach, Purdue Univ. (United States). . . . . [7540A-25]

4:10 pm: **Automatic digital photo-book making system**, Wiley H. Wang, Patrick C. Teo, Russ Muzzolini, Shutterfly (United States) . . . . [7540A-26]

4:30 pm: **The impact of geotagging on the photo industry and creating revenue streams**, Rolf Richter, locr GmbH (Germany) . . . . . [7540A-27]

Courses of Related Interest

Register for Courses at the Cashier desk.

SC964 HD Photo/JPEG XR in the Context of Modern Image Compression (Pollak) Wednesday, 8:30 am to 12:30 pm

SC980 Theory and Methods of Lightfield Photography (Georgiev, Lumsdaine) Wednesday, 1:30 to 5:30 pm

Thursday 21 January 2010 • Part of Proceedings of SPIE Vol. 7540

Multimedia Content Access: Algorithms and Systems IV

Thursday 21 January

SESSION 7

Room: Conv. Ctr. Room A4 . . . . . .Thurs. 8:30 to 9:10 am

Keynote Session

Session Chair: **Cees Snoek,** Univ. van Amsterdam (Netherlands)

8:30 am: **Cooperative classification of shared images**, Claudio Cusano, Univ. degli Studi di Milano-Bicocca (Italy); Simone Santini, Univ. Autónoma de Madrid (Spain) . . . . . [7540B-28]

SESSION 8

Room: Conv. Ctr. Room A4 . . . . . .Thurs. 9:10 to 10:10 am

Semantic/Multimodal Retrieval

Session Chair: **Cees Snoek,** Univ. van Amsterdam (Netherlands)

9:10 am: **Semantic retrieval and automatic annotation: linear transformations, correlation, and semantic spaces**, Jonathon S. Hare, Paul S. Lewis, Univ. of Southampton (United Kingdom). . . . . [7540B-29]

9:30 am: **Generic and optimized framework for multi-content analysis based on learning approaches**, Quentin J. A. Besnehard, Cédric Marchessoux, Tom R. L. Kimpe, Barco NV (Belgium). . . . . [7540B-30]

9:50 am: **Benchmark of multiple approaches for feature extraction and image similarity characterization**, Jianping Fan, The Univ. of North Carolina at Charlotte (United States). . . . . [7540B-31]

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

SESSION 9

Room: Conv. Ctr. Room A4 . . . . .Thurs. 10:30 to 11:10 am

Keynote Session

Session Chair: **Cees Snoek,** Univ. van Amsterdam (Netherlands)

10:30 am: **Exploiting context and semantics for improved image classification and retrieval**, Nuno Vasconcelos, Univ. of California, San Diego (United States) . . . . . [7540B-32]

SESSION 10

Room: Conv. Ctr. Room A4 . . . . .Thurs. 11:10 to 11:50 am

Image Representation, Retrieval, and Techniques I

Session Chair: **Cees Snoek,** Univ. van Amsterdam (Netherlands)

11:10 am: **Three-domain image representation for personal photo album management**, Edoardo Ardizzone, Marco Morana, Marco La Cascia, Univ. degli Studi di Palermo (Italy); Filippo Vella, Consiglio Nazionale delle Ricerche (Italy) . . . . . [7540B-33]

11:30 am: **Harvesting large-scale weakly tagged image databases from the web**, Jianping Fan, The Univ. of North Carolina at Charlotte (United States). . . . . [7540B-34]

Lunch Break . . . . . 11:50 am to 1:30 pm

SESSION 11

Room: Conv. Ctr. Room A4 . . . . . .Thurs. 1:30 to 2:10 pm

Keynote Session

Session Chair: **Cees Snoek,** Univ. van Amsterdam (Netherlands)

1:30 pm: **Toward total scene understanding: data-driven learning meets detailed image modeling**, Fei-Fei Li, Li-Jia Li, Stanford Univ. (United States). . . . . [7540B-36]

SESSION 12

Room: Conv. Ctr. Room A4 . . . . . .Thurs. 2:10 to 3:10 pm

Image Representation, Retrieval, and Techniques II

Session Chair: **Cees Snoek,** Univ. van Amsterdam (Netherlands)

2:10 pm: **Image retrieval for identifying house plants**, Hanife Kebapci, Berrin Yanikoglu, Gozde B. Unal, Sabanci Univ. (Turkey). . . . . [7540B-37]

2:30 pm: **Comparative study of content-base image retrieval and video fingerprinting**, Xiaofan Lin, Vobile Inc. (United States) . . . . . [7540B-38]

2:50 pm: **Incorporating camera metadata for attended region detection and consumer photo classification**, Jianping Fan, The Univ. of North Carolina at Charlotte (United States). . . . . [7540B-39]

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

SESSION 13

Room: Conv. Ctr. Room A4 . . . . . .Thurs. 3:40 to 5:00 pm

Video Retrieval and Techniques

Session Chair: **Cees Snoek,** Univ. van Amsterdam (Netherlands)

3:40 pm: **Robust video and audio-based synchronization of multimedia files**, Benjamin Raichel, Peter Bajcsy, Univ. of Illinois at Urbana-Champaign (United States) . . . . . [7540B-40]

4:00 pm: **Video event definition using rough set theory and partially supervised learning**, Shirahama Kimiaki, Chieri Sugihara, Yuta Matsuoka, Kuniaki Uehara, Kobe Univ. (Japan) . . . . . [7540B-41]

4:20 pm: **Composition of SIFT features for robust image representation**, Ignazio Infantino, Consiglio Nazionale delle Ricerche (Italy); Giovanni Spoto, Univ. degli Studi di Palermo (Italy); Filippo Vella, Consiglio Nazionale delle Ricerche (Italy); Salvatore Gaglio, Univ. degli Studi di Palermo (Italy) . . . . . [7540B-42]

4:40 pm: **On accuracy, privacy, and complexity in the identification problem**, Fokko P. Beekhof, Sviatoslav Voloshynovskiy, Oleksiy Koval, Taras Holotyak, Univ. of Geneva (Switzerland) . . . . . [7540B-43]

Media Forensics and Security XII

Conference Chairs: **Nasir D. Memon,** Polytechnic Institute of NYU; **Jana Dittmann,** Otto-von-Guericke-Univ. Magdeburg (Germany); **Adnan M. Alattar,** Digimarc Corp.; **Edward J. Delp III,** Purdue Univ.

Program Committee: **Mauro Barni,** Univ. degli Studi di Siena (Italy); **Jeffrey A. Bloom,** Dialogic Research Inc.; **Patrick Bas,** Ecole Nationale Supérieure de Physique de Grenoble (France); **Hany Farid,** Dartmouth College; **Jessica Fridrich,** Binghamton Univ.; **Ton Kalker,** Hewlett-Packard Co.; **Andrew D. Ker,** Univ. of Oxford (United Kingdom); **Benoît Macq,** Univ. Catholique de Louvain (Belgium); **Bangalore S. Manjunath,** Univ. of California, Santa Barbara; **Pierre Moulin,** Univ. of Illinois at Urbana-Champaign; **Dulce B. Ponceleon,** IBM Almaden Research Ctr.; **Regunathan Radhakrishnan,** Dolby Labs., Inc.; **Husrev Taha Sencar,** TOBB Univ. of Economics and Technology (Turkey); **Gaurav Sharma,** Univ. of Rochester; **Claus Vielhauer,** Otto-von-Guericke-Univ. Magdeburg (Germany); **Sviatoslav V. Voloshynovskiy,** Univ. of Geneva (Switzerland); **Min Wu,** Univ. of Maryland, College Park

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room A3 . . . . . .Mon. 8:30 to 10:35 am

Steganography

Session Chair: **Jessica Fridrich,** Binghamton Univ.

8:55 am: **Modern steganalysis can detect YASS**, Jan Kodovsky, Binghamton Univ. (United States); Tomas Pevny, Czech Technical Univ. (Czech Republic); Jessica Fridrich, Binghamton Univ. (United States) . . . . . .[7541-02]

9:20 am: **Subset selection circumvents the square root law**, Scott A. Craver, Binghamton Univ. (United States) . . . . . .[7541-03]

9:45 am: **Feature selection for steganalysis using the Mahalanobis distance**, J. L. Davidson, J. Jalan, Iowa State Univ. (United States) . . . . . .[7541-04]

10:10 am: **Minimizing embedding impact in steganography using trellis-coded quantization**, Tomá? Filler, Jan Judas, Jessica Fridrich, Binghamton Univ. (United States) . . . . . .[7541-05]

Coffee Break . . . . . .10:35 to 11:00 am

SESSION 2

Room: Conv. Ctr. Room A3 . . .Mon. 11:00 am to 12:40 pm

Forensics I

Session Chair: **Gaurav Sharma,** Univ. of Rochester

11:00 am: **Image forensic analyses that elude the human visual system**, Hany Farid, Dartmouth College (United States); Mary J. Bravo, Rutgers, The State Univ. of New Jersey (United States). . . . . .[7541-06]

11:25 am: **Efficient estimation and large-scale evaluation of lateral chromatic aberration for digital image forensics**, Thomas Gloe, Antje Winkler, Karsten Borowka, Technische Univ. Dresden (Germany)[7541-07]

11:50 am: **Managing a large database of camera fingerprints**, Miroslav Goljan, Binghamton Univ. (United States); Jessica Fridrich, Tomá? Filler, SUNY Binghamton (United States) . . . . . .[7541-08]

12:15 pm: **Efficient techniques for sensor fingerprint matching in large image and video databases**, Sevinc Bayram, Polytechnic Institute of NYU (United States); Husrev T. Sencar, TOBB Ekonomi ve Teknoloji Üniv. (Turkey); Nasir Memon, Polytechnic Institute of NYU (United States) . . . . . .[7541-09]

Lunch Break . . . . . 12:40 to 2:10 pm

SESSION 3

Room: Conv. Ctr. Room A3 . . . . . .Mon. 2:10 to 3:25 pm

Watermark Embedding

Session Chair: **Adnan M. Alattar,** Digimarc Corp.

2:10 pm: **Feature point-based image watermarking with insertions, deletions, and substitution codes**, Philippe Belet, Tim Dams, Artesis Univ. College of Antwerp (Belgium); Dieter Bardyn, Ann Dooms, Peter Shelkens, Vrije Univ. Brussel (Belgium). . . . . .[7541-10]

2:35 pm: **SIFT features in semi-fragile video watermarks**, Stefan Thiemert, Martin Steinebach, Fraunhofer-Institut für Sichere Informations-Technologie (Germany) . . . . . .[7541-11]

3:00 pm: **Reversible transformations can improve the quality of reversible watermarking**, Ajith M. Kamath, Digimarc Corp. (United States) . . . . . .[7541-12]

Coffee Break . . . . . 3:25 to 3:55 pm

SESSION 4

Room: Conv. Ctr. Room A3 . . . . . .Mon. 3:55 to 5:10 pm

Authentication

Session Chair: **Dulce B. Ponceleon,** IBM Almaden Research Ctr.

3:55 pm: **Multimodal object authentication with random projections: a worst-case approach**, Oleksiy J. Koval, Sviatoslav V. Voloshynovskiy, Univ. of Geneva (Switzerland) . . . . . .[7541-13]

4:20 pm: **Digital image authentication from thumbnails**, Eric Kee, Hany Farid, Dartmouth College (United States) . . . . . .[7541-14]

4:45 pm: **Automatic counterfeit protection system code classification**, Joost Van Beusekom, Marco Schreyer, Thomas M. Breuel, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany) .[7541-15]

Tuesday 19 January

Room: Marriott Ballroom . . . . . Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 5

Room: Conv. Ctr. Room A3 . . . . . Tues. 9:30 to 10:20 am

Watermark Security

Session Chair: **Scott A. Craver,** Binghamton Univ.

9:30 am: **Audio watermarking forensics: detecting malicious re-embedding**, Martin Steinebach, Sascha Zmudzinski, Fraunhofer-Institut für Sichere Informations-Technologie (Germany); Stefan Katzenbeisser, Technische Univ. Darmstadt (Germany) . . . . . .[7541-17]

9:55 am: **Better security levels for 'Broken Arrows'**, Fuchun Xie, INRIA Rennes (France). . . . . .[7541-18]

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

SESSION 6

Room: Conv. Ctr. Room A3 . . Tues. 10:45 am to 12:00 pm

Forensics II

Session Chair: **Hany Farid,** Dartmouth College

10:45 am: **Improving re-sampling detection by adding noise**, Lakshmanan Nataraj, Anindya Sarkar, Bangalore S. Manjunath, Univ. of California, Santa Barbara (United States) . . . . . .[7541-19]

11:10 am: **JPEG recompression detection**, Xiaoying Feng, Gwenaël Doërr, Univ. College London (United Kingdom) . . . . . .[7541-20]

11:35 am: **Detecting double compression of audio signal**, Rui Yang, Sun Yat-Sen Univ. (China); Yun-Qing Shi, New Jersey Institute of Technology (United States); Jiwu Huang, Sun Yat-Sen Univ. (China) . . . . . .[7541-21]

Lunch/Exhibition Break . . . . . 12:00 to 1:30 pm

SESSION 7

Room: Conv. Ctr. Room A3 . . . . . Tues. 1:30 to 5:30 pm

Biometric Security

Session Chair: **Ton Kalker,** Hewlett-Packard Co.

1:30 pm: **Biometric security: an overview** *(Invited Paper)*, Ton Kalker, Hewlett-Packard Co. (United States); Tanya Ignatenko, Frans Willems, Technische Univ. Eindhoven (Netherlands); Natalia Schmid, West Virginia Univ. (United States); Anthony Vetro, Mitsubishi Electric Research Labs. (United States); Anil K. Jain, Michigan State Univ. (United States); Shantanu Rane, Mitsubishi Electric Research Labs. (United States); Harry Wechsler, George Mason Univ. (United States) . . . . . .[7541-22]

2:10 pm: **IT and SLT characterizations of biometric recognition systems: fancy toppings on an old fashioned topic** *(Invited Paper)*, Natalia A. Schmid, West Virginia Univ. (United States); Harry Wechsler, George Mason Univ. (United States). . . . . .[7541-23]

2:40 pm: **On alignment and bit extraction for secure fingerprint biometrics** *(Invited Paper)*, Abhishek Nagar, Michigan State Univ. (United States); Shantanu Rane, Anthony Vetro, Mitsubishi Electric Research Labs. (United States). . . . . .[7541-24]

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

3:40 pm: **Security analysis of biometric template feature transformation** *(Invited Paper)*, Abhishek Nagar, Michigan State Univ. (United States); Karthik Nandakumar, A*STAR Institute for Infocomm Research (United States); Anil K. Jain, Michigan State Univ. (United States) . . . . . .[7541-25]

4:10 pm: **On information leakage in fuzzy commitment** *(Invited Paper)*, Tanya Ignatenko, Frans Willems, Technische Univ. Eindhoven (Netherlands) . . . . . .[7541-26]

4:40 pm: **On the security of biohashing**, Xuebing Zhou, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Ton Kalker, Hewlett-Packard Co. (United States) . . . . . .[7541-27]

5:05 pm: **Minutiae-based fingerprint template encryption by geometric diversification,** Bian Yang, Christoph Busch, Gjøvik Univ. College (Norway) . . . . . .[7541-28]

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 8

Room: Conv. Ctr. Room A3 . . . . . Wed. 9:30 to 10:20 am

Counter Forensics

Session Chair: **Chad D. Heitzenrater,** Air Force Research Lab.

9:30 am: **Sensor noise camera identification: countering counter-forensics**, Miroslav Goljan, Jessica Fridrich, SUNY Binghamton Univ. (United States); Mo Chen, Jadak Technologies (United States) . .[7541-29]

9:55 am: **Texture based attacks on intrinsic signature based printer identification**, Nitin Khanna, Aravind K. Mikkilineni, Edward J. Delp III, Purdue Univ. (United States) . . . . . .[7541-30]

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

SESSION 9

Room: Conv. Ctr. Room A3 . . . . . Wed. 10:40 to 11:55 am

Watermarking Quality

Session Chair: **Mauro Barni,** Univ. degli Studi di Siena (Italy)

10:40 am: **Human visual system-based color image steganography using the contourlet transform**, Wadood Abdul, Philippe Carré, Univ. de Poitiers (France); Philippe Gaborit, Univ. de Limoges (France). . .[7541-31]

11:05 am: **Perception-referenced joint encryption and reversible watermarking**, Bian Yang, Gjøvik Univ. College (Norway) and Harbin Institute of Technology (China); Christoph Busch, Gjøvik Univ. College (Norway); Xiamu Niu, Harbin Institute of Technology (China) . . . .[7541-32]

11:30 am: **Audio annotation watermarking with robustness against DA/AD conversion**, Kun Qian, Christian Kraetzer, Michael Biermann, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . .[7541-33]

Lunch/Exhibition Break . . . . . 11:55 am to 1:10 pm

SESSION 10

Room: Conv. Ctr. Room A3 . . . . . .Wed. 1:10 to 3:15 pm

Forensics III

Session Chair: **Regunathan Radhakrishnan,** Dolby Labs., Inc.

1:10 pm: **Exploring image dependencies: a new challenge in image forensics**, Alessia De Rosa, Francesca Uccheddu, Alessandro Piva, Univ. degli Studi di Firenze (Italy); Mauro Barni, Andrea Costanzo, Univ. degli Studi di Siena (Italy). . . . . .[7541-34]

1:35 pm: **Forensic hash for multimedia information**, Wenjun Lu, Avinash L. Varna, Min Wu, Univ. of Maryland, College Park (United States)[7541-35]

2:00 pm: **Detecting content adaptive scaling of images for forensic applications**, Claude S. Fillion, Univ. of Rochester (United States) and Xerox Corp. (United States); Gaurav Sharma, Univ. of Rochester (United States) . . . . . .[7541-36]

2:25 pm: **On detection of median filtering in digital images**, Matthias Kirchner, Technische Univ. Dresden (Germany); Jessica Fridrich, SUNY Binghamton Univ. (United States) . . . . . .[7541-37]

2:50 pm: **Efficient estimation of CFA pattern configuration in digital camera images**, Matthias Kirchner, Technische Univ. Dresden (Germany) . . . . . .[7541-38]

Coffee Break . . . . . 3:15 to 3:35 pm

SESSION 11

Room: Conv. Ctr. Room A3 . . . . . .Wed. 3:35 to 5:40 pm

Miscellaneous

Session Chair: **Sviatoslav V. Voloshynovskiy,** Univ. of Geneva (Switzerland)

3:35 pm: **A framework for theoretical analysis of content fingerprinting**, Avinash L. Varna, Wei-Hong Chuang, Min Wu, Univ. of Maryland, College Park (United States) . . . . . .[7541-39]

4:00 pm: **Image dependent log-likelihood ratio allocation for repeat accumulate code-based decoding in data hiding channels**, Anindya Sarkar, Bangalore S. Manjunath, Univ. of California, Santa Barbara (United States) . . . . . .[7541-40]

4:25 pm: **Ear identification by fusion of segmented slice regions using invariant features: an experimental manifold with dual-fusion approach**, Dakshina R. Kisku, BCREC (India); Jamuna K. Sing, Jadavpur Univ. (India); Phalguni Gupta, Indian Institute of Technology Kanpur (India). . . . . .[7541-42]

4:50 pm: **Fast identification of highly distorted images**, Taras Holotyak, Sviatoslav Voloshynovskiy, Fokko Beekhof, Oleksiy Koval, Univ. of Geneva (Switzerland) . . . . . .[7541-43]

5:15 pm: **On the embedding capacity of DNA strands under substitution, insertion, and deletion mutations**, Félix Balado, Univ. College Dublin (Ireland) . . . . . .[7541-41]

Multimedia on Mobile Devices 2010

Conference Chairs: **Reiner Creutzburg,** Fachhochschule Brandenburg (Germany); **David Akopian,** The Univ. of Texas at San Antonio

Program Committee: **Sos S. Agaian,** The Univ. of Texas at San Antonio; **Faouzi Alaya Cheikh,** Gjøvik Univ. College (Norway); **Linda Breitlauch,** Mediadesign Hochschule Dusseldorf (Germany); **Jianfei Cai,** Nanyang Technological Univ. (Singapore); **Alan Chalmers,** Univ. of Bristol (United Kingdom); **Surendar Chandra,** Univ. of Notre Dame; **Chang Wen Chen,** Univ. at Buffalo; **Kenneth J. Crisler,** Motorola, Inc.; **David Scott Doermann,** Univ. of Maryland, College Park; **Uwe Dummann,** Siemens AG (Germany); **Elizabeth Dykstra-Erickson,** Kinoma, Inc.; **Stefan Edlich,** Technische Fachhochschule Berlin (Germany); **Lajos Hanzo,** Univ. of Southampton (United Kingdom); **Zhihai He,** Univ. of Missouri, Columbia; **Hendrik O. Knoche,** Univ. College London (United Kingdom); **Catalin Lacatus,** Toyota; **Xin Li,** West Virginia Univ.; **Manzur M. Murshed,** Monash Univ.; **Sethuraman Panchanathan,** Arizona State Univ.; **Kari A. Pulli,** Nokia Research Ctr.; **Matthias Rauterberg,** Technische Univ. Eindhoven (Netherlands); **Phillip A. Regalia,** TELECOM & Management SudParis (France); **Phanikrishna K. Sagiraju,** The Univ. of Texas at San Antonio; **Abhay Samant,** National Instruments India (India); **Thomas Schwotzer,** Fachhochschule Brandenburg (Germany); **Olli J. Silvén,** Univ. of Oulu (Finland); **Jarmo Henrik Takala,** Tampere Univ. of Technology (Finland); **Kaisa Anneli Väänänen-Vainio-Mattila,** Tampere Univ. of Technology (Finland); **Haitao Zheng,** Univ. of California, Santa Barbara

Monday 18 January

SESSION 1

Room: Conv. Ctr. Room B4 . . . . . .Mon. 8:30 to 10:10 am

New Emerging Technologies and Services

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

8:30 am: **Ergonomic evaluation of ubiquitous computing with monocular head-mounted display** *(Invited Paper)*, Takashi Kawai, Waseda Univ. (Japan); Jukka Häkkinen, Univ. of Helsinki (Finland) and Nokia Research Ctr. (Finland); Takashi Yamazoe, Hiroko Saito, Shinsuke Kishi, Hiroyuki Morikawa, Waseda Univ. (Japan); Terhi Mustonen, Jyrki Kaistinen, Göte Nyman, Univ. of Helsinki (Finland) . . . . . .[7542-01]

9:00 am: **Camera assisted multimodal user interaction** *(Invited Paper)*, Jari Hannuksela, Olli J. Silvén, Univ. of Oulu (Finland); Sakari Alenius, Markku Vehviläinen, Sami Ronkainen, Nokia Research Ctr. (Finland) . . . . . .[7542-02]

9:30 am: **Image-based mobile service: automatic text extraction and translation**, Jérôme Berclaz, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Nina T. Bhatti, Steven Simske, John Schettino, Hewlett-Packard Labs. (United States) . . . . . .[7542-03]

9:50 am: **Mobile cosmetics advisor: an imaging based mobile service**, Nina T. Bhatti, Harlyn Baker, Hui Chao, Mike Harville Clearwater, Jhilmil Jain, Nic Lyons, Hewlett-Packard Labs. (United States); Joanna Marguier, Ecole Polytechnique Fédérale de Lausanne (Switzerland); John Schettino, Hewlett-Packard Labs. (United States); Sabine Süsstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . .[7542-04]

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

SESSION 2

Room: Conv. Ctr. Room B4 . . .Mon. 10:40 am to 12:20 pm

Secure Services

Session Chair: **David Akopian,** The Univ. of Texas at San Antonio

10:40 am: **New normalized expansions for redundant number systems: data hiding applications**, Ravindrnath C. Cherukuri, Sos S. Agaian, The Univ. of Texas at San Antonio (United States) . . . . . .[7542-05]

11:00 am: **Fused number representation systems for barcode applications**, Sarkis Agaian, Stanford Univ. (United States) . . . .[7542-06]

11:20 am: **Visual cryptography by use of polarization**, Hirotsugu Yamamoto, Takanori Imagawa, Shiro Suyama, Univ. of Tokushima (Japan) . . . . . .[7542-07]

11:40 am: **Private anonymous fingerprinting for color images in the wavelet domain**, Wadood Abdul, Philippe Carré, Univ. de Poitiers (France); Philippe Gaborit, Univ. de Limoges (France) . . . . . .[7542-08]

12:00 pm: **Improvement of information fusion-based audio steganalysis**, Christian Kraetzer, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . .[7542-09]

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

SESSION 3

Room: Conv. Ctr. Room B4 . . . . . .Mon. 1:50 to 3:10 pm

Watermarking and Forensics

Session Chair: **Reiner Creutzburg,** Fachhochschule Brandenburg (Germany)

1:50 pm: **Cell phone camera ballistics: attacks and countermeasures**, Martin Steinebach, Huajian Liu, Fraunhofer-Institut für Sichere Informations-Technologie (Germany); Stefan Katzenbeisser, TU Darmstadt (Germany) . . . . . .[7542-10]

2:10 pm: **Reverse-engineering a watermark detector based on a more precise model**, Jun Yu, Scott A. Craver, Binghamton Univ. (United States) . . . . . .[7542-11]

2:30 pm: **Toward a simplified perceptual quality metric for watermarking applications**, Maurizio Carosi, Vinod Pankajakshan, Florent Autrusseau, Univ. of Nantes (France) . . . . . .[7542-12]

2:50 pm: **Chain of evidence generation for contrast enhancement in digital image forensics**, Giuseppe Messina, Univ. degli Studi di Catania (Italy) and STMicroelectronics (Italy); Sebastiano Battiato, Univ. degli Studi di Catania (Italy) . . . . . .[7542-13]

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

SESSION 4

Room: Conv. Ctr. Room B4 . . . . . Mon. 3:40 to 5:20 pm

Media Processing and Services

Session Chair: **David Akopian,** The Univ. of Texas at San Antonio

3:40 pm: **A novel scan priority based position estimation on mobile platforms**, Bhargav Kalgikar, David Akopian, The Univ. of Texas at San Antonio (United States) . . . . . .[7542-14]

4:00 pm: **Seam carving with improved edge preservation**, Johannes Kiess, Stephan Kopf, Benjamin Guthier, Wolfgang Effelsberg, Univ. Mannheim (Germany) . . . . . .[7542-15]

4:20 pm: **Design of an H.264/SVC resilient watermarking scheme**, Robrecht Van Caenegem, Ann Dooms, Joeri Barbarien, Peter Schelkens, Vrije Univ. Brussel (Belgium) . . . . . .[7542-16]

4:40 pm: **Pointing into remote 3D environments**, Robert A. Ulichney, Matthew Gaubatz, Hewlett-Packard Co. (United States) . . . . . .[7542-17]

5:00 pm: **Mixed resolution framework for distributed multiview coding**, Diogo C. Garcia, Camilo C. Dórea, Bruno Macchiavello, Ricardo de Queiroz, Univ. de Brasília (Brazil); Debargha Mukherjee, Hewlett-Packard Labs. (United States) . . . . . .[7542-18]

Tuesday 19 January

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

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 in Exhibit Hall 1. Demonstrators will provide interactive, hands-on demonstrations of a wide-range of products related to Electronic Imaging.

Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Intelligent video surveillance with abandoned object detection and multiple pedestrian counting, Taekyung Kim, Joonki Paik, Chung-Ang Univ. (Korea, Republic of) . . . . . .[7542-19]

How to secretly share the treasure map of the captain, Naveed Islam, William Puech, Robert Brouzet, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France) . . . . . .[7542-21]

Extending the Clark-Wilson security model for digital long-term preservation use cases, Maik Schott, Christian Krätzer, Jana Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany); Claus Vielhauer, Fachhochschule Brandenburg (Germany). . . . . .[7542-22]

Fast motion vector recovery algorithm in H.264 video streams, Kavish Seth, Atheros Communications (India); V. Kamakoti, S. Srinivasan, Indian Institute of Technology Madras (India) . . . . . .[7542-23]

Template-based education in mobile application development, Abhinav Kumar Gummaraju, The Univ. of Texas at San Antonio (United States) . . . . . .[7542-24]

Adaptive down-sampling video coding, Ren-Jie Wang, Ming-Chen Chien, Pao-Chi Chang, National Central Univ. (Taiwan) . . . . . .[7542-25]

An adaptive interpolation technique based on the information from the 4x4 intra prediction, Kangjun Lee, Juhyeon Lee, Jechang Jeong, Hanyang Univ. (Korea, Republic of) . . . . . .[7542-26]

Video watermarking in compressed domain considering structural information, Azadeh Mansouri, Farah Torkamani-Azar, Ahmad Mahmoudi Aznaveh, Shahid Beheshti Univ. (Iran, Islamic Republic of) . . . . .[7542-28]

Video object tracking combining feature value selection with feature spatial distribution, Wenming Yang, Fei Zhou, Qingmin Liao, Tsinghua Univ. (China) . . . . . .[7542-29]

Sharp, bright, three-dimensional: open profiling of quality for mobile 3DTV coding methods, Dominik Strohmeier, Technische Univ. Ilmenau (Germany); Gerhard Tech, Fraunhofer Heinrich Hertz Institut (Germany) . . . . . .[7542-30]

Influence of camera parameters on the quality of mobile 3D capture, Mihail Georgiev, Atanas R. Boev, Tampere Univ. of Technology (Finland); Miska M. Hannuksela, Nokia Research Ctr. (Finland); Atanas P. Gotchev, Tampere Univ. of Technology (Finland). . . . . .[7542-31]

Chrominance watermarking for mobile applications, Alastair M. Reed, Eliot Rogers, Dan James, Digimarc Corp. (United States) . . . . . .[7542-32]

User-centered quality of experience of mobile 3DTV: how to evaluate quality in the context of use, Satu Jumisko-Pyykkö, Timo Utriainen, Tampere Univ. of Technology (Finland). . . . . .[7542-33]

Visual Information Processing and Communication

Conference Chairs: **Amir Said,** Hewlett-Packard Labs.; **Onur G. Guleryuz,** DoCoMo Communications Labs. USA, Inc.

Program Committee: **John G. Apostolopoulos,** Hewlett-Packard Labs.; **Mireille Boutin,** Purdue Univ.; **Chang Wen Chen,** Univ. at Buffalo; **Gerard de Haan,** Philips Research Nederland B.V. (Netherlands); **Edward J. Delp III,** Purdue Univ.; **Eric Dubois,** Univ. of Ottawa (Canada); **Frederic Dufaux,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Touradj Ebrahimi,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Marta Karczewicz,** Qualcomm, Inc.; **Janusz Konrad,** Boston Univ.; **C.-C. Jay Kuo,** Univ. of Southern California; **Ligang Lu,** IBM Thomas J. Watson Research Ctr.; **Peyman Milanfar,** Univ. of California, Santa Cruz; **Antonio Ortega,** Univ. of Southern California; **Thrasyvoulos N. Pappas,** Northwestern Univ.; **William A. Pearlman,** Rensselaer Polytechnic Institute; **Fernando Pereira,** Univ. Técnica de Lisboa (Portugal); **Béatrice Pesquet-Popescu,** Telecom ParisTech (France); **Majid Rabbani,** Eastman Kodak Co.; **Dan Schonfeld,** Univ. of Illinois at Chicago; **Gaurav Sharma,** Univ. of Rochester; **Robert L. Stevenson,** Univ. of Notre Dame; **Andrew G. Tescher,** AGT Associates; **Vasudev Bhaskaran,** Qualcomm, Inc.; **Anthony Vetro,** Mitsubishi Electric Research Labs.; **John W. Woods,** Rensselaer Polytechnic Institute; **Xiaolin Wu,** McMaster Univ. (Canada); **Dan Lelescu,** Micron Technology, Inc.

Tuesday 19 January

Room: Marriott Ballroom . . . . . Tues. 8:00 to 9:15 am

Plenary Session I

8:00 am: **Automatic 3D Modeling and Analysis of Large Scale Urban Environments**, Avideh Zakhor, Univ. of California, Berkeley (United States) . . . . . .[EI10SE-100]

SESSION 1

Room: Conv. Ctr. Room B4 . . . . . Tues. 9:30 to 10:30 am

Keynote Session I

9:30 am: **Toward creating the next-generation multimedia communication experience** *(Presentation Only)*, John G. Apostolopoulos, Hewlett-Packard Labs. (United States) . . . . . .[7543-01]

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

SESSION 2

Room: Conv. Ctr. Room B4 . . Tues. 11:00 am to 12:00 pm

Image and Video Coding I

11:00 am: **Optimizing motion estimation based on long term prediction dependencies**, Giuseppe Valenzise, Politecnico di Milano (Italy); Antonio Ortega, The Univ. of Southern California (United States) . . . . . .[7543-02]

11:20 am: **Anisotropic multiscale sparse learned bases for image compression**, Angelique Dremeau, Cedric Herzet, Christine Guillemot, Jean-Jacques Fuchs, INRIA Rennes (France). . . . . .[7543-03]

11:40 am: **Variable block size transforms with higher order kernels for ultra-high definition video coding**, Bumshik Lee, Munchurl Kim, Korea Advanced Institute of Science and Technology (Korea, Republic of); Hui Yong Kim, Jin Soo Choi, Electronics and Telecommunications Research Institute (Korea, Republic of) . . . . . .[7543-04]

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

SESSION 3

Room: Conv. Ctr. Room B4 . . . . . Tues. 1:50 to 3:10 pm

GPU-based Processing

1:50 pm: **Moving from pixels to points: advances in GPU-based image processing and computer vision**, James Fung, NVIDIA Corp. (United States) . . . . . .[7543-05]

2:10 pm: **A CUDA implementation of thumbnail-assisted decoder motion search for error concealment**, Wai-Tian Tan, Hewlett-Packard Labs. (United States) . . . . . .[7543-06]

2:30 pm: **GPU-aided Motion Adaptive Video Deinterlacing**, Xiaolin Wu, Jie Cao, McMaster Univ. (Canada) . . . . . .[7543-07]

2:50 pm: **GPU Implementation of JPEG XR**, Ming-Chao Che, Jie Liang, Simon Fraser Univ. (Canada). . . . . .[7543-08]

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

SESSION 4

Room: Conv. Ctr. Room B4 . . . . . Tues. 3:40 to 4:40 pm

Multiview Imaging and 3D

3:40 pm: **Geometry-based block partitioning for efficient intraprediction in depth video coding**, Min-Koo Kang, Gwangju Institute of Science and Technology (Korea, Republic of) and Visual Communications Lab. (Korea, Republic of); Yo-Sung Ho, Gwangju Institute of Science and Technology (Korea, Republic of); Jaejoon Lee, Jin Young Lee, Samsung Electronics Co., Ltd. (Korea, Republic of) . . . . . .[7543-09]

4:00 pm: **Depth map coding with distortion estimation of rendered view**, Woo-Shik Kim, Antonio Ortega, The Univ. of Southern California (United States); PoLin Lai, Dong Tian, Cristina Gomila, THOMSON Corporate Research (United States) . . . . . .[7543-10]

4:20 pm: **Multiple description coding of 3D dynamic meshes based on temporal subsampling,** Mehmet O. Bici, Middle East Technical Univ. (Turkey); Nikolce Stefanoski, Leibniz Univ. Hannover (Germany); Gözde B. Akar, Middle East Technical Univ. (Turkey) . . . . . [7543-12

Room: Exhibit Hall 1 . . . . . Tues. 5:30 to 8:00 pm

Interactive Paper and Symposium Demonstration Session

Session Chairs: **Neil A. Dodgson,** Univ. of Cambridge (United Kingdom); **Andrew J. Woods,** Curtin Univ. of Technology (Australia)

Demonstrations . . . . . 5:30 to 8:00 pm

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Interactive Papers . . . . . 5:30 to 7:00 pm

Posters will be placed on display after 9:00 am in Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm

Adaptation of H.264/AVC predictions for enabling fast transrating, Philippe Bordes, Thomson CSF (France) . . . . . .[7543-31]

Exact JPEG recompression, Andrew B. Lewis, Markus G. Kuhn, Univ. of Cambridge (United Kingdom) . . . . . .[7543-32]

Seamless heterogeneous tessellation via smoothing and mosaicking in the DWT domain, Khizar Hayat, William Puech, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France); Gilles Gesquiere, Univ. of Marseille (France). . . . . .[7543-33]

Video coding mode decision as a classification problem, Rashad M. Jillani, Florida Atlantic Univ. (United States); Urvang B. Joshi, Chiranjib Bhattacharya, Indian Institute of Science (India); Hari Kalva, Florida Atlantic Univ. (United States); Rohit K. Ramakrishnan, Indian Institute of Science (India). . . . . .[7543-34]

JP3D compressed-domain watermarking of volumetric medical data sets, Azza Ouled Zaid, Ecole Nationale d'Ingénieurs de Tunis (Tunisia); Achraf Makhloufi, National Engineering School of Tunis (Tunisia); Christian Olivier, Univ. de Poitiers (France) . . . . . .[7543-35]

Improved quantization index modulation-based watermarking integrated to JPEG2000 coding scheme, Azza Ouled Zaid, Achraf Makhloufi, Ecole Nationale d'Ingénieurs de Tunis (Tunisia); Christian Olivier, Univ. de Poitiers (France) . . . . . .[7543-36]

Dynamic algorithm for correlation noise estimation in distributed video coding, Kuganeswaran Thambu, Xavier N. Fernando, Ling Guan, Ryerson Univ. (Canada). . . . . .[7543-37]

A novel embedding technique for dirty paper trellis codes watermarking, Marc Chaumont, Lab. d'Informatique de Robotique et de Microelectronique de Montpellier (France) . . . . . .[7543-38]

A pipelined iteration architecture for fast belief propagation algorithm, Soon Kwon, Jong-Hun Lee, Daegu Gyeongbuk Institute of Science & Technology (Korea, Republic of) . . . . . .[7543-39]

Wednesday 20 January

Room: Marriott Ballroom . . . . . Wed. 8:00 to 9:15 am

Award Announcements and Plenary Session II

8:00 am: **Hey! What Is That In Your Pocket? The Mobile Device Future**, Edward J. Delp III, Purdue Univ. (United States) . .[EI10SE-200]

SESSION 5

Room: Conv. Ctr. Room B4 . . . . . .Wed. 9:40 to 10:20 am

Distributed Coding

9:40 am: **Compression efficiency analysis of Wyner-Ziv video coding with motion compensated side information interpolation**, João M. Ascenso, Instituto Superior de Engenharia de Lisboa (Portugal); Catarina Brites, Fernando Pereira, Instituto de Telecomunicações (Portugal) . . . . . .[7543-13]

10:00 am: **Toward a practical distributed video coding system with maximum likelihood motion estimation**, Ivy Tseng, Antonio Ortega, Univ. of Southern California (United States). . . . . .[7543-14]

Coffee Break . . . . . .10:20 to 11:00 am

SESSION 6

Room: Conv. Ctr. Room B4 . . . . . .Wed. 11:00 to 11:40 am

Image and Video Coding II

11:00 am: **A second-order-residual (SOR) coding approach to high-bit-rate video compression**, Qi Zhang, Seunghwan Kim, Yunyang Dai, C.-C. Jay Kuo, Univ. of Southern California (United States). . . . . .[7543-16]

11:20 am: **Bipredictive video super-resolution using key-frames**, Karen Oliveira, Fernanda Brandi, Edson M. Hung, Ricardo L. de Queiroz, Univ. de Brasília (Brazil); Debargha Mukherjee, Hewlett-Packard Labs. (United States) . . . . . .[7543-17]

Lunch Break . . . . . 11:40 am to 1:40 pm

SESSION 7

Room: Conv. Ctr. Room B4 . . . . . .Wed. 1:40 to 2:20 pm

H.264/AVC Video Coding I

1:40 pm: **Phase refinement for image prediction based on sparse representation**, Aurélie Martin, IRISA Rennes (France) and Thomson R&D France (France); Jean-Jacques Fuchs, IRISA Rennes (France); Christine Guillemot, IRISA Rennes (France) and Thomson R&D France (France); Dominique Thoreau, Thomson R&D France (France) . . . . . .[7543-18]

2:00 pm: **Prediction matching for video coding**, Yunfei Zheng, Peng Yin, THOMSON Corporate Research (United States); Oscar D. Escoda, Telefonica Research (Spain); Joel Sole, Cristina Gomila, THOMSON Corporate Research (United States) . . . . . .[7543-20]

SESSION 8

Room: Conv. Ctr. Room B4 . . . . . .Wed. 2:20 to 3:20 pm

Computer Vision and Tracking

2:20 pm: **Automatic pose initialization of swimmers in videos**, Christian X. Ries, Rainer W. Lienhart, Univ. Augsburg (Germany) . . . . . .[7543-21]

2:40 pm: **A kinematic model for Bayesian tracking of cyclic human motion**, Thomas Greif, Rainer Lienhart, Univ. Augsburg (Germany) . . . . . .[7543-22]

3:00 pm: **A Viterbi tracker for local features**, Gary G. B. Baugh, Anil C. Kokaram, Trinity College Dublin (Ireland) . . . . . .[7543-23]

3:20 pm: **Object tracking initialization using automatic moving object detection**, Ka Ki Ng, Edward J. Delp III, Purdue Univ. (United States) . . . . . .[7543-24]

Thursday 21 January

SESSION 9

Room: Conv. Ctr. Room B4 . . . . . .Thurs. 8:30 to 9:30 am

Keynote Session II

8:30 am: **Image analysis and compression: renewed focus on texture**, Thrasyvoulos N. Pappas, Northwestern Univ. (United States) . . .[7543-40]

SESSION 10

Room: Conv. Ctr. Room B4 . . . . . .Thurs. 9:30 to 10:30 am

H.264/AVC Video Coding II

9:30 am: **Texture refinement framework for improved video coding**, Fabien Racapé, Thomson R&D France (France); Marie Babel, Olivier Déforges, Institut National des Sciences Appliquées de Rennes (France); Dominique Thoreau, Jérôme Viéron, Edouard François, Thomson R&D France (France) . . . . . .[7543-25]

9:50 am: **Smoothed reference inter-layer texture prediction for bit depth scalable video coding**, Zhan Ma, Polytechnic Institute of NYU (United States); Jiancong Luo, Peng Yin, Cristina Gomila, THOMSON Corporate Research (United States); Yao Wang, Polytechnic Institute of NYU (United States) . . . . . .[7543-26]

10:10 am: **An enhancement of H.264 coding mode for R-D optimization of ultrahigh-resolution video coding under low bit rate**, Tomonobu Yoshino, Sei Naito, Shigeyuki Sakazawa, KDDI R&D Labs., Inc. (Japan). . . . . .[7543-27]

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

SESSION 11

Room: Conv. Ctr. Room B4 . Thurs. 11:00 am to 12:00 pm

Image and Video Processing

11:00 am: **Image deblurring and denoising with non-local regularization constraint**, Peter J. van Beek, Sharp Labs of America, Inc. (United States); Junlan Yang, Univ. of Illinois at Chicago (United States); Shuhei Yamamoto, Yasuhiro Ueda, Sharp Corp. (Japan). . . . . .[7543-28]

11:20 am: **Image reconstruction from videos distorted by atmospheric turbulence**, Xiang Zhu, Peyman Milanfar, Univ. of California, Santa Cruz (United States). . . . . .[7543-29]

11:40 am: **Adaptive motion estimation using warping for video frame-up conversion**, Ying Chen, Mark J. Smith, Edward J. Delp III, Purdue Univ. (United States). . . . . .[7543-30]

Courses of Related Interest

Register for Courses at the Cashier desk.

SC966 Video Streaming (Civanlar) Sunday, 8:30 am to 5:30 pm
SC468 Image Enhancement and Deblurring (Rabbani) Monday, 8:30 am to 5:30 pm
SC060 Stereoscopic Display Application Issues (Merritt, Woods) Sunday, 8:30 am to 5:30 pm

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