IS&T/SPIE 17th Annual Symposium

Electronic Imaging
Science and Technology

16–20 January 2005
San Jose Marriott and San Jose Convention Center
San Jose, California USA

Conferences • Course • Technical Exhibition

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Andrew J. Woods, Ctr. for Marine Science and Technology/Curtin Univ. of Technology (Australia)

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Nasser M. Nasrabadi, Army Research Lab.
Sethuraman Panchanathan, Arizona State Univ.
Rene Rasmussen, Xerox Corp.
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Amir Said, Hewlett-Packard Labs.
Nitin Sampat, Rochester Institute of Technology
Simone Santini, Univ. of California/San Diego
Raimondo Schettini, DISCo/Univ. degli Studi di Milano-Bicocca (Italy)
Subramania Sudharsanan, Queen's Univ. (Canada)
Kazem Taghva, Univ. of Nevada/Las Vegas
Jarmo Takala, Tampere Univ. of Technology (Finland)
Nalini Venkatasubramanian, Univ. of California/Irvine
James S. Walton, 4DIVIDEO
Ping Wah Wong, IDzap LLC
Angela Y. Wu, American Univ.

We would like to express our deepest appreciation to the symposium chairs, course chairs, cochair, program committees, and session chairs who have so generously given of their time and advice. The symposium 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. For information about the technical program please email: ei@imaging.org.

Figures used courtesy of J. Da Rigna and H. Konik from Proceedings Vol. 5304-37.
Contents

Welcome .................................... 2
Technical Conference Index ............ x
Daily Conference Schedule .......... x
Daily Course Schedule ............... x
Special Events .......................... x
Plenary Presentations ................. x

Technical Conferences ................ x

Program on 3D Imaging, Interaction, and Measurement ............... x

Program on Imaging, Visualization, and Perception ........ x

Program on Image Processing .......... x

Program on Sensors, Digital Imaging, and Applications ...... x

Program on Multimedia Processing and Applications ...... x

Program on Image and Video Communications and Processing .......... x

General Information ................. x

Technical Abstract Summaries ........ xx-xx

Proceedings ............................ x

Publication Order Form ............... x
Welcome

Over the past several years, the field of “Electronic Imaging” has expanded to encompass a large and diverse range of topics, from image acquisition and display devices, to sophisticated image processing and analysis algorithms, to applications in virtual reality and art. Significant advances in image processing are being enabled by the increase in computing power and advances in the understanding of the human visual system. Imaging systems are everywhere from advanced scientific explorations to our everyday lives. A mobile phone is considered passé if it doesn’t include a digital still camera and a color screen, while rovers equipped with stereoscopic digital still cameras are roaming the surface of Mars and providing important insights. Electronic imaging researchers are at the center of all these important imaging innovations.

At Electronic Imaging 2005 you will have access to a great range of unpublished information, most of which is not yet available to the general public. Hear and meet leaders in the field through the plenary sessions and keynote presentations. Take advantage of other opportunities that you get only by attending a meeting: many fruitful collaborations have been enabled by chance meetings at past EI symposia. Additional professional experiences are provided by the receptions, the vendor exhibition, interest group meetings, and technology demonstrations that are part of the EI symposium. In addition, Photonics West will take place in the same location the following week.

In the following pages, you will find a full listing of the advance programs for the 23 individual conferences that make up the Electronic Imaging Symposium, including a new conference on “Multimedia for Mobile Devices,” a young and rapidly advancing field.

The conferences will continue to provide the depth necessary to today’s researcher, as will the supporting short courses, panel discussions, and poster sessions. The conference chairs and their technical committees represent a great resource for the newcomer who seeks ways to connect to the EI community and, perhaps, to eventually participate in organizing a conference. Becoming directly involved in EI is also an excellent way to develop contacts and learn who’s who in the various fields.

Your colleagues who attend the EI Symposium are a rich and diverse crowd, with strong international representation, and a good mixture of attendance from industry, government, and academic research communities. This composition ensures that you will find the complete range of applied and academic research in play throughout the symposium. Renew old friendships and network with new contacts—this is an excellent opportunity to get accelerated for the next economic upswing!

We are looking forward to seeing you in San Jose!

2005 Symposium Chairs

Thrasyvoulos N. Pappas, Northwestern Univ.

Andrew J. Woods, Ctr. for Marine Science and Technology/Curtin Univ. of Technology (Australia)
Program on 3D Imaging, Interaction, and Measurement

Mon-Weds  5664A Stereoscopic Displays and Applications XVI (Woods, Merritt)  p. x
Thurs  5664B The Engineering Reality of Virtual Reality 2005 (Bolas, McDowall)  p. x
Tues-Thurs  5665 Videometrics VIII (Beraldin, El-Hakim, Gruen, Walton)  p. x

Program on Imaging, Visualization, and Perception

Mon-Thurs  5666 Human Vision and Electronic Imaging X (Rogowitz, Pappas, Daly)  p. x
Mon-Thurs  5667 Color Imaging X: Processing, Hardcopy, and Applications (Eschbach, Marcu)  p. x
Tues-Thurs  5668 Image Quality and System Performance II (Rasmussen, Miyake)  p. x
Mon-Tues  5669 Visualization and Data Analysis 2005 (Erbacher, Roberts, Gröhn, Börner)  p. x
Tues-Thurs  5670 Internet Imaging VI (Santini, Schettini, Gevers)  p. x

Program on Image Processing

Tues-Thurs  5671 Real-Time Image Processing (Kehtamavaz, Laplante)  p. x
Mon-Tues  5672 Image Processing: Algorithms and Systems IV (Dougherty, Astola, Egiazarian)  p. x
Weds-Thurs  5673 Applications of Neural Networks and Machine Learning in Image Processing IX (Nasrabadi, Rizvi)  p. x
Mon-Tues  5674 Computational Imaging III (Bouman, Miller)  p. x
Tues-Weds  5675 Vision Geometry XIII (Latecki, Mount, Wu)  p. x
Weds-Thurs  5676 Document Recognition and Retrieval XII (Barney Smith, Taghva)  p. x

Program on Digital Imaging, Sensors, and Applications

Tues-Thurs  5677 Sensors and Cameras for Scientific and Industrial Applications VI (Blouke)  p. x
Mon-Tues  5678 Digital Photography (Sampat, DiCarlo, Motta)  p. x
Mon-Tues  5679 Machine Vision Applications in Industrial Inspection XIII (Price, Meriaudeau)  p. x

Program on Multimedia Processing and Applications

Weds-Thurs  5680 Multimedia Computing and Networking 2005 (Chandra, Venkatasubramanian)  p. x
Mon-Thurs  5681 Security, Steganography, and Watermarking of Multimedia Contents VII (Delp, Wong)  p. x
Tues-Weds  5682 Storage and Retrieval Methods and Applications for Multimedia 2005 (Lienhart, Babaguchi, Chang)  p. x
Mon-Tues  5683 Embedded Processors for Multimedia and Communications II (Sudharsanan, Bove, Panchanathan)  p. x
Mon-Tues  5684 Multimedia on Mobile Devices (Creutzburg, Takala)  p. x

Program on Image and Video Communications and Processing

Tues-Thurs  5685 Image and Video Communications and Processing 2005 (Said, Apostolopoulos)  p. x
<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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<tbody>
<tr>
<td><strong>Program on</strong></td>
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<tr>
<td><strong>Image and Video Communications and Processing</strong></td>
<td>Conf. 5665 <strong>Videometrics VIII</strong> (Beraldin, El-Hakim, Gruen, Walton), p. x</td>
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<td><strong>Imaging, Visualization, and Perception</strong></td>
<td>Conf. 5666 <strong>Human Vision and Electronic Imaging X</strong> (Rogowitz, Pappas, Daly), p.x</td>
<td>Conf. 5667 <strong>Color Imaging XI: Processing, Hardcopy, and Applications</strong> (Eschbach, Marcu), p.x</td>
<td>Conf. 5668 <strong>Image Quality and System Performance II</strong> (Rasmussen, Miyake), p. x</td>
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<td><strong>Image Processing</strong></td>
<td>Conf. 5669 <strong>Visualization and Data Analysis 2005</strong> (Erbacher, Roberts, Gröhn, Börner), p.x</td>
<td>Conf. 5670 <strong>Internet Imaging VI</strong> (Santini, Schettini, Gevers), p. x</td>
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<td>Conf. 5674 <strong>Computational Imaging III</strong> (Bouman, Miller), p.x</td>
<td>Conf. 5675 <strong>Vision Geometry XIII</strong> (Latecki, Mount, Wu), p.x</td>
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<td><strong>Image and Video Communications and Processing</strong></td>
<td>Conf. 5677 <strong>Sensors and Cameras for Scientific and Industrial Applications VI</strong> (Blouke), p.x</td>
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<td>Course Daily Schedule</td>
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<td>SC504, Introduction to CCD and CMOS Imaging Sensors and Applications (Janesick) 8:30 am to 5:30 pm, $440 / $520</td>
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<td>SC694, How to Select the Right Image Sensor for Your Application (Putnam) 8:30 am to 12:30 pm, $205 / $245</td>
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<td>SC513, Practical MTF and Noise Measurement for Digital Cameras and Scanners (Burns, Williams) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC660, Stereoscopic Display Application Issues (Merritt, Woods) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC881, Data Analysis, Modeling and Visualization (Börner) 1:30 to 5:30 pm, $205 / $245</td>
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<td>SC589, Image and Video Display Application Issues (Gevers, Sebe) 8:30 am to 5:30 pm, $445</td>
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<td>SC682, An Introduction to the Science and Technology of Image Quality of Printing Systems (Dalal) 1:30 to 5:30 pm, $205 / $245</td>
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<td>SC582, Color Considerations for Liquid Crystal Displays (Marcu) 1:30 to 5:30 pm, $205 / $245</td>
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<td>SC680, Introduction to Digital Halftoning (Allebach, Wong) 1:30 to 5:30 pm, $205 / $245</td>
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<td><strong>Digital Imaging Systems and Engineering</strong></td>
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<td>SC693, Applied Morphological and Nonlinear Image Analysis Techniques (Vincent) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC684, Logic-based Nonlinear Image Processing (Marshall) 8:30 am to 12:30 pm, $205 / $245</td>
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<td>SC491, Neural Networks Applications in Image Processing (Rabbani) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC675, Effective Color Computing (Marcu) 8:30 am to 12:30 pm, $205 / $245</td>
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<td>SC683, Photographic Quality Digital Imaging: Applications and Systems (Owens) 8:30 am to 12:30 pm, $205 / $245</td>
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<td>SC527, Software Engineering for Imaging Engineers (Laplante) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC581, Data Analysis, Modeling and Visualization (Börner) 1:30 to 5:30 pm, $205 / $245</td>
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<td>SC589, Image and Video Display Application Issues (Gevers, Sebe) 8:30 am to 5:30 pm, $445</td>
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<td>SC513, Practical MTF and Noise Measurement for Digital Cameras and Scanners (Burns, Williams) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC504, Advanced Digital Image and Video Processing Algorithms (Rabbani) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC685, Content-based Image and Video Retrieval (Gevers, Sebe) 8:30 am to 12:30 pm, $205 / $245</td>
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<td>SC589, Image and Video Compression: Standards and Trends (Rabbani) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC684, An Introduction to Cryptography and Digital Watermarking with Applications to Imaging, Video, and Multimedia Systems (Delp) 8:30 am to 5:30 pm, $365 / $445</td>
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<td>SC588, Biometric Technologies for Security Applications - State of the Art (Vielhauer) 1:30 to 5:30 pm, $205 / $245</td>
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*Register for Courses onsite!*

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Technical Group Meetings

Members and nonmembers alike are invited to attend these informative meetings that provide excellent networking opportunities.

Electronic Imaging

Tuesday 18 January ................................. 7:30 to 9:30 pm
Chair: Gabriel Marcu, Apple Computer, Inc.

This group addresses diverse research, engineering, and specialized applications of electronic imaging devices or systems. Because of the diverse topical areas within electronic imaging, the technical group covers image processing, image capture, display and hardcopy, system integration and visualization. Application areas are just as far-reaching. They include industrial automation, graphic arts, aerospace sensing, remote sensing, document processing, high-resolution television, medical imaging, and all areas of digital image processing, including analysis, compression and restoration. The group members are strongly encouraged to propose topics of interest for the next meeting and to submit short articles for publications in the Electronic Imaging Newsletter which serves to promote the topics of interest to the Group.

IS&T/SPIE Electronic Imaging Technical Group

Joint sponsorship by the IS&T and SPIE provides even more benefits and contacts for members of the technical group through the close partnership of the two societies. Both IS&T and SPIE members may join the technical group at the member rate of just $15 per year.

Technical group benefits include:
• a twice-yearly newsletter covering events in the field
• an annual directory of members
• discounts on conference registration fees
• discounts on selected publications, including the SPIE/IS&T copublished quarterly Journal of Electronic Imaging.

Investigative and Forensic Image Processing

Tuesday 18 January ................................. 4:30 to 5:30 pm

The Investigative Image Processing technical group focuses on forensic investigations of image and video material. Within this group methods for investigation and presentation as forensic evidence are discussed. Efforts in the fields of training, education, research and development are reviewed, and each year a conference is organized. The group will offer collaboration in certification in the field of investigative image processing, and will communicate with groups active in this field for law enforcement, e.g., IOCE, SWGIT (FBI / USA), SWGDE, and the ENFSI Digital Imaging Working Group (Europe).

In practice it appears to be necessary to have such a group. Forensic Imaging is a field that does not get very much attention at the moment. Many experts will testify in court, but questions may arise about whether the software used has been validated. We have seen several cases where the wrong conclusions were drawn based on e.g. photogrammetry. New developments in this field are needed; however, in forensic science a good validation of procedures is necessary.

For information about this Technical Group, please go to spie.org/membership/index.cfm?fuseaction=TG_InvestigativeImage

Poster Session

San Jose Convention Center, Exhibit Hall 1

Tuesday, 18 January ................................. 5:30 pm to 7:00 pm

Conference attendees are invited to the poster session. Authors of poster papers will be on hand during this session to answer questions and provide in-depth discussion concerning their papers. Attendees are requested to wear their conference registration badges to the poster session.

Authors can set up posters after 10:00 am on Tuesday. Poster supplies (pushpins) will be available. Other supplies can be obtained from the Speakers’ Audio Visual Desk.

Posters can be previewed during the day of the event before the formal poster session begins at 5:30 pm.

Authors must remove their papers at the conclusion of the poster reception. It is the author’s responsibility to remove their posters immediately after the session. Papers not removed will be considered unwanted and will be discarded. The Societies assume no responsibility for posters left up after the end of the poster reception.

All-Conference Reception

Marriott Hotel: San Jose Ballroom

Wednesday, 19 January ................................. 7:30 pm to 9:30 pm

Plan to join us for this great opportunity to get to know your Electronic Imaging colleagues. All attendees are invited to relax and enjoy a pleasant evening with friends old and new.

3D Phantogram Exhibit

San Jose Convention Center, Concourse 1 Lobby

Tuesday 18 January ................................. 10:00 am to 5:00 pm
Wednesday 19 January ................................. 10:00 am to 4:00 pm

Phantograms are a relatively new “3D art form” which place realistic three-dimensional images within hand’s reach of the observer. In some ways like a hologram, but in other ways not, phantograms use conventional stereoscopic display technology in a special way to present images that are enchanting. Be prepared to experience a new reality with this innovative combination of art and technology.

Exhibition, Product Demonstrations, and Bookfair

San Jose Convention Center, Concourse 1 Lobby

Tuesday, 18 January ................................. 10:00 am to 5:00 pm
Wednesday, 19 January ................................. 10:00 am to 4:00 pm

An intimate exhibit and bookfair will feature select Electronic Imaging companies showcasing their latest products and technologies. 2004 Exhibitors:

3D Consortium
ABBYY USA Software House, Inc.
Advanced Imaging Magazine
Amerinex Applied Imaging, Inc.
Davidson Optronics, Inc.
Eastman Kodak Company (Discovery & Development)
Eastman Kodak Company (Image Sensor Solutions)
Photron USA
Vision Systems Design

There is no charge to visit the exhibition hall; however, a registration badge is required for admittance. On-site registration is available for exhibition-only visitors.

For information about exhibiting or scheduling product demonstrations at this symposium, please contact Elizaboe Exibitions Chair, Ufuk Agar at ufuka@garanti.com.tr, or IS&T Project Coordinator, Stacy Barrentine: telephone 703-642-9090 Ext. 105; fax: 703-642-9094
In January 2004, NASA’s Mars Exploration Rover (MER) mission landed a pair of rovers onto the Martian surface. The rovers carried 20 cameras - more than all previous Mars-landed missions combined. The Spirit and Opportunity rovers have since driven several kilometers across the Martian surface and have acquired 360-degree stereo panoramas at more than 100 distinct locations. Over 41,000 images have been returned, including dramatic pictures of the Martian landscape that provide supporting evidence of past liquid water activity on the surface of the planet.

The cameras responsible for the acquisition of these image data are considerably smaller in mass and use less power than cameras flown in previous Mars-landed missions. Advances in electronics, detectors, and packaging have allowed the MER cameras to weigh less than 300 grams each (the size of a typical consumer-grade compact digital camera) and consume less than 3 watts of power. The cameras are classified into 4 major optical types: wide-angle Hazard Avoidance Cameras, medium-angle Navigation Cameras, narrow-angle color Panoramic Cameras, and high-resolution Microscopic Imagers (MI). All of the cameras are equipped with a single monochromatic visible-IR wavelength filter, with the exception of the narrow-angle Panoramic camera, which includes a 13-position filter wheel. The cameras share a common electronics design and use 1024-by-1024 pixel CCD detectors digitized at 12 bits/pixel. The images are typically wavelet-compressed at bit rates ranging from 8 bits/pixel (lossless) up through rates of approximately 0.5 bits/pixel (lossy).

Because the operation of a Martian surface rover is an image intensive process, the MER cameras play a critical role in the daily command cycle of the vehicle. In addition to providing data for scientific analysis, the images are used to safely drive the rovers across the Martian surface and operate the Rover robotic arms. The free-roaming nature of the rovers requires the systematic acquisition of panoramic stereo image data for vehicle operation - these images are downlinked on a daily basis and must be analyzed quickly (in a few hours) in order to command the rover for the next day of operations. After the rover has completed a commanded movement, the operations team must use additional image data to verify the post-move location of the vehicle relative to the commanded location.

This talk will provide an overview of the MER Imaging System and will include a discussion of the camera hardware, the onboard imaging processing capabilities of the MER rovers, and the ground processing capabilities of the operational image processing system here on Earth. Images from the MER mission will also be shown, including the most recent images received from each rover.

Biography: Dr. Justin Maki is the Mars Exploration Rover Imaging Scientist at the Jet Propulsion Laboratory in Pasadena, CA. Dr. Maki has 13 years of experience building and operating planetary remote sensing instruments. He has worked on 5 planetary projects, including the Cassini mission to Saturn, the Russian Mars 96 mission, the 1997 Mars Pathfinder mission, the 1999 Mars Polar Lander mission, and the 2003 Mars Exploration Rover Mission. Dr. Maki has been involved in the development and/or operation of 28 flight instruments (including 18 presently operating on Mars and 1 presently operating at Saturn). Dr. Maki received his Ph.D. from the University of Colorado, Boulder in 1996.

The big idea in computer graphics, what makes CG different than other ways of making and representing images, is that CG represents images symbolically. The result is that we are not constrained to conventional media, we may invent new abstract image models, and the associated computational processes that convert the models to concrete images. Somewhat surprisingly, most of computer graphics research has focused on the science and technology for making photorealistic images representing the physical world. But there are alternate, non-representational, image models that better depict our mental models of the world. Such abstract image representations are often more informative and more expressive than realistic ones. Historical examples include statisticial graphics, thematic maps, and engineering drawings. Future possibilities are smart illustrations and information visualizations. In this talk, I will explore the future of abstract image representations, touching on both the scientific and technological opportunities.

Pat Hanrahan is the CANON USA Professor of Computer Science and Electrical Engineering at Stanford University where he teaches computer graphics. His current research involves visualization, image synthesis, and graphics systems and architectures. Before joining Stanford he was a faculty member at Princeton. He has also worked at Pixar where he developed developed volume rendering software and was the chief architect of the RenderMan™ Interface - a protocol that allows modeling programs to describe scenes to high-quality rendering programs. Previous to Pixar he directed the 3D computer graphics group in the Computer Graphics Laboratory at New York Institute of Technology. Professor Hanrahan has received three university teaching awards. He has received two Academy Awards for Science and Technology, the Spirit of America Creativity Award, the SIGGRAPH Computer Graphics Achievement Award, and this year the SIGGRAPH Stephen A. Coons Award. He was recently elected to the National Academy of Engineering.
Monday 17 January

SESSION 1
Conv. Ctr. Room A8 ................. Mon. 8:30 to 10:10 am
Convergence Accommodation Issues
Chair: Andrew J. Woods, Curtin Univ. of Technology (Australia)
8:30 am: Stereoscopic 3D display with dynamic optical correction for recovering from asthenopia, T. Shibata, T. Kawai, Waseda Univ. (Japan); M. Otsuki, N. Miyake, Nikon Corp. (Japan); Y. Yoshihara, Arisawa Manufacturing Co., Ltd. (Japan); T. Iwasaki, Univ. of Occupational and Environmental Health (Japan) ............... [5664A-01]
8:50 am: Creating a comfortable stereoscopic viewing experience: effects of viewing (accommodative) distance and field of view on fusionscopic fusion, E. W. Jin, M. E. Miller, S. Endrikovshki, C. D. Ceresaletti, Eastman Kodak Co. .......... [5664A-02]
9:10 am: Fixed-viewpoint volumetric stereoscopic 3D display using adaptive optics, F. P. Shevlin, Shevlin Technologies Ltd. (Ireland) and Trinity College Dublin (Ireland) ............ [5664A-03]
9:30 am: Natural 3D display with 2x8 directional images used for human-engineering evaluation, H. Nakanuma, H. Kamei, Y. Takaki, Tokyo Univ. of Agriculture and Technology (Japan) ............. [5664A-04]
9:50 am: Predicting individual fusion range from optometric data, S. Endrikovshki, E. Jin, M. Miller, C. Ceresaletti, Eastman Kodak Co. .......... [5664A-05]
Coffee Break. ...................................................................................................................... 10:10 to 10:40 am

SESSION 2
Conv. Ctr. Room A8 ................. Mon. 10:40 am to 12:00 pm
Human Factors
Chair: John O. Merritt, Merritt Group
10:40 am: Stereo-foveation for anaglyph imaging, A. Colttein, Helsinki Univ. of Technology (Finland) ............... [5664A-06]
11:00 am: Selectively rendering for efficient high-fidelity stereo images, C. Lo, A. Chalmers, Univ. of Bristol (United Kingdom) .......... [5664A-07]
11:20 am: Accommodative load for stereoscopic displays, M. Omori, M. Miyao, Nagoya Univ. (Japan); S. Ishihara, Aichi Univ. of Education (Japan); S. Hasegawa, Nagoya Bunri Univ (Japan); H. Ishigaki, Aichi Institute of Technology (Japan); T. Watanabe, Obu Dementia Care Research and Training Ctr. (Japan); H. Tahara, EyePower Sports Ltd. (Japan) .......... [5664A-79]
11:40 am: Perceived smoothness in multiview stereoscopic displays, F. Speranza, J. W. Tam, T. Martin, L. Stelmach, Communications Research Ctr. Canada (Canada); C. Ahn, Electronics and Telecommunications Research Institute (South Korea) .......... [5664A-09]
Lunch Break. ......................................................................................................................... 12:00 to 1:30 pm
Tuesday 18 January

SESSION 5
Conv. Ctr. Room A8 ........................ Tues. 9:30 to 10:10 am
2D to 3D Conversion
Chair: Janusz Konrad, Boston Univ.
9:50 am: Interactive 2D to 3D stereoscopic image synthesis, M. H. Feldman, L. Lipton, Stereographics Corp. ........................ [5664A-21]
Coffee Break .............................. 10:10 to 10:40 am

SESSION 6
Conv. Ctr. Room A8 ........................ Tues. 10:40 am to 12:00 pm
Stereo Video
Chair: Andrew J. Woods, Curtin Univ. of Technology (Australia)
10:40 am: New version of HD stereoscopic camera and its picture quality assessment concerning the camera parameters, J. Lee, S. Nam, J. Lee, C. Park, Korean Broadcasting System (South Korea) ........................ [5664A-22]
11:00 am: Pre-rendered stereoscopic videos for commodity display systems, J. R. Moreland, L. Arns, S. Meador, Purdue Univ. ........................ [5664A-23]
11:20 am: OpenCL hardware-accelerated algorithms for auto-stereoscopic monitor pattern creation, M. Huiskamp, Lightspeed Design Group and Institute of Chemical Technology Prague (Czech Republic); C. Ward, Lightspeed Design Group ........................ [5664A-24]
Lunch/Exhibition Break ........................ 12:00 to 1:30 pm

SESSION 7
Conv. Ctr. Room A8 ........................ Tues. 1:30 to 2:50 pm
Stereoscopic Developments
Chair: Vivian K. Walworth, Jasper Associates
1:30 pm: Tri-stack 3D LCD monitor, A. Louskianitsa, A. Yaroyov, K. Kanashin, Neurok Optics LLC ........................ [5664A-26]
1:50 pm: Full-color auto-stereoscopic video display system using computer-generated synthetic phase holograms, K. Choi, H. Kim, B. Lee, Seoul National Univ. (South Korea) ........................ [5664A-27]
2:10 pm: Real-time holographic video images with commodity PC hardware, T. Quintmeyer, V. M. Bove, Jr., W. J. Plesnialik, MIT Media Lab. ........................ [5664A-28]
2:30 pm: Low-loss filter for stereoscopic projection with LCD projectors, O. Stefani, M. Bues, R. Blach, Fraunhofer-Institut für Angewandte Optik (Germany) ........................ [5664A-29]

SESSION 8
Conv. Ctr. Room A8 ........................ Tues. 2:50 to 3:30 pm
Depth Mapping
Chair: Vivian K. Walworth, Jasper Associates
2:50 pm: Three-dimensional scene reconstruction using multiview images and depth camera, S. M. Um, Electronics and Telecommunications Research Institute (South Korea); G. Kim, Kwangju Institute of Science and Technology (South Korea); C. Ahn, Electronics and Telecommunications Research Institute (South Korea); K. Lee, Kwangju Institute of Science and Technology (South Korea) ........................ [5664A-30]
3:10 pm: Smoothing region boundaries in variable depth mapping for real-time stereoscopic images, N. S. Holliman, Univ. of Durham (United Kingdom) ........................ [5664A-31]
Coffee Break .............................. 3:30 to 3:50 pm

SD&A Demonstration Session ........................ 3:50 to 5:30 pm
Chairs: Neil A. Dodgson, Univ. of Cambridge (United Kingdom); Andrew J. Woods, Curtin Univ. of Technology (Australia)
Interactive, hands-on demonstrations of stereoscopic hardware, software, and display content to support presentations given in the conference

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

✔ Coding of full-parallax multiview images, T. Palfner, E. Mueller, Univ. Rostock (Germany) ........................ [5664A-72]
✔ Physical modeling of a microlens array setup for use in computer generated IP, S. S. Athineos, N. P. Sgouros, P. G. Papageorgas, D. M. Maroulis, M. S. Sangriotis, N. G. Theofanous, Univ. of Athens (Greece) ........................ [5664A-75]
✔ Stereoscopic display which shows 3D natural scenes without contradiction of accommodation and convergence, Y. Akutsu, Univ. Of Tsukuba (Japan); H. Kakeya, Univ. of Tsukuba (Japan) ........................ [5664A-76]
✔ McLife: multiple cameras for light field live with thousands of lenslets, M. Kojima, T. Naemura, Univ. of Tokyo (Japan) ........................ [5664A-78]
✔ Reduction of the distortion due to non-ideal lens alignment in lenticular 3D displays, Y. Lee, J. B. Ra, Korea Advanced Institute of Science and Technology (South Korea) ........................ [5664A-80]

Visit www.stereoscopic.org for the latest information on the Stereoscopic Displays and Applications conference program.
### Wednesday 19 January

#### Plenary Speaker

**Marriott Hotel: San Jose Ballroom**  
**The Future of Computer Graphics: Realism or Abstraction?**  
**Pat Hanrahan,** Stanford Univ.  
See pg. x for details.

#### Coffee Break

**10:30 to 10:50 am**

#### SESSION 9

**Conv. Ctr. Room A8**  
**Wednesday 19 January**  
**10:50 am to 12:10 pm**

**Chair:** Greg E. Favalora, Reality Systems, Inc.

**Laser-induced image technology (yesterday, today and tomorrow),** I. N. Troitski, Igor Troitski, LLC ___________________________ [5664A-32]


**Optical system which projects small volumetric images to very large size,** J. B. Eichenlaub, Dimension Technologies Inc. ___________________________ [5664A-34]

**Multi finger gestural interaction with 3D volumetric displays,** T. Grossman, D. Wiegand, R. Balakrishnan, Univ. of Toronto (Canada) ___________________________ [5664A-35]

**Joint Session with Conf. 5664B The Engineering Reality of Virtual Reality**

**Conv. Ctr. Room A5**  
**Wednesday 19 January**  
**1:30 to 2:30 pm**

**Telemanipulator and Telepresence Technologies**

**Chairs:** Andrew J. Woods, Curtin Univ. of Technology (Australia); Mark T. Bolas, Fakespace Labs., Inc.

**Effect of reduced stereoscopic camera separation on ring placement with a surgical telerobot,** S. R. Ellis, NASA Ames Research Ctr.; J. M. Fishman, Oxford Medical School (United Kingdom); C. J. Hauser, Intuitive Surgical, Inc. and Immersion Corp.; D. Stern, Intuitive Surgical, Inc. ___________________________ [5664A-42]


**Fire training in a virtual-reality environment,** E. Freund, J. Rossmann, A. Bücken, Univ. Dortmund (Germany) ___________________________ [5664A-44]

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

#### SESSION 10

**Conv. Ctr. Room A8**  
**Wednesday 19 January**  
**1:30 to 3:10 pm**

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

**Depth estimation method for uni-directional integral 3D images by discrete space mapping,** J. Ren, A. Aggoun, De Montfort Univ. (United Kingdom) __________ [5664A-36]

**Three-dimensional electro-floating display system based on integral imaging technique,** S. Min, J. Kim, B. Lee, Seoul National Univ. (South Korea) __________ [5664A-37]

**Projection-type integral 3D imaging using multifacet flat mirrors,** S. Jung, S. A. Chestak, K. Cha, T. Kim, T. Ha, J. Koq, S. Kim, Samsung Electronics Co., Ltd. (South Korea) __________ [5664A-38]

**Autostereoscopic liquid crystal display using mosaic color pixel arrangement,** K. Tokyo, R. Fukushima, T. Saito, H. Kobayashi, Y. Hirayama, Toshiba Corp. (Japan) __________ [5664A-39]

**Long viewing distance autostereoscopic display,** H. Liao, Univ. of Tokyo (Japan) __________ [5664A-40]

#### SESSION 11

**Conv. Ctr. Room A8**  
**Wednesday 19 January**  
**3:40 to 4:40 pm**

**Stereoscopic Display Applications**

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

**Procedure to evaluate road safety level using stereoscopic in digital photogrammetric techniques,** H. M. Ebaid, Survey Research Institute (Egypt) __________ [5664A-40]

**Multiview projection-type autostereoscopic displays for arcade games, advertising, on-site entertainment, and desktop applications,** J. B. Eichenlaub, Dimension Technologies Inc. __________ [5664A-45]

**Stereoscopy in orthopaedics,** E. S. Tan, Royal Newcastle Hospital (Australia) __________ [5664A-46]

**Keynote Presentation**  
**4:40 to 5:40 pm**

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Wednesday 19 January

SESSION 11

Joint Session with Conf. 5664A Stereoscopic Displays and Applications

Conv. Ctr. Room A5 ................. Wed. 1:30 to 2:30 pm

Telemanipulator and Telepresence Technologies

Chairs: Andrew J. Woods, Curtin Univ. of Technology (Australia); Mark T. Bolas, Fakespace Labs., Inc.

1:30 pm: Effect of reduced stereoscopic camera separation on ring placement with a surgical telemanipulator, S. R. Ellis, NASA Ames Research Ctr.; J. M. Fishman, Oxford Medical School (United Kingdom); C. J. Hassler, Intuitive Surgical, Inc. and Immersion Corp.; J. D. Stern, Intuitive Surgical, Inc. ................. [5664A-41]


2:10 pm: Fire training in a virtual-reality environment, E. Freund, J. Rossmann, A. Blüken, Univ. Dortmund (Germany) ................. [5664A-44]

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

Thursday 20 January

SESSION 13

Conv. Ctr. Room A1 .................. Thurs. 8:30 to 10:10 am

Systems I

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

8:30 am: Passive method of eliminating accommodation/convergence disparity in stereoscopic head-mounted displays, J. B. Eichenlaub, Dimension Technologies Inc. ......................... [5664B-49]

8:50 am: Reusable methodology based on filters in order to define relevant tangible parts for a TUI, F. Depaulis, N. Couture, J. Lagardeur, L. Garreau, École Supérieure des Technologies Industrielles Avancées (France) .......... [5664B-50]

9:10 am: WebVR: an interactive web browser for virtual environments, E. N. Barsoum, F. Kuester, Univ. of California/Irvine .......... [5664B-51]

9:30 am: What’s good enough: some experiments with projected VR quality, D. Pape, P. Costa, Univ. at Buffalo .................... [5664B-52]

9:50 am: Realizing real-time distributed tiled display system, S. Kim, F. Kuester, K. H. Kim, Univ. of California/Irvine .......... [5664B-53]

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

SESSION 14

Conv. Ctr. Room A1 .................. Thurs. 10:40 am to 12:00 pm

Mixed Realities

Chair: Shojiro Nagata, InterVision (Japan)

10:40 am: Projection-based augmented reality with automated shape scanning, Y. Yasumuro, K. Kohyama, M. Imura, Y. Manabe, K. Chihara, Nara Institute of Science and Technology (Japan) ................. [5664B-54]

11:00 am: Localization of wearable users using invisible retro-reflective markers and an IR camera, Y. Nakazato, M. Kanbara, N. Yokoya, Nara Institute of Science and Technology (Japan) ................. [5664B-55]
Tuesday 18 January

Plenary Speaker: Tues. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Maki, Jet Propulsion Lab.
See pg. x for details.

SESSION 1
Conv. Ctr. Room B3 ............... Tues. 9:30 to 11:40 am
3D Measurement, Sensing, and Modeling Systems I
Chair: J. Angelo Beraldin, National Research Council Canada
9:55 am: Surface orientation imager with enabling capability of non-Lambertian reflectance, T. Kurhara, T. Shimizu, N. Ono, S. Ando, Univ. of Tokyo (Japan) [5665-02]
Coffee Break. ........................ 10:20 to 10:50 am
10:50 am: Advancements in image processing and data analysis for shipbuilding dimensional and accuracy control automation, G. W. Johnson, MidCoast Metrology Inc.; M. Shortis, RMIT Univ. (Australia); S. Robson, Univ. College London (United Kingdom) ............................ [5665-03]
11:15 am: Photogrammetry for geological applications: automatic retrieval of discontinuity orientation in rock slopes, G. Forlani, Univ. degli Studi di Parma (Italy); F. Remondino, ETH Zürich (Switzerland); R. Roncella, Univ. degli Studi di Parma (Italy) ................................. [5665-05]
Lunch/Exhibition Break. .......... 11:40 am to 1:00 pm

SESSION 2
Conv. Ctr. Room B3 ............... Tues. 1:00 to 3:35 pm
3D Measurement, Sensing, and Modeling Systems II
1:00 pm: Boat’s hull modeling with low-cost triangulation scanners, G. Guidi, Univ. degli Studi di Firenze (Italy); L. Micoli, M. Russo, Politecnico di Milano (Italy) ............................. [5665-06]
1:25 pm: Experimental stress analysis of carbon composite reinforced concrete beams with digital image correlation, J. D. Helm, S. Kurtz, Lafayette College [5665-07]
1:50 pm: Two-dimensional imaging and three-dimensional sensing data acquisition and mutual registration for painting conservation, R. Fontana, M. C. Gambino, M. Greco, L. Marras, E. Pampaloni, A. Pelagotti, L. Pezzati, P. Poggi, Istituto Nazionale di Ottica Applicata (Italy) ............................ [5665-08]
2:15 pm: Topography reconstruction of specular surfaces, S. Kamnel, J. W. Horbach, Univ. Karlsruhe (Germany) ................................. [5665-09]
2:40 pm: Evaluating the performance of close-range 3D active vision systems for industrial design applications, J. A. Beraldin, National Research Council Canada; M. Gaian, Politecnico di Milano (Italy) ............................ [5665-47]
Coffee Break. ...................... 3:05 to 3:35 pm

SESSION 3
Conv. Ctr. Room B3 ............... Tues. 3:35 to 5:20 pm
Visualization I
Chair: Lorenzo Gonzo, Instituto Trentino di Cultura (Italy)
3:35 pm: Capturing appearance (Invited Paper), H. E. Rushmeier, Yale Univ. [5665-11]
4:05 pm: Stereoscopy application of spherical imaging, H. G. Haggrén, Helsinki Univ. of Technology (Finland) .......................... [5665-12]
4:30 pm: Extended view interpolation by parallel use of the GPU and the CPU, I. Geyss, Katholieke Univ. Leuven (Belgium); L. Van Gool, Katholieke Univ. Leuven (Belgium) and ETH Zürich (Switzerland) ......................... [5665-13]
4:55 pm: Combining 3D technologies for cultural heritage interpretation and entertainment, J. A. Beraldin, M. Picard, S. F. El-Hakim, G. Godin, National Research Council Canada Council; V. Valziano, A. Bandiera, Univ. degli Studi di Lecce (Italy) .......................... [5665-14]

Posters-Tuesday
Posters will be placed on display after 9:00 am in Conv. Ctr. Room Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.
Wednesday 19 January

**SESSION 4**
**Conv. Ctr. Room B3**  Monday, 9:40 am to 11:30 am
**Visualization II**
Chair: Holly E. Rushmeier, Yale Univ.
9:40 am: Virtualizing Ancient Rome: 3D acquisition and modeling of a large plaster-of-Paris model of Imperial Rome (Invited Paper), G. Guidi, Univ. degli Studi di Firenze (Italy); B. Frischer, M. De Simone, Univ. of Virginia; A. Cioci, A. Spinetti, Univ. degli Studi di Firenze (Italy); L. Micoli, M. Russo, Politecnico di Milano (Italy); T. Grasso, SMS (Italy) ................................................................. [5665-15]
10:10 am: Multisensor panorama fusion and visualization, K. K. Scheibe, German Aero Space Ctr. (Germany) ................................................................. [5665-16]
Coffee Break ................................................................. 10:35 to 11:05 am
11:05 am: Combined use of 2D Images and 3D models for retrieving and browsing digital archive contents, R. Kadobayashi, National Institute of Information and Communications Technology (Japan) ................................................................. [5665-19]
Lunch/Exhibition Break ................................................................. 11:30 am to 1:00 pm

**SESSION 5**
**Conv. Ctr. Room B3**  Monday, 1:25 pm to 3:15 pm
**Calibration and Performance Evaluations**
Chair: Mark R. Shortis, RMIT Univ. (Australia)
1:25 pm: Calibration and improvements of the high-resolution range-imaging camera SwissRanger, T. Kahlimann, H. Ingensand, ETH Zürich (Switzerland) [5665-20]
1:35 pm: New multiple camera calibration method for a large number of cameras, Y. Kojima, T. Fujii, M. Tanimoto, Nagoya Univ. (Japan) ................................................................. [5665-21]
1:50 pm: Influence of Bayer filters on the quality of photogrammetric measurement, M. R. Shortis, RMIT Univ. (Australia); J. Seager, Univ. of Western Australia (Australia) ................................................................. [5665-22]
2:15 pm: Evaluation and correction of laser-scanned point clouds, C. Teutsch, Fraunhofer-Institut für Fabrikbetrieb und -automatisierung (Germany) and Otto-von-Guericke Univ. Magdeburg (Germany); T. Isenber, T. Strathotte, Otto-von-Guericke Univ. Magdeburg (Germany); E. Trostmann, M. Weber, D. Berndt, Fraunhofer-Institut für Fabrikbetrieb und -automatisierung (Germany) ................................................................. [5665-23]
2:40 pm: A comparative study on the retrieval of exterior orientation parameters from coplanar direct linear transformation, G. H. Seedahmed, Pacific Northwest National Lab. ................................................................. [5665-24]
Coffee Break ................................................................. 3:05 to 3:35 pm

**SESSION 6**
**Conv. Ctr. Room B3**  Monday, 3:35 pm to 5:15 pm
**3D Data Processing and Integration**
Chair: Gabriele Guidi, Univ. degli Studi di Firenze (Italy)
3:35 pm: Flexible mathematical model for matching of 3D surfaces and attributes, D. Akca, A. Gruen, ETH Zürich (Switzerland) ................................................................. [5665-25]
4:00 pm: Improving accuracy and computation time of 3D reconstruction through an improved carving procedure, D. Ruiz, B. Maac, Univ. Catholique de Louvain (Belgium) ................................................................. [5665-26]
4:25 pm: Efficient corner detector for 3D point cloud data and application to 3D modeling of structures, H. Yokoyama, H. Chikatsum, Tokyo Denki Univ. (Japan) ................................................................. [5665-27]
4:50 pm: Three-dimensional modeling of close-range objects: photogrammetry or laser scanning?, A. Vetteo, Univ. degli Studi di Padova (Italy); F. Remondino, ETH Zürich (Switzerland) ................................................................. [5665-29]

**Thursday 20 January**

**SESSION 7**
**Conv. Ctr. Room B3**  Thurs., 8:30 am to 10:15 am
**Tracking and Dynamic Modeling**
Chair: James S. Walton, QDIVIDEO
8:30 am: Image processing for motion capture (Invited Paper), J. R. W. Morris, OMG plc (United Kingdom) ................................................................. [5665-30]
9:00 am: Model-based sparse 3D reconstruction for online body tracking, T. Jaeggli, Katholieke Univ. Leuven (Belgium) and Swiss Federal Institute of Technology (Switzerland); T. P. Koninckx, L. Van Gool, Katholieke Univ. Leuven (Belgium) [5665-31]
9:25 am: Three-dimensional measurement for small moving object, Y. Manabe, Y. Ura, University of Electro-Communications (Japan) ................................................................. [5665-32]
9:50 am: Integration of videogrammetry and terrestrial laser scanning for dynamic surface modeling, S. Lin, J. Mills, Univ. of Newcastle upon Tyne (United Kingdom) ................................................................. [5666-33]
Coffee Break ................................................................. 10:15 to 10:45 am

**SESSION 8**
**Conv. Ctr. Room B3**  Thurs., 10:45 am to 12:25 pm
**Human Body Modeling**
10:45 am: Digitization of the human body in the present day economy, N. D’Apuzzo, Homometria Consulting (Switzerland) ................................................................. [5666-34]
11:10 am: Realistic body modeling out of video sequences: first application to body parts, G. Schroter, ETH Zürich (Switzerland) ................................................................. [5666-35]
11:35 am: Conditions that influence the accuracy of anthropometric parameter estimation for human body segments using shape-from-silhouette, L. Mündermann, A. Mündermann, A. Chaudhuri, T. P. Andreiacchi, Stanford Univ. ................................................................. [5666-36]
12:00 pm: Most favorable camera configuration for a shape-from-silhouette markerless motion capture system for biomechanical analysis, L. Mündermann, S. Corazza, A. Chaudhuri, E. J. Alexander, T. P. Andreiacchi, Stanford Univ. ................................................................. [5666-37]
Lunch Break ................................................................. 12:25 to 1:40 pm

**SESSION 9**
**Conv. Ctr. Room B3**  Thurs., 1:40 pm to 3:20 pm
**Scene Reconstruction**
1:40 pm: Graph-based surface reconstruction from stereo pairs using image segmentation, M. Bleyer, M. Gelautz, Vienna Univ. of Technology (Austria) ................................................................. [5666-38]
2:05 pm: Line extraction for city modeling using least-median of squares method, Y. Kunii, H. Chikatsum, Tokyo Denki Univ. (Japan) ................................................................. [5666-40]
2:30 pm: Photogrammetric bridging of GPS outages in mobile mapping, G. Forlani, Univ. degli Studi di Parma (Italy); F. Remondino, ETH Zürich (Switzerland); R. Roscella, Univ. degli Studi di Parma (Italy) ................................................................. [5666-41]
2:55 pm: Three-dimensional model reconstruction for treasures of jadeite material from uncalibrated image sequences, C. Cheng, C. Teng, S. Wang, P. Huang, Y. Chien, S. Lai, National Tsing Hua Univ. (Taiwan) ................................................................. [5666-42]
Human Vision and Electronic Imaging X

Conference Chairs: Bernice E. Rogowitz, IBM Thomas J. Watson Research Ctr.; Thrasyvoulos N. Pappas, Northwestern Univ.; Scott J. Daly, Sharp Labs. of America

Program Committee: Albert J. Ahumada, Jr., NASA Ames Research Ctr.; Jan P. Allebach, Purdue Univ.; Walter R. Bender, MIT Media Lab.; Michael H. Brill, Datacolor; John C. Dalton, Synthetik Software; Hub de Ridder, Delft Univ. of Technology (Netherlands); Gunilla A. Derfeldt, Swedish Defence Research Agency (Sweden); Miguel P. Eckstein, Univ. of California/Santa Barbara; Elena A. Fedorovskaya, Eastman Kodak Co.; Jennifer Gille, Raytheon Co.; Laurent Itti, Univ. of Southern California; Stanley A. Klein, Univ. of California/Berkeley; Jan J. Koenderink, Univ. Utrecht (Netherlands); John J. McCann, McCann Imaging; Jeffrey B. Mulligan, NASA Ames Research Ctr.; Karol Myszkowski, Max-Planck-Institut für Informatik (Germany); Adar Pelah, Univ. of York (United Kingdom); Hawley K. Rising III, Sony Electronics; Robert J. Safranek, Benevue, Inc.; Christopher W. Tyler, Smith-Kettlewell Eye Research Institute; Andrew B. Watson, NASA Ames Research Ctr.

Monday 17 January

SESSION 1
Marriott Hotel: Ballroom III        Mon. 10:30 am to 12:10 pm
Keynote Session

Chairs: Bernice E. Rogowitz, IBM Thomas J. Watson Research Ctr.; Thrasyvoulos N. Pappas, Northwestern Univ.; Scott J. Daly, Sharp Labs. of America

10:30 am: Eye-Robot: a standard observer for vision technology (Keynote Presentation), A. B. Watson, NASA Ames Research Ctr.  [s666-01]
11:30 am: Celestial illusions and ancient astronomers: Aristarchus and Eratosthenes (Keynote Presentation), T. V. Papathomas, Rutgers Univ.  [s666-02]
Lunch Break  12:10 to 1:30 pm

SESSION 2
Marriott Hotel: Ballroom III        Mon. 1:30 to 3:10 pm
Perspectives in Vision Science

Chair: Bernice E. Rogowitz, IBM Thomas J. Watson Research Ctr.

1:30 pm: Do humans discount the illuminant?, J. J. McCann, McCann Imaging  [s666-03]
1:50 pm: Self-organizing cortical color maps, R. Rao, G. Cecchi, C. Peck, J. Kozlowski, IBM Corp.  [s666-04]
2:10 pm: A study of human recognition rates for feature-sized image patches selected from initial and final fixations on calibrated natural images, L. van der Linde, Anglia Polytechnic Univ. (United Kingdom) and Univ. of Texas/Austin; U. Rajashekar, L. K. Cormack, A. C. Bovik, Univ. of Texas/Austin  [s666-05]
2:30 pm: Human face recognition, R. Lameprecht, Fachhochschule Pinkafeld (Austria)  [s666-06]
2:50 pm: Toward a multilevel cognitive probabilistic representation of space, A. Tague, S. Vasudevan, R. Siegwart, Ecole Polytechnique Federale de Lausanne (Switzerland)  [s666-07]
Coffee Break  3:10 to 3:40 pm

SESSION 3
Marriott Hotel: Ballroom III        Mon. 3:40 to 5:30 pm
Memorial Session in Honor of Bela Julesz

Chair: Christopher W. Tyler, Smith-Kettlewell Eye Research Institute

3:40 pm: Top-down processes in perceiving false depth and motion for faces and scenes, T. V. Papathomas, Rutgers Univ.  [s666-08]
4:10 pm: Local cross-correlation model of stereo correspondence, M. S. Banks, S. Gepshtein, H. F. Rose, Univ. of California/Berkeley  [s666-09]
4:40 pm: The riches of the cyclopean paradigm, C. W. Tyler, Smith-Kettlewell Eye Research Institute  [s666-10]
5:10 pm: Binocular matching and the smoothness constraint, C. M. Schor, Smith-Kettlewell Eye Research Institute  [s666-45]

Tuesday 18 January

SESSION 4
Marriott Hotel: Ballroom III        Tues. 9:30 am to 12:00 pm
Perceptual Image Compression and Quality

Chair: Scott J. Daly, Sharp Labs. of America

9:30 am: Sharpening image motion based on spatio-temporal characteristics of human vision, T. Takeuchi, NTT Communication Science Labs. (Japan); K. K. De Valois, Univ. of California/Berkeley  [s666-11]
9:50 am: Spatial quantization via local texture masking, M. D. Gaboritz, D. M. Chandler, S. S. Hemami, Cornell Univ.  [s666-12]
10:10 am: Perceptual analysis of video impairments that combine blackly, blurrily, noisily, and ringing synthetic artifacts, M. Q. Farias, J. M. Foley, S. K. Mitra, Univ. of California/Santa Barbara  [s666-18]
Coffee Break  10:30 to 11:00 am
11:00 am: Delicate visual artifacts of advanced digital video processing algorithms, M. M. Nicolas, F. Lebowsky, ST Microelectronics (France)  [s666-14]
11:20 pm: Analysis of psychological factors for quality assessment of interactive multimodal service, K. Yamagishi, T. Hayashi, NTT Corp. (Japan)  [s666-15]
11:40 am: Audiovisual quality evaluation of low-bitrate video, S. Winkler, Genista A/S (Copenhagen); C. R. Atkinson, Ecole Polytechnique Federale de Lausanne (Switzerland) and Agere Systems Inc.  [s666-16]
Lunch/Exhibition Break  12:00 to 1:40 pm
Marriott Hotel: Ballroom III  
Tuesday, 1:40 to 3:00 pm

Reference-Free Image Quality

Chair: Thrasivoulos N. Pappas, Northwestern Univ.

1:40 pm: Reduced-reference image quality assessment using a wavelet-domain natural image statistic model, Z. Wang, E. P. Simoncelli, New York Univ. ... [5666-20]

2:00 pm: Reference-free objective quality metrics for MPEG coded video, H. Cheng, J. Lubin, Sarnoff Corp.  [5666-21]

2:20 pm: No-reference video quality estimation based on human visual system for 2.5/3-D devices, F. Massidda, D. D. Giusto, C. Perra, Univ. degli Studi di Cagliari (Italy) and Consorzio Nazionale Interuniversitario per le Telecomunicazioni (Italy)  [5666-22]

2:40 pm: No-reference perceptual metric for frame dropping impairments, R. R. Pastrana-Vidal, J. Gicquel, C. Colomes, France Telecom R&D (France); C. Hocine, Univ. de Bourgogne (France)  [5666-23]

Coffee Break  [5666-24]

SESSION 6

Marriott Hotel: Ballroom III  
Tuesday, 3:30 to 4:30 pm

Image Quality of System Tonescale

Chair: Bemie E. Rogowitz, IBM Thomas J. Watson Research Ctr.

3:30 pm: Predicting gamut mapping quality using color image difference formulae, E. Bando, J. V. Hardeberg, D. R. Connah, I. Farup, Gjovik Univ. College (Norway)  [5666-17]

3:50 pm: Perceptual evaluation of tone mapping operators with real-world scenes, A. Yoshida, V. Blanz, K. Myszkowski, H. Seidel, Max-Planck-Institut für Informatik (Germany)  [5666-13]

4:10 pm: Predicting visible differences in high dynamic range images: model and its validation, R. Mantlik, Max-Planck-Institut für Informatik (Germany); S. Daly, Sharp Labs of America; K. Myszkowski, H. Seidel, Max-Planck-Institut für Informatik (Germany)  [5666-19]

Panel Discussion  4:30 to 5:50 pm

Perceptual Image Quality: What’s Next?

✔ Posters-Tuesday

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

✔ Methods study for the relocation visual Information in central scotoma cases, A. Scheren, Lab. d’Informatique Graphique et d’Ingénierie (France) and Institut National de la Santé et de la Recherche Médicale (France); V. Gautier, Lab. d’Informatique Graphique et d’Ingénierie (France)  [5666-28]

✔ Blink duration measurement system for drowsiness detection using image processing, T. Kageyama, K. Masami, Sophia Univ. (Japan)  [5666-38]

✔ Human recognition by body shape features under surveillance environment, M. Du, L. Guan, Ryerson Univ. (Canada)  [5666-39]

✔ Artifacts-based video quality metric using fuzzy logic, W. Dai, Z. Cai, W. E. Lynch, Concordia Univ. (Canada)  [5666-40]

✔ Measuring the negative impact of frame dropping on perceptual visual quality, Z. Lu, Institute for Infocomm Research (Singapore)  [5666-41]

✔ Color adaptation and contrast control depending on an image, H. C. Kim, S. H. Baik, K. D. Kim, I. J. Chung, E. Y. Oh, J. K. Yun, LG Philips LCD Co., Ltd. (South Korea)  [5666-42]

✔ Using perceptually based face indexing to facilitate human-computer collaborative retrieval, J. A. Black, Jr., P. Satyan, Arizona State Univ.; C. Gibbs, N. A. Dodgson, Univ. of Cambridge (United Kingdom)  [5666-43]

✔ Investigating affective color association of media content in language and perception based on on-line RGB experiment, K. J. Lee, Purdue Univ.  [5666-44]

Thursday 20 January

Invited Program on VALVE: Vision, Action, and Locomotion in Virtual (and Real) Environments

Organizers: Adar Pelah, Univ. of York (United Kingdom); Jan J. Koenderink, Univ. Utrecht (Netherlands)

SESSION 11: Special Session: VALVE I
Chair: Adar Pelah, Univ. of York (United Kingdom)

Marriott Hotel: Ballroom III ......... Thurs. 9:00 to 10:20 am

9:00 am: Perception and action in virtual environments (Keynote Presentation), H. H. Buelthoff, Max Planck Institute for Biological Cybernetics (Germany) ............ [5666 48]

9:40 am: Perceiving and acting in real and virtual environments, J. M. Loomis, A. C. Beall, J. Kelly, K. Macuga, Univ. of California/Santa Barbara ............ [5666 49]

10:00 am: Pilot behavior and course deviations during precision flight, J. B. Mulligan, X. L. C. Brolly, NASA Ames Research Ctr. .................... [5666 50]

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

SESSION 12: Special Session: VALVE II
Chair: Jack M. Loomis, Univ. of California/Santa Barbara

Marriott Hotel: Ballroom III ......... Thurs. 10:50 am to 12:10 pm

10:50 am: Interception moving targets, E. Brenner, J. Smeets, Erasmus MC (Netherlands) .................... [5666 51]

11:10 am: Separating the edge-based detection of object motion from the detection of objectless motion energy: Implications for visually guided locomotion, H. Hock, Florida Atlantic Univ. .................... [5666 52]

11:30 am: Achieving near-correct focus cues in a 3D display using multiple image planes, S. J. Watt, Univ. of Wales (United Kingdom); K. Akeley, Microsoft Research Asia; A. R. Girshick, M. S. Banks, Univ. of California/Berkeley ................ [5666 53]

11:50 am: Visual Illusions: pointing the finger at the Judd illusion, A. Dunn, Nottingham Trent Univ. (United Kingdom); P. Thompson, Univ. of York (United Kingdom) .................... [5666 54]

Lunch Break .................... 12:10 to 1:30 pm

SESSION 13: Special Session: VALVE III
Chair: Markus Lappe, Univ. Münster (Germany)

Marriott Hotel: Ballroom III ................ Thurs. 1:30 to 3:20 pm

1:30 pm: Heading and the control of locomotion in a natural environment, B. J. Rogers, Univ. of Oxford (United Kingdom) .......................... [5666 55]

2:00 pm: Spatial awareness in immersive virtual reality environments revealed in open loop walking, K. Turano, S. Chaudhury, Johns Hopkins Univ. ................ [5666 56]


2:40 pm: Visual and nonvisual signals of locomotion, A. Pelah, Univ. of York (United Kingdom); A. Thurrell, Univ. of Cambridge (United Kingdom) ................ [5666 58]

3:00 pm: Mixed visual reference frames: perceiving head-centric or spatio-topic visual quantities in a retino-centric frame, A. V. van den Berg, R. van Ee, A. Noest, Univ. Utrecht (Netherlands) ................................ [5666 59]

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

SESSION 14: Special Session: VALVE IV
Chair: Kathleen Turano, Johns Hopkins Univ.

Marriott Hotel: Ballroom III ................ Thurs. 3:50 to 5:30 pm

3:50 pm: The use of visual and nonvisual cues in updating the perceived position of the world during translation, L. Harris, York Univ. (Canada); R. T. Dyde, Consultant (Canada); M. R. M. Jenkin, York Univ. (Canada) .................... [5666 60]

4:10 pm: Perception of object movement during locomotion, S. K. Rushton, P. Warren, Cardiff Univ. (United Kingdom) .................... [5666 61]

4:30 pm: Investigations on the interactions between vision and locomotion using a treadmill virtual environment, W. Thompson, S. Creem-Regehr, B. Mohler, P. Willemse, Univ. of Utah .................. [5666 62]

4:50 pm: Virtual odometry from visual flow, M. Lappe, H. Frenz, T. Buehrmann, Univ. Münster (Germany); M. Kolesnik, Fraunhofer-Institut-fuer Medienkommunikation (Germany) .................... [5666 63]

5:10 pm: The perception of linear self-motion, F. H. Durgin, Swarthmore College; L. Fox, Massachusetts Institute of Technology; E. Schaffer, Swarthmore College .................... [5666 64]
Monday 17 January

SESSION 1
Marriott Hotel: Ballroom I/II ............ Mon. 10:30 to 11:40 am
Spectral Sensitivity Functions
Chair: Reiner Eschbach, Xerox Corp.
10:30 am: The history of spectral sensitivity functions for humans and imagers: 1861 to 2004 (Invited Paper), J. J. McCann, McCann Imaging .......................... [5667-01]
11:00 am: Representing spectral functions using symmetric extension, F. Vadakkumpadan, Y. Sun, Purdue Univ. .............................. [5667-02]
11:20 am: Spectral information and spatial color computation, A. Rizzi, D. Galda, D. Marin, Univ. degli Studi di Milano (Italy) .................. [5667-03]
Lunch Break .......................................................... 11:40 am to 1:30 pm

SESSION 2
Marriott Hotel: Ballroom I/II ............ Mon. 1:30 to 3:00 pm
Multispectral Imaging I
Chair: Alessandro Rizzi, Univ. degli Studi di Milano (Italy)
1:30 pm: Do we really need (multi)spectral color imaging? (Invited Paper), J. Parkkinen, Univ. of Joensuu (Finland) .......................... [5667-04]
2:00 pm: Evaluation and analysis for spectral reflectance image of human skin, K. Kamimura, N. Tsutsumi, T. Nakaguchi, Y. Miyake, Chiba Univ. (Japan) ...... [5667-05]
2:20 pm: Convex reduction of multispectral data, A. Alsam, Gjevik Univ. College (Norway) .................................................. [5667-06]
2:40 pm: Multispectral Illuminant change transform, S. Zuffi, Consiglio Nazionale delle Ricerche (Italy); R. Schettini, Univ. degli Studi di Milano-Bicocca (Italy)[5667-07]
Coffee Break .......................................................... 3:00 to 3:30 pm

SESSION 3
Marriott Hotel: Ballroom I/II ............ Mon. 3:30 to 4:50 pm
Multispectral Imaging II
Chair: Shoji Tominaga, Osaka Electro-Communication Univ. (Japan)
3:30 pm: Computer-assisted spectral design and synthesis, Y. Sun, Purdue Univ. [5667-08]
3:50 pm: Spectral recovery using polynomial models, D. R. Connah, J. Y. Hardeberg, Gjevik Univ. College (Norway) .......................... [5667-09]
4:10 pm: Real-time detection of natural objects using AM-coded spectral matching imager, A. Kimachi, Osaka Electro-Communication Univ. (Japan) .................................. [5667-10]
4:30 pm: Experience in multispectral mosaicking, G. Novati, P. Pellegrini, Univ. degli Studi di Milano-Bicocca (Italy) and ITC/CNR (Italy); R. Schettini, Univ. degli Studi di Milano-Bicocca (Italy) .................. [5667-12]
SESSION 6
Marriott Hotel: Ballroom I/II  ............ Tues. 1:40 to 3:10 pm
Toward Higher Dimensions in Color Reproduction
Chair: Roger-David Hersch, Ecole Polytechnique Fédérale de Lausanne (Switzerland)
1:40 pm: Challenges in color reproduction: toward higher dimensions (Invited Paper), R. Bala, Xerox Corp .......................................................... [5667-20]
2:10 pm: Color and gloss reproduction from multispectral images, S. Li II, Y. Manabe, K. Chihara, Nara Institute of Science and Technology (Japan) ........................................ [5667-21]
2:30 pm: Colorimetric and spectral-based printing: a simple comparison, S. Zulfi, Consiglio Nazionale delle Ricerche (Italy); R. Schettini, Univ. degli Studi di Milano-Bicocca (Italy) ........................................ [5667-22]
2:50 pm: What color is it?, R. Eschbach, Xerox Corp.; G. Sharma, Univ. of Rochester; G. Bodzagi, Middle East Technical Univ. (Turkey) .................. [5667-23]
Coffee Break .................................................. 3:10 to 3:40 pm

SESSION 7
Marriott Hotel: Ballroom I/II  ............ Tues. 3:40 to 5:00 pm
Gamut Mapping
Chair: A. Ufuk Agar, Garanti Technology (Turkey)
4:00 pm: Toward image-dependent gamut mapping: fast and accurate gamut boundary determination, E. Schuberth, J. Giesen, ETH Zürich (Switzerland); K. Simon, P. Zolliker, Swiss Federal Labs. for Materials Testing and Research (Switzerland) ........................................ [5667-25]
4:20 pm: Selecting appropriate gamut mapping algorithms based on a combination of image statistics, P. Sun, Z. Zheng, Shih Hsin Univ. (Taiwan) .................. [5667-26]
4:40 pm: Continuity of gamut mapping algorithms, P. Zolliker, M. Daetwyler, K. Simon, Swiss Federal Labs. for Materials Testing and Research (Switzerland) ........ [5667-27]

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

Wide color gamut and high brightness WUXGA LCD monitor with color calibrator, H. Sugienda, H. Kaneko, S. Kagawa, M. Ozawa, Mitsubishi Electric Corp. (Japan); H. Tanizoe, H. Ueno, T. Kimura, H. Katou, NEC Mitsubishi Electric Visual Systems Corp. (Japan) ........................................... [5667-28]
DNA microarray image processing based on minimum error segmentation and Histogram analysis, S. Wu, Yantai Univ. (China); H. Yan, City Univ. of Hong Kong (Hong Kong China) .................. [5667-37]
Efficient digitization of printed color maps, Y. S. Moon, H. W. Yeung, K. C. Chan, S. Yung, Chinese Univ. of Hong Kong (Hong Kong China) .................. [5667-66]
Device-dependent color neutralization method, M. Nakajima, Waseda Univ. (Japan); Y. Yamaguchi, Univ. of Tokyo (Japan) ........................................... [5667-67]
A new identification method for artificial objects based on various features, L. Cui, P. Tang, Z. Zhao, Institute of Remote Sensing Applications (China); J. Shi, Institute of Geographic Sciences and Natural Resources (China) .................. [5667-68]
Human color perception in the HSV space and its application in histogram generation for image retrieval, A. Vadivel, S. Surai, A. K. Majumdar, Indian Institute of Technology (India) .................. [5667-69]
Color histogram specification by histogram warping, M. Grundland, N. A. Dodgson, Univ. of Cambridge (United Kingdom) .................. [5667-70]

SESSION 8
Marriott Hotel: Ballroom I/II  ............ Wed. 9:30 to 10:20 am
Color Perception
Chair: Gabriel G. Marcu, Apple Computer, Inc.
9:30 am: Human color perception, cognition, and culture: why red is always red (Invited Paper), T. King, Stanford Univ. .................. [5667-28]
10:00 am: Study on the reason prints made with only cyan and magenta inks look like regular full-color prints, M. Ikeda, M. Omodani, Tokai Univ. (Japan) ....... [5667-29]
Coffee Break .................................................. 10:20 to 10:40 am

SESSION 9
Marriott Hotel: Ballroom I/II  ............ Wed. 10:40 am to 12:20 pm
Image Processing Applications
Chair: Chris Tuijn, Agfa-Gevaert N.V. (Belgium)
10:40 am: Segmentation for mixed raster contents with multiple extracted constant color areas, Z. Z. Fan, T. Jacobs, Xerox Corp. .................. [5667-30]
11:00 am: Linear techniques for image sequence processing acceleration, M. Chambard, Univ. de Reims (France); C. Gatta, A. Rizzi, Univ. degli Studi di Milano (Italy) .................. [5667-31]
11:20 am: Color profile function for morphological image segmentation, M. C. d’Orellas, J. A. T. Borges da Costa, A. P. Dias, Univ. Federal de Santa Maria (Brazil) .................. [5667-32]
11:40 am: Urban damage estimation using statistical processing of satellite images: 2005 Bam, Iran earthquake, Z. Chen, T. C. Hutchinson, Univ. of California/Irvine .................. [5667-33]
12:00 pm: Color binarization for complex camera-based images, C. Thillou, B. Gosselin, Faculté Polytechnique de Mons (Belgium) .................. [5667-34]
Lunch/Exhibition Break ................................ 12:20 to 1:40 pm

SESSION 10
Marriott Hotel: Ballroom I/II  ............ Wed. 1:40 to 3:20 pm
Displays I
Chair: Gabriel G. Marcu, Apple Computer, Inc.
1:40 pm: Visual display requirements: on standards and their uses, J. L. van Nes, ERGONES (Netherlands) and Technische Univ. Eindhoven (Netherlands) .................. [5667-35]
2:00 pm: Optimal chromaticities of the primaries for wide gamut 3-channel display, Y. Kwak, S. Lee, W. Choe, C. Y. Kim, Samsung Advanced Institute of Technology (South Korea) .................. [5667-36]
2:20 pm: Display profiling method with the eyes and the color matching accuracy in soft proofing, T. Sugiyama, Y. Kudo, Dai Nippon Printing Co., Ltd. (Japan) .................. [5667-44]
2:40 pm: Improving color characteristics of LCD, X. Feng, Sharp Labs. of America .................. [5667-38]
3:00 pm: Studying for multi primary LCD, W. Choe, S. Lee, C. Kim, Samsung Advanced Institute of Technology (South Korea) .................. [5667-39]
Coffee Break .................................................. 3:20 to 3:50 pm
SESSION 11
Marriott Hotel: Ballroom I/II .......... Wed. 3:50 to 5:10 pm
Displays II
Chair: Choon-Woo Kim, Inha Univ. (South Korea)
3:50 pm: Fast color conversion for multiprimary displays using a classification technique. M. Takaya, K. Ito, G. Ohashi, Y. Shimoda, Shizuoka Univ. (Japan) .................................. [5667-40]
4:10 pm: Color decomposition method for multiprimary display using 3D LUT in linearized LAB space. D. Kang, Y. Kim, Y. Choi, Kyungpook National Univ. (South Korea); W. Choi, Samsung Advanced Institute of Technology (South Korea); Y. Ha, K. Park, Kyungpook National Univ. (South Korea) .................................. [5667-41]
4:30 pm: Correcting projection display nonuniformity using a webcam. G. Menou, L. Peigné, Univ. de Bourgogne (France); J. Y. Hardeberg, Gjøvik Univ. College (Norway); P. Gouton, Univ. de Bourgogne (France) .................................. [5667-42]
4:50 pm: Color discrimination problems in digital TV systems. F. Lebowsky, M. M. Nicolas, STMicroelectronics (France) ................................. [5667-43]

Thursday 20 January
SESSION 12
Marriott Hotel: Ballroom I/II ......... Thurs. 8:30 to 10:10 am
Printing II
Chair: Shaun T. Love, Lexmark International, Inc.
8:30 am: Inter-printer color calibration considering the gamut differences. H. Zeng, Hewlett-Packard Co.; J. Humet, Hewlett-Packard Co. (Spain) .................................. [5667-45]
8:50 am: Fast printer color calibration using pre-build linearization tables. Y. Wu, Hewlett-Packard Co. ................................................................. [5667-46]
9:10 am: Smooth blending of two inks of similar hue to simulate one ink. M. Shaw, Hewlett-Packard Company; R. Bala, Xerox Corp.; G. Sharma, Univ. of Rochester .................................. [5667-47]
9:30 am: Image zooming and edge enhancement: a blending algorithm. G. Gallo, A. LoGiudice, Univ. di Catania (Italy) ............................................. [5667-48]
9:50 am: Special interpolation to minimize grain in printer color separation. H. Zeng, Hewlett-Packard Co. ......................................................... [5667-49]
Coffee Break .......................................................... 10:10 to 10:30 am

SESSION 13
Marriott Hotel: Ballroom I/II ......... Thurs. 10:30 am to 12:10 pm
Printing II
Chair: Phil J. Green, London College of Printing (United Kingdom)
10:30 am: Improving the Yule-Nielsen modified spectral Neugebauer model by dot surface coverages depending on the ink superposition conditions. R. D. Hersch, F. Crété, Ecole Polytechnique Fédérale de Lausanne (Switzerland) .................................. [5667-50]
10:50 am: Scalable SIMD digital signal processor for high-quality multifunctional printer systems. H. Kang, Y. Choi, K. Kim, I. Park, Korea Advanced Institute of Science and Technology (South Korea); J. Kim, E. Lee, G. Gahang, Samsung Electronics Co., Ltd. (South Korea) .................................. [5667-51]
11:10 am: Versioning of printed products. C. Tujin, Agfa-Gevaert N.V. (Belgium) ................................................................. [5667-52]
11:30 am: Customizing digital printing for fine art practices. C. E. Parraman, T. Trickell, S. Hoskins, P. Laidler, H. Q. Wang, Univ. of the West of England (United Kingdom) .................................. [5667-53]
11:50 am: Printed products for digital cameras and mobile devices. R. Fageth, CEWE Color AG (Germany); W. Schmidt-Sacht, CeWe Color AG & Co. OHG (Germany) .................................. [5667-54]
Lunch Break .......................................................... 12:10 to 1:30 pm

SESSION 14
Marriott Hotel: Ballroom I/II .......... Thurs. 1:30 to 3:00 pm
Halftoning I
Chair: Jan P. Allebach, Purdue Univ.
1:30 pm: Grand challenge problems in digital image rendering (Invited Paper). C. A. Bouman, Purdue Univ. ............................................................... [5667-55]
2:00 pm: Algebraic masks for color halftoning. V. Misic, P. Anderson, Rochester Institute of Technology .................................. [5667-56]
2:20 pm: Efficient text segmentation and adaptive color error diffusion for text enhancement. J. Kwon, Y. Kim, T. Park, Y. Ha, Kyungpook National Univ. (South Korea) .................................. [5667-57]
2:40 pm: Quantitative evaluation of misregistration-induced color shifts in color halftones. B. Oztan, G. Sharma, Univ. of Rochester; R. P. Lece, Xerox Corp. .................................. [5667-58]
Coffee Break .......................................................... 3:00 to 3:30 pm

SESSION 15
Marriott Hotel: Ballroom I/II .......... Thurs. 3:30 to 4:50 pm
Halftoning II
Chair: Reiner Eschbach, Xerox Corp.
3:30 pm: Quantization of accumulated diffused errors in error diffusion. T. Chang, Purdue Univ. and Siemens Corporate Research, Inc.; J. Allebach, Purdue Univ. .................................. [5667-59]
3:50 pm: A multiresolution halftoning algorithm for progressive display. M. Mukherjee, Rochester Institute of Technology; G. Sharma, Univ. of Rochester .................................. [5667-60]
4:10 pm: Error diffusion algorithm for gray level representation on plasma display panel. C. Kim, Y. H. Kim, Inha Univ. (South Korea) .................................. [5667-61]
4:30 pm: Glossmark technology: beyond halftone frequencies. S. Wang, C. Liu, B. Xu, Xerox Corp. ................................................................. [5667-63]
Conference 5668 • Marriott Hotel: Guadalupe Room
Tuesday-Thursday 18-20 January 2005 • Proceedings of SPIE Vol. 5668

Image Quality and System Performance II

Conference Chairs: Rene Rasmussen, Xerox Corp.; Yoichi Miyake, Chiba Univ. (Japan)
Program Committee: Peter D. Burns, Eastman Kodak Co.; Luke C. Cui, Lexmark International, Inc.; Mark D. Fairchild, Rochester Institute of Technology; Susan Farmand, Eastman Kodak Co.; Frans Gaykema, OcTec-Technologies B.V. (Netherlands); Dirk Hertel, Polaroid Corp.; Robin B. Jenkin, Cranfield Univ. (United Kingdom); Steven V. Korol, Xerox Corp.; Eric K. Zeise, NexPress Solutions LLC

Tuesday 18 January

Plenary Speaker ......................... Tues. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Makl, Jet Propulsion Lab.
See pg. x for details.

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

✔ Multimedia quality evaluation across different modalities, T. C. Thang, Y. M. Ro, Information and Communications Univ. (South Korea) .................. [5668-02]

✔ Visualization of distortion using interference fringe patterns and the correction of chromatic aberration using a Fresnel zone plate with microdisplay, S. Shin, P. Bryanston-Cross, D. Taulbut, Univ. of Warwick (United Kingdom) .......... [5668-32]

✔ Multiprojector tiled display wall calibration with a camera, C. Li, H. Lin, J. Shi, Zhejiang Univ. (China) .................. [5668-33]

✔ A human visual system model for no-reference video quality estimation, F. Massidda, D. D. Giusto, C. Perra, Univ. degli Studi di Cagliari (Italy) .................. [5668-34]

Wednesday 19 January

Plenary Speaker ......................... Wed. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
The Future of Computer Graphics: Realism or Abstraction?
Pat Hanrahan, Stanford Univ.
See pg. x for details.

SESSION 1

Marriott Hotel: Guadalupe Room .... Wed. 9:30 am to 12:05 pm
Preference and Psychophysics
Chair: Yoichi Miyake, Chiba Univ. (Japan)
9:30 am: Image quality evaluation: the data mining approach, C. L. Cui, Lexmark International, Inc. .................. [5668-01]
9:55 am: Psychophysical study on the influence factors for color preference in photographic color reproduction, J. Kuang, Qualcomm Inc. and Rochester Institute of Technology; X. Jiang, S. Quan, A. Chiu, Qualcomm Inc. .................. [5668-05]
Coffee Break .......................... 10:20 to 10:50 am
10:50 am: Multidimensional scaling with non-repeating random paths, N. Moroney, I. Tastl, Hewlett-Packard Labs. .................. [5668-03]
11:15 am: Presence and preferable viewing conditions when using an ultrahigh-definition large-screen display, K. Masaoka, M. Emoto, M. Sugawara, F. Okano, NHK Science and Technical Research Labs. (Japan) .................. [5668-06]
11:40 am: Softcopy banding visibility assessment, O. Arslan, J. P. Allebach, Z. Pizlo, Purdue Univ. .................. [5668-06]
Lunch/Exhibition Break ................. 12:05 to 1:15 pm

Thursday 20 January

SESSION 3

Marriott Hotel: Guadalupe Room .... Thurs. 8:05 to 10:25 am
Standards
Chair: Eric K. Zeise, NexPress Solutions LLC
8:05 am: Tone-transfer (OECF) characteristics and spatial frequency response measurements for digital cameras and scanners, P. D. Burns, Eastman Kodak Co. .................. [5668-14]
8:30 am: Extension of the ISO 12232 SFR measurement technique to provide MTF bounds for critical systems, R. B. Jenkin, Cranfield Univ. (United Kingdom); R. E. Jacobson, Univ. of Westminster (United Kingdom); M. A. Richardson, I. Luckcraft, Cranfield Univ. (United Kingdom) .................. [5668-15]
9:20 am: Cares and concerns of CIE TCB-08: spatial appearance modeling and HDR imaging, C. M. Johnson, Rochester Institute of Technology .................. [5668-31]
10:05 am: Gloss uniformity measurement update for ISO/IEC 17651, Y. S. Ng, NexPress Solutions, Inc; D. Mashtare, Xerox Corp.; C. Kuo, NexPress Solutions, Inc. .................. [5668-18]
Coffee Break .......................... 10:25 to 10:55 am
SESSION 4
Marriott Hotel: Guadalupe Room ... Thurs. 10:55 am to 12:10 pm
Measurements and Modeling I
Chair: Robin B. Jenkin, Cranfield Univ. (United Kingdom)
10:55 am: Novel technique of image quality objective measurement by wavelet analysis throughout the spatial frequency range, G. Luo, Buckinghamshire Chilterns Univ. College (United Kingdom) ........................................ [5668-20]
11:45 am: Video quality comparison on LCD monitors, T. Jeong, J. Choe, J. Lim, H. Choi, E. Lee, C. Lee, Yonsei Univ. (South Korea) ................................. [5668-22]
Lunch Break .................................................. 12:10 to 1:40 pm

SESSION 5
Marriott Hotel: Guadalupe Room ........ Thurs. 1:40 to 5:30 pm
Measurements and Modeling II
Chairs: Peter D. Burns, Eastman Kodak Co.; Rene Rasmussen, Xerox Corp.
1:40 pm: Comparison and evaluation of quality criteria for hyperspectral imagery, E. Christophe, Ctr. National d’Etudes Spatiales (France) and ONERA (France) and Alcatel Space (France); C. Mailhes, Telecommunications Spatials and Aeronautiques (France); D. Leger, ONERA (France) .......................... [5668-23]
2:05 pm: Simple and effective method to quantify the optical performance of camera phones, D. M. Wang, K. Johnson, Motorola, Inc. .......................... [5668-24]
2:30 pm: Image quality evaluation in the field of digital film restoration, M. Chambah, Univ. de Reims (France); C. Saint Jean, Univ. de La Rochelle (France); F. Helt, Consultant (France) ........................................ [5668-25]
Coffee Break .................................................. 3:20 to 3:50 pm
3:50 pm: The array scanner as microdensitometer surrogate: a deal with the devil or… a great deal?, D. R. Williams, Eastman Kodak Co. .......................... [5668-27]
4:15 pm: Development of multispectral scanner used LEDs array for digital color proof, S. Yamamoto, H. Nagai, N. Tsumura, T. Nakaguchi, Y. Miyake, Chiba Univ. (Japan) ........................................ [5668-28]
4:40 pm: Application of Tatian’s method to slanted-edge MTF measurement, P. D. Burns, Eastman Kodak Co. .......................... [5668-29]
5:05 pm: Analysis of self-correcting active pixel sensors, K. Salama, Stanford Univ. ........................................ [5668-30]
Monday 17 January

SESSION 1
Marriott Hotel: San Carlos Room  .......... Mon. 9:00 to 10:00 am
Distributed Data and Techniques
Chair: Robert F. Erbacher, Utah State Univ.

9:00 am: Distributed load balancing algorithms for parallel volume rendering on cluster of PCs, A. Coelho, C. Bentes, R. Farias, Univ. Federal do Rio de Janeiro (Brazil)  .......... [5669-01]


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

SESSION 2
Marriott Hotel: San Carlos Room  .......... Mon. 10:30 am to 12:10 pm
Visualization Techniques
Chair: Stephen G. Eick, SSS Research, Inc.

10:30 am: Geodesic self-organizing map, Y. Wu, Univ. of Sydney (Australia) and National ICT Australia (Australia); M. Takatsuka, Univ. of Sydney (Australia)  [5669-04]

10:50 am: Haptic visualization of computational fluid dynamics data using reactive forces, K. E. Lundin, Linköpings Univ. (Sweden); M. Sillén, SAAB AB (Sweden); M. D. Cooper, A. Ynnerman, Linköpings Univ. (Sweden)  [5669-05]

11:10 am: Illustrative visualization of 3D city models, J. Döllner, H. Buchholz, M. Nienhaus, F. Kirsch, Univ. Potsdam (Germany)  .......... [5669-06]

11:30 am: Exploring causal influences, E. M. Neufeld, S. K. Kristtorn, Q. Guan, M. Sanscartier, Univ. of Saskatchewan (Canada); C. Ware, Univ. of New Hampshire  .......... [5669-07]

11:50 am: Automatic mosaic of facade texture from vehicle-based image sequence, Z. Kang, Wuhan Univ. (China) and Supersoft Inc. (China); Z. Zhang, J. Zhang, Wuhan Univ. (China)  .......... [5669-08]

Lunch Break  ................. 12:10 to 1:20 pm

SESSION 3
Marriott Hotel: San Carlos Room  .......... Mon. 1:20 to 2:10 pm
Invited Paper I
Chair: Jonathan C. Roberts, Univ. of Kent (United Kingdom)

1:20 pm: Connecting the dots: from turning points to critical pathways (Invited Paper), C. Chen, Drexel Univ.  .......... [5669-42]

Session Break  ................. 2:10 to 2:20 pm

SESSION 4
Marriott Hotel: San Carlos Room  .......... Mon. 2:20 to 3:00 pm
Visual Data Mining
Chair: Jonathan C. Roberts, Univ. of Kent (United Kingdom)

2:20 pm: Effects of cognitive styles and data characteristics on visual data mining, P. Bak, J. Meyer, Ben-Gurion Univ. of the Negev (Israel)  .......... [5669-09]

2:40 pm: Visual mining geo-related data using pixel bar charts, M. C. Hao, Hewlett-Packard Labs.; D. C. Keim, Univ. Konstanz (Germany); U. Dayal, P. Wright, Hewlett-Packard Labs.; J. Schneiderwind, Univ. Konstanz (Germany)  .......... [5669-10]

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

SESSION 5
Marriott Hotel: San Carlos Room  .......... Mon. 3:30 to 4:30 pm
Volume Visualization
Chair: Matti T. Gröhn, CSC-Scientific Computing Ltd. (Finland)

3:30 pm: Extraction and LOD control of colored interval volumes, H. N. Miyamura, Tokyo Univ. of Agriculture and Technology (Japan); Y. Takeshima, Japan Atomic Energy Research Institute (Japan); T. Akutsu, Tokyo Univ. of Agriculture and Technology (Japan)  .......... [5669-11]

3:50 pm: Interval volume decomposer: a topological approach to volume traversal, S. Takahashi, Univ. of Tokyo (Japan); I. Fujishiro, Ochanomizu Univ. (Japan); Y. Takeshima, Japan Atomic Energy Research Institute (Japan)  .......... [5669-12]


Session Break  ................. 4:30 to 4:40 pm

SESSION 6
Marriott Hotel: San Carlos Room  .......... Mon. 4:40 to 5:40 pm
Geo Visualization
Chair: Katy Börner, Indiana Univ.

4:40 pm: Geoscience visualization with GPU programming, J. Lin, Landmark Graphics Corp.  .......... [5669-14]

5:00 pm: Visualization tools facilitate geological investigations of Mars exploration rover landing sites, K. D. Schwerk, C. Nishimura, C. L. Johnson, D. Kibb, A. Nayak, Univ. of California/San Diego  .......... [5669-15]

Tuesday 18 January

Plenary Speaker ................. Tues. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Maki, Jet Propulsion Lab.
See pg. x for details.

SESSION 7
Marriott Hotel: San Carlos Room ....... Tues. 9:30 to 10:10 am
Visual Quality
Chair: Katy Börner, Indiana Univ.
9:30 am: Is It Darker? Improving density representation in 2D scatter plots through a user study, E. Bertini, G. Santucci, Univ. degli Studi di Roma (Italy) ....... [5669-17]
9:50 am: Texture-based correspondence display, M. J. Gerald-Yamasaki, NASA Ames Research Ctr. ............................................. [5669-18]
Coffee Break ............................................. 10:10 to 10:40 am

SESSION 8
Marriott Hotel: San Carlos Room ....... Tues. 10:40 to 11:40 am
Time Series Data
Chair: Ming C. Hao, Hewlett-Packard Labs.
10:40 am: Interactive pattern search in time series, P. Buono, Univ. degli Studi di Bari (Italy); A. Ais, C. Plaisant, A. Khella, B. Shneiderman, Univ. of Maryland .................................................. [5669-19]
11:00 am: STAView: a multiresolution time series data visualizer, A. Fouks, R. D. Bergeron, J. P. McHugh, Univ. of New Hampshire ................. [5669-20]
11:20 am: Time-dependent reorderable matrix method for visualizing evolving tabular data, E. Qeli, Univ. Marburg (Germany); W. Wielchert, Univ. Siegen (Germany); B. Freisleben, Univ. Marburg (Germany) .................. [5669-21]
Lunch/Exhibition Break .................................... 11:40 am to 1:00 pm

SESSION 9
Marriott Hotel: San Carlos Room ....... Tues. 1:00 to 1:50 pm
Invited Paper II
Chair: Jonathan C. Roberts, Univ. of Kent (United Kingdom)
1:00 pm: Spatially aware scale-independent visualization on the sphere (Invited Paper), B. De Vargo, Consultant ........................................... [5669-43]
Session Break ............................................. 1:50 to 2:00 pm

SESSION 10
Marriott Hotel: San Carlos Room ....... Tues. 2:00 to 3:00 pm
Visualization Applications
Chair: Matti T. Gröhn, CSC-Scientific Computing Ltd. (Finland)
2:00 pm: Experiences with starfield visualizations for analysis of library collections, A. Sanchez, Univ. de las Americas Puebla (Mexico); M. B. Twidale, Univ. of Illinois/Urbana-Champaign; D. M. Nichols, Univ. of Waikato (New Zealand); N. N. Silva, Univ. de las Americas Puebla (Mexico) .................. [5669-22]
2:40 pm: Visimpact: business impact visualization, M. C. Hao, Hewlett-Packard Labs.; D. Keim, Univ. Konstanz (Germany); U. Dayal, Hewlett-Packard Labs.; J. Schneiderwind, Univ. Konstanz (Germany) .................. [5669-24]
Coffee Break ............................................. 3:00 to 3:30 pm

SESSION 11
Marriott Hotel: San Carlos Room ....... Tues. 3:30 to 4:30 pm
Visualization Environments
Chair: Philip J. Rhodes, Univ. of New Hampshire
3:30 pm: Three-dimensional miracles: 3D models retrieval and visualization engine, W. Liu, Fujitsu R&D Ctr. Co., Ltd. (China) .................. [5669-25]
3:50 pm: Interactive simulation and visualization using the GPU, T. D. Zuk, Univ. of Calgary (Canada) and Veritas DGC Inc. (Canada); S. Carpendale, Univ. of Calgary (Canada) .................. [5669-26]
Session Break ............................................. 4:30 to 5:00 pm

SESSION 12
Marriott Hotel: San Carlos Room ....... Tues. 4:40 to 6:00 pm
Large-Scale Data
Chair: Robert F. Eberacher, Utah State Univ.
4:40 pm: Analyzing and visualizing terascale turbulent solar convection simulations, J. Cyne, M. Rast, National Ctr. for Atmospheric Research ......... [5669-28]
5:00 pm: Out-of-core visualization using iterator-aware multidimensional prefetching, P. J. Rhodes, Univ. of Mississippi; X. Tang, EMC Corp.; R. D. Bergeron, T. M. Sparr, Univ. of New Hampshire .......................... [5669-29]
5:40 pm: Three-dimensional visualization of gene clusters and networks, L. Zhang, W. Sheng, X. Liu, Brunel Univ. (United Kingdom) .................. [5669-44]

✔ Posters-Tuesday
Posters will be placed on display after 9:00 am in Conv. Ctr. Room Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.
✔ Data mining for network intrusion, S. Varan, Florida Atlantic Univ. ......... [5669-31]
The CircleSegmentView: a visualization for query preview and visual filtering, P. Klein, H. Reitner, Univ. Konstanz (Germany) .................. [5669-32]
Towards perceptual enhancement of multiple intersecting surfaces, M. A. Robinson, K. A. Robbins, Univ. of Texas/San Antonio .................. [5669-34]
Resource systems reference database, D. Lu, Futurefarmers .................. [5669-35]
Case study: Interacting with volumetric datasets in networked CAVE environments, A. Al-khalifah, Univ. of Reading (United Kingdom); D. J. Roberts, Univ. of Leeds (United Kingdom) .................. [5669-36]
Registration and visualization of fluorescent neural images, N. Vaidyanathan, Y. Sun, B. Duerstock, Purdue Univ. .................. [5669-37]
Monitoring the solid-liquid interface in tanks using profiling sonar and 3D visualization techniques, N. Sood, Florida International Univ. and Hemispheric Ctr. for Environmental Technology; J. Zhang, D. Roelant, R. Srivastava, Florida International Univ. .................. [5669-38]
Interface for visualization of image database in adaptive image retrieval systems (AIRS), A. Doloc-Mihu, V. V. Raghavan, S. Karnatakup, C. H. Chu, Univ. of Louisiana/Lafayette .................. [5669-40]
DECIDE: A tool for hypothesis-based analysis, D. Cluxton, SSS Research, Inc.; S. G. Eck, SSS Research, Inc. and Univ. of Chicago .................. [5669-41]
Tuesday 18 January

Plenary Speaker .................. Tues. 8:30 to 9:15 am

Marriott Hotel: San Jose Ballroom
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Maki, Jet Propulsion Lab.
See pg. x for details.

✔ Posters-Tuesday

Chairs: Theo Gevers, Univ. van Amsterdam (Netherlands); Simone Santini, Univ. of California/San Diego; Raimondo Schettini, DISCo/Univ. degli Studi di Milano-Bicocca (Italy)

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

✓ Content filtering for broadcasting media, S. H. Jin, Information and Communications Univ. (South Korea) .......................... [5670-31]

✓ Techniques and applications of content-based image retrieval on Internet, D. Xia, S. Liu, Guilin Univ. of Electronic Technology (China) .......................... [5670-33]

✓ Multiple description coding based on balanced multirate wavelet transform, W. Liu, Z. Ma, Zhongshan Univ. (China) .......................... [5670-34]

✓ Online system for managing watermarked images database, G. Chareyron, J. Da Rugna, H. Konik, A. Trémeau, Univ. Jean Monnet (France) .......................... [5670-35]

✓ Event description framework for video application using spatio-temporal relations, M. Cho, D. Song, J. Shin, P. Kim, P. Kim, Chosun Univ. (South Korea) .......................... [5670-38]

Wednesday 19 January

Plenary Speaker .......................... Wed. 8:30 to 9:15 am

Marriott Hotel: San Jose Ballroom
The Future of Computer Graphics: Realism or Abstraction?
Pat Hanrahan, Stanford Univ.
See pg. x for details.

SESSION 1

Marriott Hotel: San Jose Room .... Wed. 11:00 am to 12:00 pm

SVG

Chairs: Simone Santini, Univ. of California/San Diego; Raimondo Schettini, DISCo/Univ. degli Studi di Milano-Bicocca (Italy)

11:00 am: Advanced SVG triangulation/polygonization of digital images, S. Battisti, G. Barbera, G. Di Blasi, G. Gallo, Univ. di Catania (Italy); G. Messina, STMicroelectronics (Italy) .......................... [5670-05]

11:20 am: Three-dimensional medical data visualization using SVG, S. Kim, Chonbuk National Univ. (South Korea) and Handong Univ. (South Korea); O. Gwon, M. Lim, D. Park, Chonbuk National Univ. (South Korea); K. Lee, Handong Univ. (South Korea) .......................... [5670-02]

11:40 am: SVG rendering by watershed decomposition, S. Battisti, A. Costanzo, G. Di Blasi, G. Gallo, S. Nicolotra, Univ. di Catania (Italy) .......................... [5670-03]

Lunch/Exhibition Break .......................... 12:00 to 1:40 pm

SESSION 2

Marriott Hotel: San Carlos Room .... Wed. 1:40 to 2:50 pm

Ten Years After QBIC

Chairs: Theo Gevers, Univ. van Amsterdam (Netherlands); Raimondo Schettini, DISCo/Univ. degli Studi di Milano-Bicocca (Italy)


2:00 pm: Life between computer vision and data bases: problems and opportunities, S. Santini, Univ. of California/San Diego .......................... [5670-06]

2:30 pm: Occam’s razor: supporting visual query expression for content-based image queries, C. C. Venters, Univ. of Manchester (United Kingdom); R. J. Hartley, Manchester Metropolitan Univ. (United Kingdom); W. T. Hewitt, Univ. of Manchester (United Kingdom) .......................... [5670-07]

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

SESSION 3

Marriott Hotel: San Carlos Room .... Wed. 3:20 to 5:30 pm

Image Analysis Techniques

Chairs: Theo Gevers, Univ. van Amsterdam (Netherlands); Simone Santini, Univ. of California/San Diego

3:20 pm: Multimodal approaches for emotion recognition: a survey (Invited Paper), N. Sebe, Univ. van Amsterdam (Netherlands); I. Cohen, HP Labs., USA; T. Gevers, Univ. van Amsterdam (Netherlands); T. S. Huang, Univ. of Illinois/Urbana-Champaign .......................... [5670-08]

3:50 pm: Tri-dimensional face detection and localization, A. Colombo, DISCo/Univ. degli Studi Milano-Bicocca; C. Cusano, DISCo/Univ. degli Studi Milano-Bicocca and CNR (Italy); R. Schettini, DISCo/Univ. degli Studi Milano-Bicocca (Italy) .......................... [5670-32]

4:10 pm: Computer-assisted visual interactive recognition and its prospects of implementation over the Internet, J. Zou, A. Gattani, Rensselaer Polytechnic Institute .......................... [5670-10]

4:30 pm: Improving visual data mining using analyzing editing effect of visual data, T. M. Bae, S. J. Kang, Y. M. Ro, Information and Communications Univ. (South Korea) .......................... [5670-11]

4:50 pm: Image retrieval and reversible illumination normalization, L. J. Latecki, V. Rajagopal, Temple Univ.; A. Gross, CUNY/Queens College .......................... [5670-12]

5:10 pm: Optimal weighting of color channels for discriminative edge detection, H. M. Stokman, T. Gevers, Univ. van Amsterdam (Netherlands) .......................... [5670-13]
Thursday 20 January

SESSION 4
Marriott Hotel: San Carlos Room ....... Thurs. 9:00 to 9:40 am
Image Encoding
Chairs: Theo Gevers, Univ. van Amsterdam (Netherlands); Simone Santini, Univ. of California/San Diego
9:00 am: XML-based JPIP client side cache model management, S. G. Deshpande, Sharp Labs. of America
9:20 am: Secured and progressive transmission of compressed images on the Internet: application to telemedicine, M. Babel, l’Institut d’Electronique et de Télécommunications de Rennes (France) and INS Rennes (France); B. Parrein, Univ. of Nantes (France); O. Déforges, l’Institut d’Electronique et de Télécommunications de Rennes (France) and INSA Rennes (France); N. Normand, J. Guédon, Ecole Polytechnique de l’Univ. de Nantes (France); J. Roncin, l’Institut d’Electronique et de Télécommunications de Rennes (France)

SESSION 5
Marriott Hotel: San Carlos Room ....... Thurs. 9:40 to 11:30 am
Video
Chairs: Theo Gevers, Univ. van Amsterdam (Netherlands); Simone Santini, Univ. of California/San Diego
9:40 am: Dynamic key-frames extraction for video summarization, G. Ciocca, R. Schettini, DISCo/Univ. degli Studi di Milano-Bicocca (Italy)
10:30 am: Video summarization with moving objects in the compressed domain, R. L. Felip, Univ. Autonoma de Barcelona (Spain); J. M. Sanchez, Visual Century Research (Spain); X. Binefa, Univ. Autonoma de Barcelona (Spain)
10:50 am: Model-assisted object tracking, F. Aldershoff, T. Gevers, P. Prins, Univ. van Amsterdam (Netherlands)
11:10 am: Visual tracking system using an RFID tag, H. Hontani, Yamagata Univ. (Japan)

SESSION 6
Marriott Hotel: San Carlos Room ....... Thurs. 1:00 to 2:10 pm
From Telepresence to Telecomputing
Chairs: Simone Santini, Univ. of California/San Diego; Raimondo Schettini, DISCo/Univ. degli Studi di Milano-Bicocca (Italy)
1:00 pm: Color aspects of variable data proofing (Invited Paper), G. B. Beretta, Hewlett-Packard Co.
1:50 pm: Design and deployment of hybrid-telemedicine application, N. A. Iku-Omoregbe, A. A. Atayero, C. Ayo, D. Olugbara, Covenant Univ. (Nigeria)

SESSION 7
Marriott Hotel: San Carlos Room ....... Thurs. 2:10 to 3:30 pm
Image Retrieval
Chairs: Simone Santini, Univ. of California/San Diego; Raimondo Schettini, DISCo/Univ. degli Studi di Milano-Bicocca (Italy)
2:10 pm: Web tools to support image classification, F. Odone, A. Barla, E. Franceschi, A. Verri, Univ. degli Studi di Genova (Italy)
2:30 pm: A novel methodology for querying web images, R. Prabhakara, C. C. Lee, California State Univ.
2:50 pm: Toward complete performance characterization in content-based retrieval, N. Sebe, Univ. van Amsterdam (Netherlands); N. Huijsmans, Leiden Univ. (Netherlands); T. Gevers, Univ. van Amsterdam (Netherlands); Q. Tian, Univ. of Texas/San Antonio
3:10 pm: Proposal for image indexing ‘keypiks’: plastic graphical metadata, M. Ferri, P. Frosini, Univ. Degli Studi di Bologna (Italy)

SESSION 8
Marriott Hotel: San Carlos Room ....... Thurs. 4:00 to 5:00 pm
Multimedia
Chairs: Theo Gevers, Univ. van Amsterdam (Netherlands); Simone Santini, Univ. of California/San Diego
4:00 pm: Web-based hydrodynamics computing, A. Shimoide, L. Lin, I. Yoon, S. R. Aragon, San Francisco State Univ.
4:20 pm: Why can’t I manage my images like MP3s? The evolution and intent of multimedia metadata, A. A. Goodrum, J. Howison, Syracuse Univ.
4:40 pm: Virtual mirror based on 3D shape reconstruction and real-time face tracking, T. Makino, T. Nakaguchi, N. Tsumura, Y. Miyake, Chiba Univ. (Japan)
Real-Time Imaging IX

Conference Chairs: Nasser Kehtarnavaz, Univ. of Texas/Dallas; Phillip A. Laplante, The Pennsylvania State Univ.

Tuesday-Thursday 18-20 January 2005 • Proceedings of SPIE Vol. 5671

Tuesday 18 January

Plenary Speaker .......................... Tues. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Makì, Jet Propulsion Lab.
See pg. x for details.

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

✔ Automatic cash-binding machine register system for paper currency numbers, W. Yuan, Y. Zhang, Shenyang Univ. of Technology (China) .......................... [5671-26]

✔ Approach for counting vehicles in congested traffic flow, X. Tan, J. Li, W. Liu, Sun Yat-sen Univ. (China) .......................... [5671-27]

✔ Real-time marker-free motion capture system using blob feature analysis, C. Park, S. Kim, H. Kim, I. Lee, Electronics and Telecommunications Research Institute (South Korea) .......................... [5671-28]

Spot check and image analysis for the optical pickup head, J. Lin, Industrial Technology Research Institute (Taiwan) .......................... [5671-29]

✔ 3D-Pathology: a real-time system for quantitative diagnostic pathology and visualisation in 3D, C. Gottrop, Dinam A/S (Denmark); M. G. Beckett, Univ. of Edinburgh (United Kingdom); H. Hager, Aarhus Univ. Hospital (Denmark) [5671-02]

Wednesday 19 January

Plenary Speaker .......................... Wed. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
The Future of Computer Graphics: Realism or Abstraction?
Patrik Hanrahan, Stanford Univ.
See pg. x for details.

SESSION 1
Conv. Ctr. Room A3 .......................... Wed. 1:30 to 3:00 pm
Real-Time Systems
Chair: Nasser Kehtarnavaz, Univ. of Texas/Dallas


2:00 pm: Real-time implementation of zoom tracking on TI DM processor, V. R. Peddighar, N. Kehtarnavaz, Univ. of Texas/Dallas .......................... [5671-19]

2:20 pm: Real-time 3D ultrasound imaging, V. I. Ponomaryov, R. Sansores-Pech, F. Gallegos-Funes, Instituto Politecnico Nacional (Mexico) .......................... [5671-03]


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

SESSION 2
Conv. Ctr. Room A3 .......................... Wed. 3:30 to 5:00 pm
Real-Time Algorithms
Chair: Phillip A. Laplante, The Pennsylvania State Univ.

3:30 pm: Novel method for optimized histogram feature computation: integral features (Invited Paper), F. M. Porrêkii, Mitsubishi Electric Research Labs. .......................... [5671-05]

4:00 pm: Real-time implementation of a control system for exposure time of CCD sensor, S. Boromeo, Univ. Politecnica de Madrid (Spain) and Univ. Rey Juan Carlos (Spain); J. L. Aparicio, Univ. Politecnica de Madrid (Spain) .......................... [5671-06]

4:20 pm: Tiled fast Euclidean distance (IFeed) maps, T. E. Schouten, E. L. van den Broek, H. C. Kuppens, Radboud Univ. Nijmegen (Netherlands) .......................... [5671-07]

4:40 pm: Real-time face recognition based on wavelet transform, C. Chu, I-Shou Univ. (Taiwan) .......................... [5671-08]

SESSION 3
Thurs. 8:30 to 10:00 am
Real-Time Surveillance
Chair: Fatih M. Porikli, Mitsubishi Electric Research Labs.

8:30 am: Privacy protecting video surveillance (Invited Paper), J. Wickramasuriya, M. Alhazazi, M. Datt, S. Mehrotra, N. Venkatasubramanian, Univ. of California/Irvine .......................... [5671-09]

9:00 am: Real-time telesurveillance system using person tracking and 3D avatar, M. Dui, H. Inoue, Osaka Electro-Communication Univ. (Japan) .......................... [5671-10]

9:20 am: Real-time optimizations for integrated smart network camera, X. Desumont, B. Liemand, A. Bastide, J. Delaigle, Multitel A.S.B.L. (Belgium) .......................... [5671-11]

9:40 am: Fast skin color detector for face extraction, L. Chen, C. Grecos, Loughborough Univ. (United Kingdom) .......................... [5671-12]

Coffee Break .......................... 10:00 to 10:20 am

Thursday 20 January

Plenary Speaker .......................... Wed. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
The Future of Computer Graphics: Realism or Abstraction?
Patrik Hanrahan, Stanford Univ.
See pg. x for details.
**SESSION 4**

**Conv. Ctr. Room A3**  
Thurs. 10:20 am to 12:30 pm

**Real-Time Hardware**

*Chair: Volodymyr I. Ponomaryov, Instituto Politecnico Nacional (Mexico)*

- 10:20 am: ARM-based embedded processor: real-time implementation for thinning and crest restoration in gray level images (Invited Paper), A. M. Mohamed, École Supérieure d’Ingénieurs en Électronique et Électrotechnique (France)  
- 10:50 am: Parallel image compression circuits for high-speed cameras, Y. Nishikawa, S. Kawahito, Shizuoka Univ. (Japan); T. Inoue, Photron Ltd. (Japan)  
- 11:10 am: FPGA-based real-time anisotropic diffusion filtering of 3D ultrasound images, C. R. Castro-Pareja, Cleveland Clinic Foundation; O. S. Dandekar, The Ohio State Univ. and Cleveland Clinic Foundation; R. Shekhar, Cleveland Clinic Foundation  
- 11:30 am: Real-time implementation of a multiresolution motion compensating temporal filter on general-purpose hardware, A. Groth, K. Eck, Philips Research Labs. (Germany)  
- 11:50 am: Discrete wavelet transform core for image processing applications, A. E. Savakis, R. Carbone, Rochester Institute of Technology  
- 12:10 pm: Real-time windowing in imaging radar using FPGA technique, V. I. Ponomaryov, E. Escamilla-Hernandez, Instituto Politecnico Nacional (Mexico)  
- Lunch Break

**SESSION 5**

**Conv. Ctr. Room A3**  
Thurs. 1:40 to 4:30 pm

**Applications**

*Chair: Phillip A. Laplante, The Pennsylvania State Univ.*

- 2:00 pm: Inline sorting with hyperspectral imaging in an industrial environment, P. Tatzer, T. Panner, M. Wolf, ARC Seibersdorf Research GmbH (Austria)  
- 2:20 pm: An FPGA-based 3D image processor with median and convolution filters for real-time applications, S. Venugopal, The Ohio State Univ.; C. R. Castro-Pareja, Univ. of Maryland/Baltimore; O. S. Dandekar, The Ohio State Univ. and Cleveland Clinic Foundation  
- 3:00 pm: Performance evaluation of real-time video content analysis systems in the CANDELA project, X. Desurmont, J. Delaigle, Multitel A.S.B.L. (Belgium); O. Caignart, IT-OPTICS SA (Belgium); M. Barais, Vrije Univ. Brussel (Belgium); W. Favoureel, Traficon NV (Belgium); R. Wijnhoven, Bosch Security Systems NV/SA (Belgium)  
- 3:50 pm: Video coding based on pre-attentive processing, C. Dikici, INSA de Lyon (France) and Bogazici Univ. (Turkey); H. I. Bozma, Bogazici Univ. (Turkey)  
- 4:10 pm: Computational vision approach to stereo video stabilization, X. Fang, Y. Gui, X. Cai, Wuhan Univ. of Technology (China)
Monday 17 January

SESSION 1
Conv. Ctr. Room A3 ................................ Mon. 8:40 to 10:00 am
Image Processing Systems

8:40 am: System architecture for the digital recovery of shredded documents, A.
Uckovich, G. Ramponi, Univ. degli Studi di Trieste (Italy) ........................................ [5672-01]
9:00 am: Digital image comparison using feature extraction and luminance
matching, R. A. Bachnak, C. W. Steidley, Texas A&M Univ. ................................. [5672-02]
9:20 am: Sampling the parameter domain of Image series, M. Heizmann, J. Beyerer,
Fraunhofer-Institut Informations- und Datenverarbeitung (Germany) ........... [5672-03]
9:40 am: Multisensor system for texture-based high-speed hardwood lumber
inspection, A. Rinnhofer, G. Jakob, E. Deutschl, W. Benesova, J. Andreu, Joanneum
Research (Austria) ............................................................... [5672-04]
Coffee Break .............................................................. 10:00 to 10:30 am

SESSION 2
Conv. Ctr. Room A3 ................................ Mon. 10:30 am to 12:10 pm
Nonlinear Methods

10:30 am: Nonlinear anisotropic diffusion filtering of three-dimensional image data
from two-photon microscopy, P. J. Broser, Ruprecht-Karls-Universität Heidelberg
(Germany) and Max-Planck-Institut für Medizinische Forschung (Germany); R.
Schulte, Ruprecht-Karls-Universität Heidelberg (Germany); A. Roth, F. Helmchen, J.
Waters, Max-Planck-Institut für Medizinische Forschung (Germany); S. Lang, Ruprecht-Karls-Universität
Heidelberg (Germany); B. J. Sakmann, Max-Planck-Institut für Medizinische
Forschung (Germany); G. Wittum, Ruprecht-Karls-Universität Heidelberg
(Germany) .......................................................... [5672-05]
10:50 am: Multiband locally adaptive contrast enhancement algorithm with build-in
noise and artifact suppression mechanisms, S. Cvetkovic, Bosch Security Systems
B.V. (Netherlands) and Technische Univ. Eindhoven (Netherlands); P. H. N. de With,
Technische Univ. Eindhoven (Netherlands) and LogicaCMG Eindhoven
(Netherlands) .......................................................... [5672-06]
11:10 am: Analysis of the sigma filter using robust estimation, H. Pan, S. Daly, M. I.
Sezan, Sharp Labs. of America ......................... [5672-07]
11:30 am: Registration techniques for speckle suppression in 2D LADAR image
sequences, S. C. Cain, D. Sabo, Air Force Institute of Technology ........... [5672-08]
11:50 am: Locally adaptive image filtering based on learning with clustering, V. V.
Lukin, N. N. Ponomarenko, A. A. Zelensky, National Aerospace Univ. (Ukraine); K. O.
Egiazarian, J. T. Astola, Tampere Univ. of Technology (Finland) ............... [5672-09]
Lunch Break .............................................................. 12:10 to 1:40 pm

SESSION 3
Conv. Ctr. Room A3 ................................ Mon. 1:40 to 3:00 pm
Image Classification and Recognition I

1:40 pm: Critical analysis of procedures and algorithms currently applied for
flotation froth characterization and modeling based on real-time imaging, G.
Bonifazi, S. Silvia, Univ. degli Studi di Roma La Sapienza (Italy); V. Fabio, Eurlimage
SpA (Italy) ........................................................ [5672-10]
2:00 pm: Two-dimensional imaging based fractal logic applied to particles and
particle systems characterization, G. Bonifazi, S. Silvia, Univ. degli Studi di Roma La
Sapienza (Italy) ........................................................ [5672-11]
2:20 pm: Comparing shape and texture features for pattern recognition in simulation
data, S. Newsam, C. Kamath, Lawrence Livermore National Lab. ............ [5672-12]
2:40 pm: Combining local descriptions with geometric constraints for 3D object
recognition in multiple statuses, Y. Huang, X. Ding, Tsinghua Univ. (China) [5672-13]
Coffee Break .............................................................. 3:00 to 3:30 pm

SESSION 4
Conv. Ctr. Room A3 ................................ Mon. 3:30 to 4:50 pm
Image Classification and Recognition II

3:30 pm: Skewness correction in automatic license plate recognition, H. J. Huttunen,
Tampere Univ. of Technology (Finland) and Visy Oy (Finland) ................. [5672-14]
3:50 pm: A simple and fast text localization algorithm for indoor mobile robot
navigation, X. Liu, J. K. Samarabandu, Univ. of Western Ontario (Canada).
[5672-15]
4:10 pm: Character recognition by best anisotropic local bases and neural networks,
V. I. Uzunov, A. P. Gotchev, H. Huttunen, K. Egiazarian, J. Astola, Tampere Univ. of
Technology (Finland) .................................................. [5672-16]
4:30 pm: Robust iris recognition with region division, J. Park, C. Lee, Yonsei Univ.
(South Korea) .......................................................... [5672-17]
Tuesday 18 January

Plenary Speaker  .................  Tues. 8:30 to 9:15 am

Marriott Hotel: San Jose Ballroom

20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Maki, Jet Propulsion Lab.

See pg. x for details.

SESSION 5
Conv. Ctr. Room A3  .................  Tues. 9:30 to 10:30 am

Image Restoration
9:30 am: Influence of signal-to-noise ratio and point spread function on limits of superresolution, T. O. Pham, L. J. van Vliet, Technische Univ. Delft (Netherlands); K. Schutte, TNO-FEL (Netherlands)  .......... [5672-18]
9:50 am: Anisotropic local likelihood approximations: theory, algorithms, applications, V. Katkovnik, A. Foi, K. Egiazarian, J. Astola, Tampere Univ. of Technology (Finland)  .......... [5672-19]
10:10 am: Set theoretic approach to object-based image restoration, X. Fan, H. Huang, Xi’an Jiaotong Univ. (China); B. Liang, Dalian Maritime Univ. (China); C. Qi, Xi’an Jiaotong Univ. (China)  .......... [5672-20]

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

SESSION 6
Conv. Ctr. Room A3  .................  Tues. 11:00 am to 12:00 pm

Biomedical Image Processing
11:00 am: Feasibility study of automating breast phantom scoring using image processing techniques, M. Adel, V. Guiu, M. Ragni, Univ. Aix Marseille III (France)  .......... [5672-21]
11:20 am: Three-dimensional reconstruction of upper airways from MDCT, D. Perchet, C. Feta, F. Prêteux, Institut National des Télécommunications (France)  .......... [5672-22]
11:40 am: Adaptive edge detection based on 3D kernel functions for biomedical image analysis, E. Alkin, J. Tohka, U. Ruotsalainen, Tampere Univ. of Technology (Finland)  .......... [5672-23]

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

SESSION 7
Conv. Ctr. Room A3  .................  Tues. 1:00 to 3:00 pm

Image Processing Algorithms I
1:00 pm: New method of calculation of reversible integer 3D DCTs, A. M. Grigoryan, V. S. Bhamidipati, S. Alla, Univ. of Texas/San Antonio  .......... [5672-24]
2:00 pm: Estimating the distribution of particle dimensions from electron microscope images, P. Hirvonen, Tampere Univ. of Technology (Finland); H. J. Huttunen, Tampere Univ. of Technology (Finland) and Visy Oy (Finland); M. Lappi, VTT Processes (Finland)  .......... [5672-25]
2:20 pm: Adaptive steganography with increased embedding capacity for new generation of steganographic systems, S. S. Agaian, Univ. of Texas/San Antonio and Tufts Univ.; R. R. Silventies, Univ. of Texas/San Antonio  .......... [5672-26]
2:40 pm: Edge and corner-directed interpolation, H. Kim, Electronics and Telecommunications Research Institute (South Korea); L. Lee, Pusan National Univ. (South Korea)  .......... [5672-27]

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

SESSION 8
Conv. Ctr. Room A3  .................  Tues. 3:30 to 4:30 pm

Image Processing Algorithms II
3:30 pm: New online learning algorithm with application to image segmentation, M. Li, I. K. Sethi, Oakland Univ.  .......... [5672-28]
3:50 pm: Efficient topological descriptor for shape representation, M. Allili, Bishop’s Univ. (Canada); D. Corriveau, D. Zou, Univ. de Sherbrooke (Canada)  .......... [5672-29]
4:10 pm: Line cue augmented perspective structure from motion, J. K. Samarabandu, R. P. Rodrigo, Univ. of Western Ontario (Canada)  .......... [5672-30]
Wednesday 19 January

Plenary Speaker: Nicolaos B. Karayiannis
The Future of Computer Graphics: Realism or Abstraction?
P. Hanrahan, Stanford Univ.
See pg. x for details.

SESSION 1
Conv. Ctr. Room A4 9:30 am - 11:40 am
Classification, Recognition, and Self-Organization Feature Maps
Chair: Nicolaos B. Karayiannis, Army Research Lab.
9:50 am: Artifical neural networks-based fingerprint recognition, R. Koker, Sakarya Univ. (Turkey) .......................... [5673-02]
10:40 am: Spectral clustering for data categorization based on self-organizing maps, A. Saalbach, T. Wettmann, T. Nattkemper, Univ. Bielefeld (Germany) .......................... [5673-03]
11:00 am: PathSOM: a novel visual-spatial search strategy, D. Chen, I. K. Sethi, Oakland Univ. .......................... [5673-04]
Lunch/Exhibition Break
11:40 am to 1:30 pm

SESSION 2
Conv. Ctr. Room A4 1:30 pm - 3:00 pm
Fuzzy Clustering, Classification, and Recognition
Chair: Syed A. Rizvi, Univ. of New York/Staten Island
1:30 pm: Object classification in images for Epo doping control based on fuzzy decision trees (Invited Paper), I. Bajla, I. Holländer, D. Heiss, R. Grančič, ARC Seibersdorf Research GmbH (Austria) .......................... [5673-06]
2:00 pm: Content-based document enhancement by fuzzy clustering with spatial constraints, M. Ahmed, B. Cooper, Lexmark International, Inc. .......................... [5673-07]
2:20 pm: HCOC based on classifier of supervisory competitive learning neural network and algorithm of block and its relative fuzzy feature extraction, L. Sun, Y. Song, S. Wu, Yantai Univ. (China) .......................... [5673-08]
2:40 pm: Independent component analysis for hyperspectral imagery plant classification, P. Du, H. Zhao, Beihang Univ. (China); B. Zhang, L. Zheng, Institute of Remote Sensing Application (China) .......................... [5673-09]
Coffee Break
3:00 pm to 3:30 pm

SESSION 3
Conv. Ctr. Room A4 3:30 pm - 5:10 pm
Support Vector Machine and Machine Learning
Chair: Nasser M. Nasrabadi, Army Research Lab.
3:30 pm: Comparative study of fingerprint recognition using artificial neural networks and inductive learning, R. Koker, Sakarya Univ. (Turkey) .......................... [5673-10]
3:50 pm: Possibilistic particle swarms for optimization, S. Medasani, Y. Owechko, HRL Labs .......................... [5673-11]
4:10 pm: Generic object recognition by distinct features combination in machine learning, H. Meng, D. R. Hardoon, J. Shawe-Taylor, S. Szedmak, Univ. of Southampton (United Kingdom) .......................... [5673-12]
4:30 pm: Fingerprint recognition using inductive learning, R. Koker, Sakarya Univ. (Turkey) .......................... [5673-13]
4:50 pm: Removal of spatially correlated noise by independent component analysis, X. Zeng, Calif State Univ./Northridge; Y. Chen, Ritsumeikan Univ. (Japan); X. Chen, Univ. of Kansas; D. van Alphen, Calif State Univ./Northridge .......................... [5673-14]

Thursday 20 January

SESSION 4
Conv. Ctr. Room A4 8:40 am - 11:50 am
Use of Neural Networks for Fusion, Detection, Feature Extraction, and Learning I
Chair: Syed A. Rizvi, Univ. of New York/Staten Island
8:40 am: Automatic analysis of complex images by means of artificial neural networks, V. S. Abrukov, V. Smirnov, I. P. Pavlov, Chuvash State Univ. (Russia) .......................... [5673-16]
9:00 am: Fusion of local and global features for efficient object detection, D. Le, Graduate Univ. for Advanced Studies (Japan); S. Satoh, Graduate Univ. for Advanced Studies (Japan) and National Institute of Informatics (Japan) .......................... [5673-17]
9:40 am: Neural network noniterative learning and Identification of static features and their dynamic variations in very similar pattern, C. J. Hu, S. Chanekasit, Southern Illinois Univ./Carbondale .......................... [5673-21]
Coffee Break
10:00 to 10:30 am
10:30 am: Detection of cyst using image segmentation and building a knowledge-based Intelligent decision support system, J. Fredric, T. R. Natesan, R. Santhosh, Sathyabama Deemed Univ. (India); M. Ibrahim, Mohi-Al-Deen Technologies LLC .......................... [5673-22]
10:50 am: Feature extraction from a noisy background for use in neural network identification, A. Boonthinratvorakul, S. Chanekasit, C. J. Hu, Southern Illinois Univ./Carbondale .......................... [5673-23]
11:10 am: Face detection with neural network MLP, F. Smach, Group of Micro-technology and System-on-chip (Tunisia); M. Atri, Faculté des Sciences de Monastir (Tunisia); M. Abd, Group of Micro-technology and System-on-chip (Tunisia) .......................... [5673-18]
11:30 am: Three-dimensional defect imaging of pipeline magnetic flux leakage inspection signal-based wavelet neural network, L. Yang, Jr., F. Ma, Shenyang Univ. of Technology (China) .......................... [5673-19]
Lunch Break
11:50 am to 1:20 pm

SESSION 5
Conv. Ctr. Room A4 1:20 pm - 2:40 pm
Use of Neural Networks for Fusion, Detection, Feature Extraction, and Learning II
Chair: Syed A. Rizvi, Univ. of New York/Staten Island
1:20 pm: Mouse-based signature verification for secure Internet transactions, H. Lei, S. Palla, V. Govindaraju, Univ. at Buffalo .......................... [5673-25]
1:40 pm: Neural networks approach to cloud identification from GMS imagery, C. Dong, China Meteorological Administration (China); D. Jiang, Hunan Meteorological Bureau (China) .......................... [5673-28]
2:00 pm: Ridgelet neural network for image classification, S. Yang, Xidian Univ. (China) .......................... [5673-26]
2:20 pm: Land cover classification from multispectral satellite images, M. Toshniwal, Indian Institute of Information Technology (India) .......................... [5673-27]
Monday 17 January

SESSION 1
Conv. Ctr. Room A4 ........................ Mon. 8:30 to 10:00 am
Inverse Problems
Chair: Stanley J. Reeves. Auburn Univ.

Keynote ........................... 8:30 to 9:00 am
The boundary of x-ray and electron tomography (Keynote Presentation), Z. H. Levine, National Institute of Standards and Technology ........................ [5674-01]
9:00 am: Seismic image reconstruction using complex wavelets, M. A. Miller, N. Kingsbury, Univ. of Cambridge (United Kingdom); R. Hobbs, Univ. of Durham (United Kingdom) ........................ [5674-02]
9:20 am: Electrical resistance tomography for real-time mapping of the solid-liquid interface in tanks containing optically opaque fluids, A. Madupu, Florida International Univ. and Hemispheric Ctr. for Environmental Technology; A. Mazumdar, J. Zhang, D. Roelant, R. Srivastava, Florida International Univ. ........................ [5674-03]
9:40 am: Implementation and evaluation of the ultrasonic TOF tomography for the NDT of concrete structures, J. Kwon, S. Choi, S. M. Song, Seoul National Univ. (South Korea) ........................ [5674-04]
Coffee Break .......................... 10:00 to 10:30 am

SESSION 2
Conv. Ctr. Room A4 ........................ Mon. 10:30 am to 12:10 pm
Tomography
Chair: Yongyi Yang. Illinois Institute of Technology
10:30 am: Imaging of oscillatory behavior in concentrated Mas studies, D. Pantazis, R. M. Leahy, Univ. of Southern California ........................ [5674-05]
10:50 am: Domain decomposition methods for diffuse optical tomography, K. Kwon, I. Son, M. Guven, B. Yazici, Rensselaer Polytechnic Institute ........................ [5674-06]
11:10 am: Robust uncertainty principles and exact signal reconstruction from highly incomplete frequency information, E. Candès, J. K. Romberg, California Institute of Technology; T. Tao, Univ. of California/Los Angeles ........................ [5674-07]
11:30 am: Statistical image reconstruction with a noisy system model, J. Qi, Lawrence Berkeley National Lab. ........................ [5674-08]
11:50 am: Exact 3D cone-beam reconstruction from two short-scans using a C-arm imaging system, K. Ramamurthi, Johns Hopkins Univ.; N. Strobel, Stanford Univ.; Medical Ctr. and Siemens Medical Solutions (Germany); J. L. Prince, Johns Hopkins Univ. and Stanford Univ. Medical Center ........................ [5674-09]
Lunch Break .......................... 12:10 to 1:40 pm

SESSION 3
Conv. Ctr. Room A4 ........................ Mon. 1:40 to 4:30 pm
Image Analysis and Restoration
Chairs: Peyman Milanfar, Univ. of California/Santa Cruz; Yibin Zheng, Univ. of Virginia
1:40 pm: Image registration in high-dimensional feature spaces, A. O. Hero, H. Neemuchwala, Univ. of Michigan ........................ [5674-10]
2:00 pm: Prewarping techniques in imaging: applications in nanotechnology and biotechnology, A. Poonawala, P. Milanfar, Univ. of California/Santa Cruz ........................ [5674-11]
2:20 pm: Ray casting approach for boundary extraction and Fourier shape descriptor characterization, J. Rosiene, Eastern Connecticut State Univ.; X. Liu, C. Imielinska, Columbia Univ. ........................ [5674-12]
2:40 pm: Fast Huber-Markov edge-preserving image restoration, R. Pan, S. J. Reeves, Auburn Univ. ........................ [5674-13]
Coffee Break .......................... 3:00 to 3:30 pm
3:30 pm: Efficient multiresolution algorithm for compensating density-dependent media blurring, S. S. Saquib, W. T. Vetterling, Polaron Corp. ........................ [5674-14]
3:50 pm: Adaptive filtering framework for local registration of multiple images, G. Caner, W. Heinzelman, G. Sharma, Univ. of Rochester; A. M. TekaIup, Univ. of Rochester and Koc Univ. (Turkey) ........................ [5674-15]
4:10 pm: Multichannel image deblurring of raw color components, M. Trimche, Nokia Research Ctr. (Finland); D. Dmitry, Tampere Univ. of Technology (Finland); M. Vehvilainen, Nokia Research Ctr. (Finland); V. Katkovic, Tampere Univ. of Technology (Finland) ........................ [5674-16]

SESSION 4
Conv. Ctr. Room A4 ........................ Mon. 4:30 to 5:50 pm
Medical Image Processing
Chair: Peter C. Doerschuk, Purdue Univ.
4:30 pm: Morphological study of cortical surfaces with principal component analysis, Y. Sun, Purdue Univ. ........................ [5674-17]
4:50 pm: Detection of mass tumors in mammograms using SVD subspace analysis, E. T. Lin, Y. Liu, E. J. Delp III, Purdue Univ. ........................ [5674-18]
5:10 pm: Increasing the depth of field for medical ultrasound imaging, Y. Zheng, S. D. Silverstein, Univ. of Virginia ........................ [5674-19]
5:30 pm: Markov chain Monte Carlo method for tracking myocardial borders, R. L. Janiczek, R. S. R. Acton, R. J. Roy, B. A. French, F. H. Epstein, Univ. of Virginia ........................ [5674-20]

Tuesday 18 January

Plenary Speaker ........................ Tues. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Maki, Jet Propulsion Lab.
See pg. x for details.

SESSION 5
Conv. Ctr. Room A4 ........................ Tues. 9:30 to 11:50 am
Human Visual Inverse Problems
Chair: Zygmunt Pizlo, Purdue Univ.

Keynote ........................... 9:30 to 10:00 am
Surface color perception as an Inverse problem in human vision (Keynote Presentation), L. T. Maloney, New York Univ. ........................ [5674-21]
10:00 am: Model selection in cognitive science as an Inverse problem, J. I. Myung, M. Pitt, The Ohio State Univ. ........................ [5674-22]
Coffee Break .......................... 10:20 to 10:50 am
10:50 am: Regularization model of human binocular vision, Z. Pizlo, Y. Li, Purdue Univ. ........................ [5674-23]
11:30 am: Structure from motion: a computational study, M. Boutin, D. G. Allig, Purdue Univ. ........................ [5674-25]
Lunch/Exhibition Break .......................... 11:50 am to 11:00 pm
SESSION 6
Conv. Ctr. Room A4  1:10 to 2:30 pm
Color Imaging
Chair: Maya R. Gupta, Univ. of Washington
1:10 pm: Simulating the effect of illumination using color transformations, M. R. Gupta, J. Bowen, Univ. of Washington  [5674-26]
1:30 pm: Bayesian edge-preserving color image reconstruction from color filter array data, M. Parmar, S. J. Reeves, T. S. Denney, Jr., Auburn Univ.  [5674-27]
1:50 pm: Real-time multiresolution algorithm for correcting the distortions produced by thermal printers, S. S. Saquib, W. T. Vetterling, Polaroid Corp.  [5674-28]
2:10 pm: Multiresolution order-statistic CFAR techniques for radar target detection, M. R. Bell, Purdue Univ.  [5674-29]

SESSION 7
Conv. Ctr. Room A4  2:30 to 5:30 pm
Biomedical Inverse Problems
Chairs: Thomas S. Denney, Jr., Auburn Univ.; Yinlong Sun, Purdue Univ.
2:30 pm: Parametric reconstruction of kinetic PET data with plasma function estimation, M. E. Kamasak, C. A. Bouman, Purdue Univ.; E. D. Morris, Purdue Univ. and Indiana Univ. School of Medicine; K. D. Sauer, Univ. of Notre Dame  [5674-30]
2:50 pm: Motion-compensated fully 4D reconstruction of gated cardiac sequences, Y. Yang, E. Gravier, Illinois Institute of Technology  [5674-31]
Coffee Break  3:10 to 3:30 pm
3:30 pm: Recursive estimation methods for tracking of localized perturbations in absorption and scattering using diffuse optical tomography, A. Hamdi, E. L. Miller, Northeastern Univ.; M. E. Kilmer, Tufts Univ.; D. Boas, Massachusetts General Hospital and Harvard Medical School; M. A. Franceschini, Massachusetts General Hospital and Tufts Univ.  [5674-32]
3:50 pm: Computer simulation of light scattering and propagation in the imaging process of biological confocal microscopy, Y. Sun, Purdue Univ.  [5674-33]
4:10 pm: A fast algorithm for maximum likelihood 3D reconstruction of viruses from cryo-electron microscope images, J. Lee, Y. Zheng, P. C. Doerschuk, Purdue Univ.  [5674-34]
4:30 pm: Frequency domain simultaneous algebraic reconstruction techniques: algorithm and convergence, J. Wang, Y. Zheng, Univ. of Virginia  [5674-35]
4:50 pm: Incremental matrix orthogonalization with an application to curve fitting, M. Harker, P. L. O’Leary, Montan Univ. Leoben (Austria); F. Zsombor-Murray, McGill Univ. (Canada)  [5674-36]

✔ Posters-Tuesday
Posters will be placed on display after 9:00 am in Conv. Ctr. Room Exhibit Hall 1. A poster session, with authors present at their posters, will be held Tuesday evening, 5:30 to 7:00 pm.
✔ Inversion of flow fields from sensor network data, A. Khemka, C. A. Bouman, M. R. Bell, Purdue Univ.  [5674-37]
✔ New inverse method for simultaneous reconstruction of object buried beneath rough ground and the ground surface structure using SAWM forward model, R. Firoozabadi, E. L. Miller, C. M. Rappaport, A. W. Morganenthal, Northeastern Univ.  [5674-38]
✔ Inter-update Metz filtering as regularization for variable block-art in PET reconstruction, M. Sadik, M. Trujillo, Brunel Univ. (United Kingdom)  [5674-39]
✔ Sonification of portrait pictures, S. Torpey, O. Curran, A. Shearer, National Univ. of Ireland/Galway (Ireland)  [5674-40]
✔ Approach to reduce the computational image processing requirements for a computer vision system using sensor preprocessing and the hoteling transform, T. R. Schei, Northrop Grumman Mission Systems; C. H. G. Wright, Univ. of Wyoming; D. J. Pack, U.S. Air Force Academy  [5674-41]
✔ Subpixel target detection in hyperspectral data using higher order statistics source separation algorithms, S. A. Robila, Montclair State Univ.  [5674-42]
✔ Nonlinear image restoration methods for marker extraction in 3D fluorescent microscopy, A. Kryvanos, J. Hesser, G. Steidel, Univ. Mannheim (Germany)  [5674-43]
✔ Contour-based image mosaicking in the presence of moving objects, S. Jung, Y. Choi, T. Choi, Gwangju Institute of Science and Technology (South Korea)  [5674-44]
✔ Multigrid inversion algorithms for Poisson noise model-based tomographic reconstruction, S. Oh, C. A. Bouman, K. J. Webb, Purdue Univ.  [5674-46]
✔ Concentrated light characterization through scattering and CCD image processing, A. Parretta, C. Privato, G. Nenna, Ente per le Nuove Tecnologie l’Energia e l’Ambiente (Italy); A. Antonini, M. Stefancich, Univ. degli Studi di Padova (Italy)  [5674-47]
✔ Model-based automatic calculation and evaluation of camera positions for industrial machine vision, M. M. Ellenrieder, DaimlerChrysler AG (Germany); H. Komoto, Technical Univ. of Karlsruhe (Germany)  [5674-48]
Tuesday 18 January

Session 1

Conv. Ctr. Room C4 1:30 pm to 3:30 pm
Geometric Models
Chair: Gady Agam, Illinois Institute of Technology

9:30 am: Computing the uncertainty of transformations in digital images, K. Teelen, P. Veelaert, Hogeschool Gent (Belgium)

9:55 am: Information processing of motion in facial expression and the geometry of dynamical systems, A. H. Assadi, H. Eghbalian, B. W. McMenamin, Univ. of Wisconsin/Madison

Coffee Break 10:35 to 11:00 am

11:00 am: Did early Renaissance painters trace optical projections? Evidence from the works of Delaunay and Dürer, G. D. Stork, Ricoh Innovations, Inc. and Stanford Univ.

11:40 am: Anatomically constrained neural network model for the categorization of facial expression, B. W. McMenamin, A. H. Assadi, Univ. of Wisconsin/Madison

12:20 pm: Recognition of 3D human head model under arbitrary rotation, D. Wang, C. Cui, Zhejiang Univ. (China)

Lunch/Exhibition Break 12:45 to 2:00 pm

Session 2

Conv. Ctr. Room C4 2:00 pm to 4:30 pm
Surface Reconstruction and Visualization
Chair: Amir H. Assadi, Univ. of Wisconsin/Madison

2:00 pm: Error analysis in reconstruction of a parabola in 3D from two arbitrary perspective views, A. Shukla, A. Saxena, B. Neerka, R. Balasubramanian, BITS-Pilani (India); K. Swainanithan, Indian Institute of Technology (India)

2:25 pm: Visualization of volumetric scattered data based on weighted alpha shapes, K. Lee, Handong Univ. (South Korea); D. Gu, M. Lim, Chonbuk National Univ. (South Korea)

2:50 pm: Efficient workflows for 3D building full-color model reconstruction using lidar long-range laser and image-based modeling techniques, C. Shih, Mingdao Univ. (Taiwan)

Coffee Break 3:45 to 4:10 pm

3:40 pm: A new modeling algorithm for implicit surface polygonization, Y. Li, G. Heckenberg, Y. Duan, Univ. of Missouri/Columbia; H. Zhao, Stanford Univ.

4:05 pm: Pose estimation of tube-shaped flexible objects from geometrically rectified shadow images, M. M. Ellenrieder, DaimlerChrysler AG (Germany)

Session 3

Conv. Ctr. Room C4 4:30 pm to 5:45 pm
Aspects of Vision Geometry
Chair: Kun Lee, Handong Univ. (South Korea)

4:30 pm: Revolutionizing handwriting with a digital pen, M. Albozsta, Lumen Intellectual Property Services, Inc.; G. G. Zhang, S. Carl, H. Gonzalez, M. Mandella, ESPI

4:55 pm: Perspect machine II: visualization, J. A. Anderson, Univ. of Reading (United Kingdom)

5:20 pm: Perspect machine III: continuity over the Turing operations, J. A. Anderson, Univ. of Reading (United Kingdom)

Wednesday 19 January

Session 4

Conv. Ctr. Room C4 9:30 am to 11:40 am
Shape Analysis and Object Recognition
Chair: Peter Veelaert, Hogeschool Gent (Belgium)

9:30 am: Efficient sequence classification: a kernel method, H. Lei, V. Govindaraju, Univ. at Buffalo

9:55 am: Relations between shape spaces, P. F. Stiller, Texas A&M Univ.

Coffee Break 10:20 to 10:50 am

10:50 am: Effective shape contour extraction, multiresolution representation and matching methods, E. Attaliba, IBM IBM University and Wayne State Univ.; P. Sly, Wayne State Univ.

11:15 am: Extraction of a compact analytical data file from a complex binary graph for using in real-time neural-network learning, C. J. Hu, Southern Illinois Univ./Carbondale

Lunch/Exhibition Break 12:40 pm to 2:00 pm

Session 5

Conv. Ctr. Room C4 1:40 pm to 3:55 pm
Digital Geometry, Topology, and Morphology
Chair: Peter F. Stiller, Texas A&M Univ.

1:40 pm: Grid-independent necessary criterions for shape preserving digitization, P. C. D. Stelldinger, Univ. Hamburg (Germany)

2:05 pm: Making 3D binary digital images well-composed, M. Siqueira, Univ. of Pennsylvania and Univ. Federal de Mato Grosso do Sul (Brazil); L. J. Latecki, Temple Univ.; J. Gallier, Univ. of Pennsylvania

2:30 pm: Image segmentation using watersheds and normalized cuts, J. De Bock, P. De Smet, W. Philips, Univ. Gent (Belgium)

Coffee Break 2:55 to 3:30 pm

Session 6

Conv. Ctr. Room C4 3:30 pm to 5:40 pm
Image Reconstruction and Visualization
Chair: Marcelo Siqueira, Univ. of Pennsylvania

3:30 pm: Fast panoramic video generation method using morphological corner detection, J. Lee, W. Lee, K. Lee, D. Jeong, INHA Univ. (South Korea)

3:55 pm: View interpolation and synthesis by KLT feature tracker, X. Lu, S. Oe, Univ. of Tokushima (Japan)
Wednesday 19 January

Plenary Speaker .......................... Wed. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
The Future of Computer Graphics: Realism or Abstraction?
Pat Hanrahan, Stanford Univ.
See pg. x for details.

SESSION 1

Conv. Ctr. Room C1 ..................... Wed. 9:30 to 10:30 am
DIA I: OCR Systems I
9:30 am: OCR research beyond COTS OCR software: a survey, X. Lin, Hewlett-Packard Labs. ............................ [5676-01]
9:40 am: Font identification of scanned documents based on texture features using a COTS OCR system, S. Salihe, Concordia Univ. (Canada) ............................ [5676-02]
10:00 am: Using the Web to validate document recognition results: experiments with business cards, C. Oertel, Univ. of Tübingen (Germany); S. O’Shea, Queen’s Univ. (Canada); A. Bodnar, Univ. of British Columbia (Canada); D. Bluestein, Queen’s Univ. (Canada). ............................ [5676-03]
Coffee Break .......................... 10:30 to 11:00 am

Panel Discussion ........................ 11:00 am to 12:00 pm
Transitioning from research to practice: why is it hard?

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

SESSION 2

Conv. Ctr. Room C1 ..................... Wed. 1:40 to 2:40 pm
DIA I: OCR Systems II
1:40 pm: Study of style effects on OCR errors in the MEDLINE database, P. Garrison, D. L. Davis, T. Andersen, E. H. Barney Smith, Boise State Univ. ............................ [5676-04]
2:00 pm: Software tools and test data for research and testing of page-reading OCR systems, T. A. Nartker, S. Lumos, Univ. of Nevada/Las Vegas. ............................ [5676-05]
2:20 pm: Printed Arabic document recognition system, J. Jin, H. Wang, X. Ding, L. Peng, Tsinghua Univ. (China). ............................ [5676-06]

Discussion Session ........................ 2:40 to 3:00 pm
Open Source OCR

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

SESSION 3

Conv. Ctr. Room C1 ..................... Wed. 3:20 to 5:00 pm
Handwriting Recognition
3:20 pm: Online handwriting recognition system for Turkish, E. Vural, H. Erdogan, K. Oflazer, B. A. Yanikoglu, Sabanci Univ. (Turkey). ............................ [5676-07]
3:40 pm: Search engine for handwritten documents, S. N. Srirani, Univ. at Buffalo. ............................ [5676-08]
4:00 pm: Sequence matching based feature extraction with applications to signature verification, V. Chen, X. Ding, Tsinghua Univ. (China). ............................ [5676-09]
4:20 pm: Challenges that handwritten text images pose to computers and new practical applications, A. I. Rusu, V. Govindaraju, Univ. at Buffalo ............................ [5676-10]

Thursday 20 January

SESSION 4

Conv. Ctr. Room C1 ..................... Thurs. 8:40 to 10:00 am
DIA II: Learning Methods
8:40 am: Sequential neural network combination for degraded machine printed character recognition, A. Namane, Univ. Louis Pasteur (France) and Univ. of Bilda (Algeria). ............................ [5676-12]
9:00 am: Fourier descriptor based character recognition engine implemented under the Gamera open-source document processing framework, T. L. Andersen, J. Hopkins, Boise State Univ. ............................ [5676-13]
9:20 am: Address extraction using hidden Markov models, J. Taghva, J. S. Coombs, R. Pereda, T. A. Nartker, Univ. of Nevada/Las Vegas. ............................ [5676-14]
9:40 am: New statistical method for machine-printed Arabic character recognition, H. Wang, X. Ding, J. Jin, Tsinghua Univ. (China); M. Halmurat, Xinjiang Univ. (China). ............................ [5676-15]
Coffee Break .......................... 10:00 to 10:30 am

SESSION 5

Conv. Ctr. Room C1 ..................... Thurs. 10:30 am to 12:10 pm
Image Processing
10:30 am: Restoring high-resolution text images to improve legibility and OCR accuracy, H. Nishida, Ricoh Co., Ltd. (Japan). ............................ [5676-16]
10:50 am: Font identification of scanned documents based on texture features using a new texture operator, H. Ma, D. Doermann, Univ. of Maryland/College Park ............................ [5676-17]
11:30 am: Historical document image segmentation using background light intensity normalization, Z. Shi, V. Govindaraju, Univ. at Buffalo. ............................ [5676-19]
Lunch Break .......................... 12:10 to 2:00 pm

SESSION 7

Conv. Ctr. Room C1 ..................... Thurs. 2:00 to 3:20 pm
Applications of Document Recognition
2:00 pm: Information leakage through document redaction: attacks and countermeasures, D. P. Lopresti, Lehigh Univ.; I. Spitz, DocRec Ltd. (New Zealand) ............................ [5676-21]
2:20 pm: Implicit CAPTCHA, H. S. Baird, Lehigh Univ.; J. L. Bentley, Avaya Labs. ............................ [5676-22]
2:40 pm: Scatter/Type: a reading CAPTCHA resistant to segmentation attack, H. S. Baird, T. Biopka, Lehigh Univ. ............................ [5676-23]
3:00 pm: Chipless ID for paper documents, D. P. Lopresti, Lehigh Univ.; G. Nagy, Rensselaer Polytechnic Institute. ............................ [5676-24]
Tuesday 18 January

Plenary Speaker ................. Tues. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Maki, Jet Propulsion Lab.
See pg. x for details.

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

✔ Electro-optical leveler using CMOS image sensor, J. Wu, R. Chang, National Central Univ. (Taiwan) .................................................. [5677-28]

✔ Deconvolution scatter compensation technique for fan-beam CT with large-area flat-panel detectors, S. Li, L. Zhang, Z. Chen, Y. Xiao, Tsinghua Univ. (China) ................................................................. [5677-30]

✔ Video camera design and implementation for telemedicine applications, K. K. Behainamot, Univ. of Stellenbosch .................................................. [5677-31]

✔ A rapid-deployable imaging system for environmental system studies, C. Steidle, R. A. Bachnak, C. Mayfield, R. R. Kulkarni, Texas A&M Univ. ................................. [5677-32]

✔ Infrared response of charge-coupled devices, M. Loch, R. Widenhorn, Portland State Univ.; E. Bodegom, Portland State Univ. and Technische Univ. Delft (Netherlands) ............................................................... [5677-34]

Wednesday 19 January

Plenary Speaker ................. Wed. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
The Future of Computer Graphics: Realism or Abstraction?
P. Hanrahan, Stanford Univ.
See pg. x for details.

SESSION 1
Conv. Ctr. Room A6 ................. Wed. 9:30 am to 12:00 pm
Applications
Chair: Robin M. Dawson, Sarnoff Corp.
9:30 am: 0.9-V pulse frequency modulation photosensor based on capacitive feedback reset, K. Yawasuka, K. Kagawa, O. Jun, M. Nunosita, Nara Institute of Science and Technology (Japan) ........................................................ [5677-01]

9:50 am: Pulse modulation image sensors for on-chip bioimaging and biosensing applications, T. Tokuda, D. C. Ng, H. Okamoto, R. Kagawa, J. Ohta, M. Nunosita, Nara Institute of Science and Technology (Japan) ........................................................ [5677-02]

Coffee Break ...................... 10:10 to 10:40 am
10:40 am: Optoelectronic library for color sensor design, F. Hainard, M. Ben Chouikha, Univ. Pêrre et Marie Curie (France); A. Baguenier Desormeaux, Cadence Design Systems (France); G. Alquié, Univ. Pêrre et Marie Curie (France) ........................................................ [5677-03]


11:20 am: Software sensors, digital-imaging based for flotation froth supervision: algorithms and procedures, G. Bonifazi, S. Silvia, F. Volpe, Univ. degli Studi di Roma La Sapienza (Italy) ........................................................ [5677-05]

11:40 am: Mixed synchronous-asynchronous implementation of a regional vision operator on a programmable artificial retina, V. Gies, T. M. Bernard, Ecole Nationale Supérieure de Techniques Avancées (France) .......................... [5677-06]

Lunch/Exhibition Break .......... 12:00 to 1:40 pm

SESSION 2
Conv. Ctr. Room A6 ................. Wed. 1:40 to 5:30 pm
CMOS Sensors
Chair: Orly Yadid-Pecht, Ben-Gurion Univ. of the Negev (Israel)
1:40 pm: 0.25 μm clock output pixel sensor with wide dynamic range, C. Lai, Y. King, S. Huang, National Tsing-Hua Univ. (Taiwan) .................................................. [5677-08]

2:00 pm: Novel time-stamped pixel structure for high-speed 2D CMOS visual motion sensor, G. Zhang, J. Liu, Univ. of Texas/Dallas ................................................ [5677-09]


2:40 pm: The unique submicron scanning system: further developments and new applications, I. Scherback, B. Likhterov, Ben-Gurion Univ. of the Negev (Israel); A. A. Behlenky, Ben Gurion Univ. of the Negev (Israel); O. Yadid-Pecht, Ben-Gurion Univ. of the Negev (Israel) and Univ. of Calgary (Canada) ................................................ [5677-11]

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


3:50 pm: A CMOS image sensor with high-speed readout of multiplicity region-of-interests for an opto-navigation system, K. Yamamoto, Y. Maeda, Y. Masaki, K. Kagawa, J. Ohta, M. Nunosita, Nara Institute of Science and Technology (Japan) ................................................ [5677-12]

4:10 pm: Pixel crosstalk and correlation with modulation transfer function of CMOS image sensor, M. Estribeau, P. Magnan, Ecole Nationale Supérieure de l’Aéronautique et de l’Espace (France) ................................................ [5677-13]

4:30 pm: Design and Implementation of a one-chip wireless camera device for a capsule endoscope, S. Itoh, S. Kawahito, Shizuoka Univ. (Japan); T. Akahori, Sanei Hytechs Co., Ltd.; T. Terakawa, Hamamatsu Univ. School of Medicine (Japan) ................................................ [5677-14]

4:50 pm: Analysis of CMOS image sensor using heterojunction diode active pixel, S. Bae, PerkinElmer Optoelectronics; F. A. Rubinelli, Univ. Nacional del Litoral (Argentina) ................................................ [5677-15]
Thursday 20 January

SESSION 3
Conv. Ctr. Room A6  .................  Thurs. 9:40 to 11:50 am
New Technologies
Chair: Morley M. Blouke, Ball Aerospace & Technologies Corp.


10:00 am: CMOS retina for Zernike moments estimation, O. Aubreton, L. Lew Yan Voon, B. Lamanie, Univ. de Bourgogne (France); G. Callehebras, Univ. de Montpellier (France)  .................................................. [5677-18]

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

10:50 am: LED photometric colorimetric test system based on linear CCD camera, D. Wang, Zhejiang Univ. (China)  .................................................. [5677-19]


11:30 am: EUV spectrometer, L. V. Didkovsky, A. R. Jones, D. L. Judge, Univ. of Southern California  .................................................. [5677-21]

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

SESSION 4
Conv. Ctr. Room A6  .................  Thurs. 1:30 to 3:30 pm
CCD Sensors
Chair: Gloria G. Putnam, Eastman Kodak Co.

1:30 pm: High-speed high-sensitivity 1/2 1-m pixel frame-transfer CCD imager for medical and industrial applications, A. Stravers-Cimpoiasu, H. Stoldt, W. Klaassens, DALSA Inc. (Netherlands); R. Frost, DALSA Corp. (Canada); J. Bosiers, DALSA Inc. (Netherlands)  .................................................. [5677-22]

1:50 pm: Design and performance of charge multiplying color FIT CCD image sensor, I. Kobayashi, H. Shibuya, T. Tachibana, T. Nishiwaki, Texas Instruments Japan Ltd. (Japan); J. Hynecek, Isetex, Inc.; S. Kashima, Texas Instruments Japan Ltd. (Japan)  .................................................. [5677-23]

2:10 pm: Low-capacitance CCD image sensor with thin single-layer structure, M. Monoi, Toshiba Corp. (Japan); S. Sasaki, Y. Nakano, Iwate Toshiba Electronics (Japan); H. Tsuruta, Toshiba Corp. (Japan); Y. Hayakawa, M. Matsuura, Toshiba Microelectronics Corp. (Japan)  .................................................. [5677-24]

2:30 pm: A kind of camera arrays with parallel buffer used for high-speed image-text acquiring, Y. Zhang, Z. Wang, South China Univ. of Technology (China)  .................................................. [5677-25]

2:50 pm: Signatures of live fingers extracted from a series of fingerprint images, I. Fujieda, E. Matsuyama, M. Kurita, Ritsumeikan Univ. (Japan)  .................................................. [5677-26]

3:10 pm: High-speed CCD spectral testing and evaluating system for optical radiation safety for ophthalmic instruments, D. Wang, Zhejiang Univ. (China)  .................................................. [5677-27]
Conference 5678 • Conv. Ctr. Room A6

Monday-Tuesday 17-18 January 2005 • Proceedings of SPIE Vol. 5678

Digital Photography

Conference Chairs: Nitin Sampat, Rochester Institute of Technology; Jeffrey M. DiCarlo, Hewlett-Packard Labs.; Ricardo J. Motta, PIXIM, Inc.

Program Committee: Elji Atsumi, Nokia Japan Co., Ltd. (Japan); Ted J. Cooper, Sony Electronics Inc.; Michael A. Kris, Sharp Labs. of America; Russel A. Martin, Foveon USA; Gloria G. Putnam, Eastman Kodak Co.; Brian G. Rodricks, Micron, Inc.; Sabine E. Süsstrunk, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

Monday 17 January

SESSION 1
Conv. Ctr. Room A6 ........................ Mon. 8:50 to 10:30 am
Image Sensors/Camera Design
Chairs: Nitin Sampat, Rochester Institute of Technology; Ricardo J. Motta, PIXIM, Inc.

8:50 am: Roadmap for CMOS image sensors: Moore meets Sommerfeld, P. B. Catrysse, B. A. Wandell, Stanford Univ. ........................ [5678-01]
9:10 am: Very-large-area imagers for professional DSC applications, B. Dillen, DALSA Inc. (Netherlands) and DALSA Semiconductors (Canada); C. Draijer, L. Meessen, E. J. Manoury, W. Klaassens, DALSA Inc. (Netherlands); R. Frost, DALSA Corp. (Canada); J. Bosiers, DALSA Inc. (Netherlands) ........................ [5678-02]
9:30 am: 1/f noise measurement in CMOS image sensors, B. A. Fowler, B. Frymire, S. W. Mims, Agilent Technologies ........................ [5678-03]
10:10 am: Integrating lens design with digital camera simulation, P. Y. Maeda, Palo Alto Research Ctr., Inc.; P. B. Catrysse, B. A. Wandell, Stanford Univ. ........................ [5678-05]

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

SESSION 2
Conv. Ctr. Room A6 ........................ Mon. 11:00 am to 12:00 pm
Sensor and Camera Characterization
Chair: Jeffrey M. DiCarlo, Hewlett-Packard Labs.

11:00 am: First principles' imaging performance evaluation of CCD- and CMOS-based digital camera systems, B. G. Rodricks, Micron, Inc. ........................ [5678-06]
11:40 am: Color reproduction derived CMOS image sensor design, H. Tian, Q. Sun, J. Li, IC Media Corp. ........................ [5678-08]

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

SESSION 3
Conv. Ctr. Room A6 ........................ Mon. 1:30 to 3:10 pm
Color Processing
Chair: Sabine E. Süsstrunk, Hewlett Packard Co.

1:30 pm: Color processing in phone cameras: how good does it need to be?, F. Xiao, X. Zhang, B. A. Fowler, Agilent Technologies ........................ [5678-09]
1:50 pm: Variational color transformation method for direct color imaging, T. Saito, T. Komatsu, Kanagawa Univ. (Japan) ........................ [5678-10]
2:10 pm: Cross-talk correction methodology for color CMOS imagers, B. McClaren, Raytheon Co. ........................ [5678-11]
2:30 pm: Automatic image classification by color analysis, F. Naccari, A. Bruna, A. Capra, A. Castorina, STMicroelectronics (Italy); S. Carlolo, Univ. degli Studi di Catania (Italy) ........................ [5678-12]
2:50 pm: Some considerations in the development of color rendering and gamut mapping algorithms, J. Holm, Hewlett-Packard Labs. ........................ [5678-13]

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

Tuesday 18 January

SESSION 4
Conv. Ctr. Room A6 ........................ Mon. 3:40 to 5:00 pm
Sensor Design and Applications
Chair: Russel A. Martin, Foveon USA

3:40 pm: Distributed and fractal pixel sensors for focal-plane anti-aliasing, S. Kleinfeld, Y. Chen, A. Koohi, Univ. of California/Irvine ........................ [5678-14]
4:00 pm: Adaptive framework for image and video sensing, L. Zimet, M. Shahram, P. Milanfar, Univ. of California/Santa Cruz ........................ [5678-15]
4:20 pm: Color style transfer techniques using hue, lightness, and saturation histogram matching, L. G. Neumann, Univ. de Girona (Spain); A. Neumann, Technische Univ. Wien (Austria) ........................ [5678-16]
4:40 pm: Optimum pixel design for dispersive filtering, B. M. Ravi, Mosaic Sciences, Inc. ........................ [5678-17]

Plenary Speaker .............................. Tues. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Maki, Jet Propulsion Lab.
See pg. x for details.

SESSION 5
Conv. Ctr. Room A6 ........................ Tues. 9:30 to 10:30 am
Demosaicking/In-Camera Processing
Chair: Ted J. Cooper, Sony Electronics Inc.

9:30 am: Sharpening-demosaicking method with a total-variation-based superresolution technique, T. Saito, T. Komatsu, Kanagawa Univ. (Japan) ........................ [5678-18]
9:50 am: Lossless compression of mosaic images, K. Chaudhari, S. J. Reeves, Auburn Univ. ........................ [5678-19]
10:10 am: Near lossless compression algorithm for Bayer pattern color filter arrays, A. V. Bazhyna, A. Gotchev, K. Egalazarian, Tampere Univ. of Technology (Finland) ........................ [5678-20]

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

Chair: Sabine E. Süsstrunk, Hewlett Packard Co.

1:30 pm: Color processing in phone cameras: how good does it need to be?, F. Xiao, X. Zhang, B. A. Fowler, Agilent Technologies ........................ [5678-09]
1:50 pm: Variational color transformation method for direct color imaging, T. Saito, T. Komatsu, Kanagawa Univ. (Japan) ........................ [5678-10]
2:10 pm: Cross-talk correction methodology for color CMOS imagers, B. McClaren, Raytheon Co. ........................ [5678-11]
2:30 pm: Automatic image classification by color analysis, F. Naccari, A. Bruna, A. Capra, A. Castorina, STMicroelectronics (Italy); S. Carlolo, Univ. degli Studi di Catania (Italy) ........................ [5678-12]
2:50 pm: Some considerations in the development of color rendering and gamut mapping algorithms, J. Holm, Hewlett-Packard Labs. ........................ [5678-13]

Coffee Break .................................. 3:10 to 3:40 pm
SESSION 6
Conv. Ctr. Room A6 ........................ Tues. 11:00 am to 12:00 pm
Image Processing/Compression I

Chair: Michael A. Kriss, Sharp Labs. of America

11:00 am: Image enhancement system for mobile displays, J. Parkkinen, P. Nenonen, Nokia Research Ctr. (Finland) ............................... [5678-21]
11:20 am: Dynamic focus window selecting strategy for digital cameras, Y. Tian, Univ. of California/Berkeley; H. Feng, Z. H. Xu, Zhejiang Univ. (China) .......................... [5678-22]
11:40 am: Automatic image enhancement by picture fusion, A. Castorina, A. Capra, S. Curti, STMicorelectronics (Italy); E. Ardizzone, V. Lo Verde, Univ. degli Studi di Palermo (Italy) ............................ [5678-23]
Lunch/Exhibition Break .................................. 12:00 to 1:30 pm

SESSION 7
Conv. Ctr. Room A6 .......................... Tues. 1:30 to 2:30 pm
Image Processing/Compression II

Chair: Michael A. Kriss, Sharp Labs. of America

1:30 pm: Multitoning for small devices, V. Misić, Rochester Institute of Technology ........................................ [5678-24]
1:50 pm: The role of camera-bundled image management software in the consumer digital imaging value chain, M. Mueller, A. Mundkur, A. Balasubramanian, V. Chirania, Syracuse Univ. ........................................ [5678-25]
2:10 pm: Image enhancement to reduce the effect of atmospheric haze in landscape images, M. L. Groszek, J. P. Allebach, Purdue Univ. ............................. [5678-26]
Monday 17 January

SESSION 1

Conv. Ctr. Room A5

Industrial Applications I

Chair: Jeffery R. Price, Oak Ridge National Lab.

8:40 am: Automatic measurement of pipe eccentricity using digital image processing, P. L. O'Leary, P. Schalk, R. Ofter, Univ. of Leoben (Austria); N. Koller, Hot Vision Research (Austria).


9:40 am: Precision of computer vision systems for real-time inspection of contact wire wear in railways, S. Borromeo, J. L. Aparicio, Univ. Politécnica de Madrid (Spain).

Coffee Break: 10:00 to 10:30 am

SESSION 2

Conv. Ctr. Room A5

Semiconductor and PCB Inspection

Chair: Zachi I. Baharav, Agilent Technologies, Inc.

10:30 am: Reference-free detection of semiconductor assembly defect, A. N. Y. Ng, E. Y. Lam, Univ. of Hong Kong (Hong Kong China); R. Chung, Chinese Univ. of Hong Kong (Hong Kong China); K. S. M. Fung, W. H. Leung, ASM Assembly Automation Ltd. (Hong Kong China).

10:50 am: Classifiers combination for wafer segmentation, P. Bourjate, F. Merlaudeau, Sr., Univ. de Bourgogne (France); K. W. Tobin, Jr., Oak Ridge National Lab.; P. Gorria, Univ. de Bourgogne (France).

11:10 am: Three-dimensional reconstruction of wafer solder bumps using binary pattern projection, J. Cheng, R. Chung, Chinese Univ. of Hong Kong (Hong Kong China); E. Y. Lam, Univ. of Hong Kong (Hong Kong China); K. S. M. Fung, F. Wang, W. H. Leung, ASM Assembly Automation Ltd. (Hong Kong China).

11:30 am: Optical PCB inspection system based on Hausdorff distance, C. Chen, S. Lai, S. Liu, National Tsing Hua Univ. (Taiwan); T. Ku, S. Yeh, Industrial Technology Research Institute (Taiwan).

Lunch Break: 11:50 am to 1:40 pm
Tuesday 18 January

**Plenary Speaker** .......................... Tues. 8:30 to 9:15 am
20 Cameras on Mars: The Mars Exploration Rover Imaging System
Justin Maki, Jet Propulsion Lab.
See pg. x for details.

**SESSION 4**
Conv. Ctr. Room A5 .......................... Tues. 9:30 to 11:40 am
Thermography, High Temperature, and Infrared
Chair: Fabrice Merlaudeau, Univ. de Bourgogne (France)
9:30 am: Deflectometric inspection of diffuse surfaces in the far-infrared spectrum, J. W. Horbach, S. Kammel, Univ. Karlsruhe (Germany) ........................... [5679-13]
9:50 am: Square pulse thermography system design considerations for detection of voids inside of the material with different properties and finite differences, G. Traxler, M. Scheerer, C. Steiger, ARC Seibersdorf Research (Austria) .......... [5679-14]
10:10 am: High-temperature video-extensometry for material testing of refractories, P. Schalk, E. Fauster, P. O’Leary, Univ. of Leoben (Austria) ............................ [5679-15]
Coffee Break ................................. 10:30 to 11:00 am
11:00 am: Camber measurement at hot strip mill at voestalpine by using image processing method, H. Holibl, voestalpine Mechatronics GmbH (Austria); K. Nirol, Fachhochschule Wels (Austria); M. Prinz, voestalpine Stahl AG (Austria); G. Trinkl, voestalpine Mechatronics GmbH (Austria); W. Seyruck, voestalpine Stahl AG (Austria); J. Reisinger, voestalpine Mechatronics GmbH (Austria) ............................ [5679-16]
11:20 am: Broken roll detection application algorithm and its basic principles of sensing, G. Traxler, G. Hülble-Königsberger, ARC Seibersdorf Research GmbH (Austria); J. Klaerner, voestalpine Tubulars GmbH & Co. KG (Austria) ............................ [5679-17]
Lunch/Exhibition Break ........................ 11:40 am to 1:30 pm

**SESSION 5**
Conv. Ctr. Room A5 .......................... Tues. 1:30 to 3:30 pm
Range, Stereo, and 3D Applications
Chair: Jeffrey R. Price, Oak Ridge National Lab.
1:30 pm: Shape reconstruction from noisy surface slope information using a multiresolution Bayes method, X. Zhang, R. Karkarala, Z. Baharav, Agilent Technologies, Inc. ................................. [5679-19]
1:50 pm: Stereovision-based close-up dimensional inspection, P. Mitchell, A. Spence, D. Capson, McMaster Univ. (Canada) ................................. [5679-20]
2:10 pm: Polarization imaging applied to 3D inspection of specular metallic surfaces, O. Morel, C. Stolz, F. Merlaudeau, Sr., P. Gorria, Univ. de Bourgogne (France) ................................. [5679-21]
2:30 pm: Evaluation and calibration methods for the application of a video-extensometer to tensile testing of polymer materials, E. Fauster, P. Schalk, P. O’Leary, Univ. of Leoben (Austria) ................................. [5679-22]
2:50 pm: Optical tracked hand-held range sensor, M. Robert, B. Debache, J. Laurent, Institut National d’Optique (Canada) ................................. [5679-23]
3:10 pm: Using multispectral informations for 3D reconstruction, A. A. Mansouri, A. Lathuilière, Y. Voisin, F. Marzani, Lab. LeZaI (France) ................................. [5679-24]

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

✔ Range image registration for industrial inspection, C. Matabosch, Sr., J. Salvi, Sr., Univ. de Girona (Spain); D. Fofi, Sr., F. Meliaudeau, Univ. de Bourgogne (France) ................................. [5679-27]

✔ Real time system for flatness inspection of steel strips, C. Lopez, D. F. García, R. Usamentiaga, Univ. of Oviedo (Spain); J. González, ARCELOR (Spain) ................................. [5679-26]


✔ Inspection and measurement of a DWDM core with two stacked glass objects, S. C. Kuo, DiCon FiberOptics Inc. ................................. [5679-29]

✔ LO6 filter based inspection of cluster mura and vertical band mura on liquid crystal displays, H. Chen, L. Fang, National Chiao Tung Univ. (Taiwan); L. Lee, C. Wen, Taiwan TFT-LCD Association (Taiwan); S. Cheng, Industrial Technology Research Institute (Taiwan); S. Wang, National Chiao Tung Univ. (Taiwan) ................................. [5679-30]

✔ Attributed vector quantization: a new paradigm for image segmentation and pattern acquisition, A. D. Ward, X. D. Yang, Univ. of Regina (Canada) ................................. [5679-31]

✔ Cotton trash assessment in radiographic x-ray images with scale-space filtering and stereo analysis, M. S. Dogan, H. Sari-Sarraf, E. F. Hequet, Texas Tech Univ. ................................. [5679-32]

✔ Low-cost system for ancient stamps range image acquisition, J. D. Fofi, Univ. de Bourgogne (France); E. Thomas, F. Nicotier, G. Millon, Univ. de Reims Champagne-Ardenne (France); R. Seulun, Univ. de Bourgogne (France) ................................. [5679-33]
Multimedia Computing and Networking 2005

Conference Chairs: Surendar Chandra, Univ. of Notre Dame; Nalini Venkatasubramanian, Univ. of California/Irvine

Program Committee: Tarek F. Abdelzaher, Univ. of Virginia; Sarita Adve, Univ. of Illinois/Urbana-Champaign; Scott A. Brandt, Univ. of California/Santa Cruz; Mark Comer, Univ. of Massachusetts/Amherst; Chitra Dorai, IBM Thomas J. Watson Research Ctr.; David H. Du, Univ. of Minnesota; Wu-Chi Feng, Portland State Univ.; Carsten Grwozd, Univ. of Oslo (Norway); Kevin Jeffay, Univ. of North Carolina/Chapel Hill; Venity Krishnan, Hewlett Packard Labs.; Baochun Li, Univ. of Toronto (Canada); Rainer W. Lienhart, Univ. Augsburg (Germany); Wei-Ying Ma, Microsoft Research China (China); Wei Tsang Ooi, National Univ. of Singapore; Ragunathan Rajkumar, Carnegie Mellon Univ.; Lawrence A. Rowe, Univ. of California/Berkeley; Karsten Schwan, Georgia Institute of Technology; Ralf Steinmetz, Technische Univ. Darmstadt (Germany); Xiaodong Zhang, College of William and Mary; Roger Zimmermann, Univ. of Southern California

Wednesday 19 January

Plenary Speaker: Pat Hanrahan, Stanford Univ.

Marriott Hotel: San Jose Ballroom

The Future of Computer Graphics: Realism or Abstraction?

Pat Hanrahan, Stanford Univ. See pg. x for details.

SESSION 1

Conv. Ctr. Room B2: Wed. 9:30 am to 12:00 pm

Peer-to-Peer

9:30 am: Verifying data integrity in peer-to-peer media streaming, A. Habib, Univ. of California/Berkeley and Purdue Univ.; D. Xu, M. Atallah, B. Bhargava, Purdue Univ.; J. Chuang, Univ. of California/Berkeley. [5680-03]

10:00 am: Adaptive multisource streaming in heterogeneous peer-to-peer networks, V. Agarwal, R. Rejaie, Univ. of Oregon [5680-02]

Coffee Break 10:30 to 11:00 am

11:00 am: ACTIVE: adaptive low-latency peer-to-peer streaming, L. S. Liu, R. Zimmerman, Univ. of Southern California [5680-03]

11:30 am: Swarm: a multimedia delivery network for highly dynamic networking environments, J. C. Denney, N. J. P. Race, Lancaster Univ. (United Kingdom) [5680-04]

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

SESSION 2

Conv. Ctr. Room B2: Wed. 1:30 to 5:30 pm

Video Servers

1:30 pm: A unified benchmarking and model-based framework for building QoS-aware streaming media services, I. Cherkasova, W. Tang, Hewlett-Packard Labs.; A. Vahdat, Univ. of California/San Diego [5680-05]

2:00 pm: Loopback: exploiting collaborative caches for large-scale streaming, E. Kusmierek, Univ. of Minnesota; Y. Dong, Univ. of Hawaii; D. H. Du, Univ. of Minnesota [5680-06]

2:30 pm: Dagster: contributor-aware e-end hosts multicast for media streaming in heterogeneous environments, W. T. Osi, National Univ. of Singapore (Singapore) [5680-07]

3:00 pm: Toward robust AV conferencing on next-generation networks, H. Liu, L. Cheng, M. El Zarki, Univ. of California/Irvine [5680-16]

Coffee Break 3:30 to 4:00 pm

Keynote 4:00 pm: Whither ubiquitous video?, L. A. Rowe, Univ. of California/Berkeley [5680-25]

Thursday 20 January

SESSION 3

Conv. Ctr. Room B2: Thurs. 8:30 to 10:30 am

Short Papers: Multimedia Systems

8:30 am: Automated QoS support for multimedia disk access, J. C. Wu, S. Banachowski, S. A. Brandt, Univ. of California/Santa Cruz [5680-08]

8:45 am: Randomized load balancing in scalable storage systems, K. Fu, R. Zimmermann, Univ. of Southern California [5680-09]

9:00 am: Resilient peer-to-peer multicast without the cost, S. Birrer, F. Bustamante, Northwestern Univ. [5680-10]

9:15 am: Monitoring of cache miss rates for accurate dynamic voltage and frequency scaling, L. Singleton, C. Poellabauer, K. Schwan, Georgia Institute of Technology [5680-11]

9:30 am: TCP-RC: a receiver-centered TCP protocol for delay-sensitive applications, D. McCreary, K. Li, S. Watterson, D. K. Lowenthal, Univ. of Georgia [5680-12]

9:45 am: Reconfigurable, on-the-fly, resource-aware, streaming pipeline scheduler, M. K. Bradshaw, J. Kurose, Univ. of Massachusetts/Amherst; L. J. Page, Centre College; P. Shenoy, D. Towsley, Univ. of Massachusetts/Amherst [5680-13]

10:00 am: Efficiency and late data choice in a user-kernel interface for congestion-controlled datagrams, J. Lai, Princeton Univ.; E. Kohler, Univ. of California/Los Angeles [5680-14]


Coffee Break 10:30 to 11:00 am

SESSION 4

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

Video Coding

11:00 am: Exploiting content-based networking for fine-granularity multireceiver video streaming, V. S. W. Eide, Simula Research Lab. (Norway) and Univ. of Oslo (Norway); F. Elasen, Simula Research Lab. (Norway); I. A. Michelsen, Univ. of Oslo (Norway) [5680-18]

11:30 am: Bandwidth reduction for video-on-demand broadcasting using secondary content insertion, A. Golynski, A. Lopez-Ortiz, G. Poirier, C. Quimper, Univ. of Waterloo (Canada) [5680-17]

Lunch Break 12:00 to 1:00 pm

Panel Discussion

SESSION 5

Conv. Ctr. Room B2: Thurs. 2:00 to 3:00 pm

Applications

2:00 pm: Measurements-based performance evaluation of 36 wireless networks supporting m-health services, K. E. Wac, Univ. de Genève (Switzerland) and University of Twente (Netherlands); R. Buls, A. van Halteren, Univ. Twente (Netherlands); D. Konstantas, Univ. de Genève (Switzerland); V. Nicola, Univ. Twente (Netherlands) [5680-19]

2:30 pm: Autonomous analysis of interactive systems with self-propelled instrumentation, A. V. Mirtorodskyi, B. P. Miller, Univ. of Wisconsin/Madison [5680-20]

3:00 pm: AVPUC: automatic video production with user customization, B. Yu, K. Nahrstedt, Univ. of Illinois/Urbana-Champaign [5680-21]

Coffee Break 3:30 to 4:00 pm

SESSION 6

Conv. Ctr. Room B2: Thurs. 4:00 to 5:30 pm

Video Streaming

4:00 pm: Multipath streaming: optimization and evaluation, S. Abdouni, W. C. Cheng, A. L. Chow, L. Golubchik, Univ. of Southern California; A. W. Lee, Univ. of Maryland; J. C. S. Lui, Chinese Univ. of Hong Kong (Hong Kong China) [5680-22]

4:30 pm: Service composition for advanced multimedia applications, J. Liang, K. Nahrstedt, Univ. of Illinois/Urbana-Champaign [5680-23]

5:00 pm: Experimental analysis of DCT-based approaches for fine-grain multiresolution video, J. Huang, W. Feng, J. Walpole, Oregon Health and Science Univ.; W. Jouve, Portland State Univ. [5680-24]
Security, Steganography, and Watermarking of Multimedia Contents VII

Conference Chairs: Edward J. Delp III, Purdue Univ.; Ping W. Wong, IDzap LLC

Program Committee: Adnan M. Altattar, Digimarc Corp.; Mauro Barni, Univ. degli Studi di Siena (Italy); Jeffrey A. Bloom, Sarnoff Corp.; Gordon W. Braudaway, IBM Thomas J. Watson Research Ctr.; Ingemar J. Cox, Univ. College London (United Kingdom); Jana Dittmann, Otto-von-Guericke-Universität Magdeburg (Germany); Ahmet M. Eskicioglu, Brooklyn College; Jessica Fridrich, State Univ. of New York/Binghamton; Tom Kalker, Philips GmbH (Netherlands) and Technische Univ. Eindhoven (Netherlands); Martin Kutter, AlpVision SA (Switzerland); Inald L. Lagendijk, Technische Univ. Delft (Netherlands); Benoît M. Macq, Univ. Catholique de Louvain (Belgium); Nasir D. Memon, Polytechnic Univ.; Pierre Moulin, Univ. of Illinois/Urbana-Champaign; Fabien A. P. Petitcolas, Microsoft Research Cambridge (United Kingdom); Christine I. Podilchuk, Rutgers Univ.; Claus Vielhauer, Otto-von-Guericke-Universität Magdeburg (Germany); Min Wu, Univ. of Maryland/College Park

Monday 17 January

SESSION 1
Conv. Ctr. Room C2/C3 .......... Mon. 8:40 to 10:00 am
Special Session: Steganography and Steganalysis
Chair: Jessica Fridrich, State Univ. of New York/Binghamton
8:40 am: Resampling and the detection of LSB matching in color bitmaps, A. D. Ker, Oxford Univ. Computing Lab. (United Kingdom) .......... [5681-01]
9:00 am: ML detection of steganography, M. T. Hogan, National Univ. Of Ireland/Dublin (Ireland); C. G. Silvestre, N. J. Hurley, Univ. College Dublin (Ireland); K. M. Whelan, National Univ. Of Ireland/Dublin (Ireland) .... [5681-02]
9:20 am: Space filling curves in steganalysis, A. Westfeld, Technische Univ. Dresden (Germany) ........ [5681-03]
9:40 am: Steganalysis of spread spectrum data hiding exploiting cover memory, K. M. Sullivan, U. Madhow, S. Chandrasekaran, B. Manjunath, Univ. of California/Santa Barbara .......... [5681-04]
Coffee Break ............................................. 10:00 to 10:30 am

SESSION 2
Conv. Ctr. Room C2/C3 .......... Mon. 10:30 am to 12:30 pm
Security Systems
Chair: Ahmet M. Eskicioglu, CUNY/Brooklyn College
10:30 am: Efficient secure image transmission: compression integrated with encryption, P. Salama, B. King, Indiana Univ. .......... [5681-05]
10:50 am: A model for improving the performance of feature extraction based robust hashing, E. P. McCarthy, F. Balado, G. Silvestre, N. Hurley, National Univ. of Ireland/Dublin (Ireland) .......... [5681-06]
11:10 am: Cumulant-based image fingerprints, L. Yu, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) and Harbin Institute of Technology (China); M. Schmucker, C. Busch, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); S. Sun, Harbin Institute of Technology (China) .......... [5681-07]
11:30 am: Development of a platform offering video copyright protection and security against illegal distribution, E. Sayrol, M. Fernandez, M. Siorano, Univ. Politecnica de Catalunya (Spain) ........ [5681-08]
12:10 pm: Group-oriented joint coding and embedding technique for multimedia fingerprinting, S. He, M. Wu, Univ. of Maryland/College Park .......... [5681-10]
Lunch Break ............................................. 12:30 to 1:40 pm

SESSION 3
Conv. Ctr. Room C2/C3 .......... Mon. 1:40 to 3:40 pm
Attacks
Chair: Benoît M. Macq, Univ. Catholique de Louvain (Belgium)
1:40 pm: Shedding light on some possible remedies against watermark de-synchronization: a case study, M. Barni, Univ. degli Studi di Siena (Italy) .......... [5681-11]
2:00 pm: Additive non-Gaussian noise attacks on the Scalar Costa Scheme (SCS), R. Tzschoppe, R. Bäuml, J. Huber, A. Kaup, Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany) .......... [5681-12]
2:20 pm: Time jitter vs. additive noise in a game theory context, A. Zaidi, R. Boyer, P. Duhamel, Supélec (France) .......... [5681-13]
2:40 pm: Worst case additive attack against quantization-based watermarking techniques: joint study of probability of error and mutual information, J. Vila-Forcén, S. V. Voloshynovskiy, O. KOval, Univ. de Genève (Switzerland); F. Pérez-González, Univ. de Vigo (Spain); T. Pun, Univ. de Genève (Switzerland) .......... [5681-14]
3:00 pm: Robust mesh-based content-dependent image watermarking with resistance to both geometric attack and estimation attack, C. Lu, S. Sun, Institute of Information Science (Taiwan); P. Chang, National Central Univ. (Taiwan) .......... [5681-15]
3:20 pm: Coping with local geometric attacks by means of optic-flow-based resynchronization for robust watermarking, R. Caldelli, A. De Rosa, R. Becarelli, Univ. degli Studi di Firenze (Italy); M. Barni, Univ. degli Studi di Siena (Italy) .......... [5681-16]

SESSION 4
Conv. Ctr. Room C2/C3 .......... Mon. 4:20 to 6:00 pm
Watermarking Methods I
Chair: Ingemar J. Cox, Univ. College London (United Kingdom)
4:00 pm: Embedding multiple watermarks in the DFT domain using low and high frequency bands, E. Ganic, S. D. Dester, A. M. Eskicioglu, CUNY/Brooklyn College .......... [5681-17]
4:20 pm: TCO-based quantizer design for data hiding in images, N. Liu, K. P. Subbalakshmi, Stevens Institute of Technology .......... [5681-18]
4:40 pm: DWT-SVD based semi-blind image watermarking scheme, E. Ganic, A. M. Eskicioglu, CUNY/Brooklyn College .......... [5681-19]
5:00 pm: Handling uneven embedding capacity in binary images: a revisit, M. Wu, Univ. of Maryland/College Park; J. Frölich, M. Goljan, State Univ. of New York/Binghamton; H. Gou, Univ. of Maryland .......... [5681-20]
5:20 pm: Ensuring gain-invariance in high-rate data hiding, F. Perez-Gonzalez, C. Mosquera, Univ. de Vigo (Spain); M. Barni, A. Abrardo, Univ. degli Studi di Siena (Italy) .......... [5681-21]
5:40 pm: Integer DCT-based reversible image watermarking by adaptive coefficient modification, B. Yang, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) and Harbin Institute of Technology (China); M. Schmucker, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); X. Niu, Harbin Institute of Technology (China); C. Busch, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); S. Sun, Harbin Institute of Technology (China) .......... [5681-23]
Tuesday 18 January

Conf. Ctr. Room C2/C3 ............... Tues. 9:30 am to 12:00 pm

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

9:30 am: Three-dimensional image quality measurement for the benchmarking of 3D watermarking schemes, P. Rondao-Alfase, M. S. De Craene, F. Lefebvre, B. Marcq, Univ. Catholique de Louvain (Belgium) .................................... [5681-24]

9:50 am: Further progress in watermarking evaluation testbed (WET), H. C. Kim, E. Lin, E. J. Delp III, Purdue Univ. ............................................. [5681-25]

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

10:40 am: Benchmarking steganographic and steganalysis techniques, M. Kharrazi, H. T. Sencar, N. Memon, Polytechnic Univ. ........................................ [5681-26]

11:00 am: Characterization of steganographic algorithms using software metrics, C. D. Heitzenrater, Air Force Research Lab. .................................... [5681-27]

11:20 am: Application-oriented audio watermark benchmark service, A. Lang, J. Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany); E. J. Delp III, Purdue Univ. ............................................. [5681-28]

11:40 am: Framework for data-driven algorithm testing, W. Funk, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); D. Kirchner, Technische Univ. Darmstadt (Germany) ........................................ [5681-29]

Lunch/Exhibition Break ....................... 12:00 to 1:20 pm

SESSION 6

Conv. Ctr. Room C2/C3 ............... Tues. 1:20 to 3:00 pm

Theoretical Methods
Chair: Pierre Moulin, Univ. of Illinois/Urbana-Champaign

1:20 pm: Applying Erez and Ten Brink's dirty paper codes to data-hiding, P. Comesaña Alfaro, F. Pérez-González, Univ. de Vigo (Spain); F. M. J. Willems, Technische Univ. Eindhoven (Netherlands) ................................. [5681-30]

1:40 pm: Achievable error exponents for watermarking, P. Moulin, Y. Wang, Univ. of Illinois/Urbana-Champaign .................................................. [5681-31]

2:00 pm: Embedding encryption into Lempel-Ziv coders, D. Xie, C. C. J. Kuo, Univ. of Southern California .................................................. [5681-32]

2:20 pm: Writing on wet paper, J. Fridrich, M. Goljan, D. Soukal, State Univ. of New York/Binghamton; P. Lisonek, Simon Fraser Univ. (Canada) ..................... [5681-33]

2:40 pm: Spread spectrum vs. quantization-based data hiding: misconceptions and implications, L. Pérez-Freire, F. Pérez-González, Univ. de Vigo (Spain) ........................ [5681-34]

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

SESSION 7

Conv. Ctr. Room C2/C3 ............... Tues. 3:30 to 5:30 pm

Video Methods
Chair: Adnan M. Alattar, Digimarc Corp.

3:30 pm: Applying interest operators in semi-fragile video watermarking, S. Thiemert, Fraunhofer Institut für Integrierte Publikations- und Informationssysteme (Germany); H. Sahbi, INRIA (France); M. Steinbach, Fraunhofer Institut für Integrierte Publikations- und Informationssysteme (Germany) ........................ [5681-35]

3:50 pm: Robust video watermarking via optimization algorithm for quantization of pseudo-random semi-global statistics, M. Kucukoguz, Univ. of Washington; O. Harmanci, Univ. of Rochester and Microsoft Corp.; M. K. Mihcak, R. Venkatesan, Microsoft Corp. ........................ [5681-36]

4:10 pm: Temporal synchronization of watermarked video using image hashing, O. Harmanci, Univ. of Rochester and Microsoft Research; K. Mihcak, Microsoft Corp. .................................................. [5681-37]

4:30 pm: Robust digital watermark solution for interlaced frames of MPEG video data, E. Hauer, M. Steinbach, Fraunhofer Institut für Integrierte Publikations- und Informationssysteme (Germany) .................................................. [5681-38]

4:50 pm: Motion-compensated filtering for video watermarking, M. U. Celik, G. Sharma, Univ. of Rochester; M. Tekalp, Univ. of Rochester and Koc Univ. (Turkey) .................................................. [5681-39]

5:10 pm: Use of inferential statistics to estimate error probability of video watermarks, I. Echizen, Hitachi, Ltd. (Japan); H. Yoshiura, Univ. of Electro-Communications (Japan); Y. Fujii, T. Yamada, S. Izuoka, Hitachi, Ltd. (Japan) [5681-40]

Wednesday 19 January

Plenary Speaker ......................... Wed. 8:30 to 9:15 am
Marriott Hotel: San Jose Ballroom

The Future of Computer Graphics: Realism or Abstraction?
Pat Hanrahan, Stanford Univ.
See pg. x for details.

SESSION 8

Conv. Ctr. Room C2/C3 ............... Wed. 9:30 to 11:40 am

Other Domains
Chair: Gordon W. Baudaway, IBM Corp.

9:30 am: Feature-based watermarking of 3D objects: towards robustness against remeshing and de-synchronization, P. Rondao-Alfase, B. Macq, Univ. Catholique de Louvain (Belgium) ........................................ [5681-41]

9:50 am: High-capacity reversible watermarking for 2D vectordata, M. Voigt, Technische Univ. Darmstadt (Germany); B. Yang, Harbin Institute of Technology (China); C. Busch, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) ........................................ [5681-42]

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

10:40 am: Modeling the print-scan process for resilient data hiding, K. Solanki, U. Madhow, B. S. Manjunath, S. Chandrasekaran, Univ. of California/Santa Barbara .................................................. [5681-43]

11:00 am: Printer identification based on grayscale co-occurrence features for security and forensic applications, A. K. Mikkilineni, P. Chiang, G. N. Ali, G. T. C. Chiu, J. P. Allebach, E. J. Delp III, Purdue Univ. .................................................. [5681-44]

11:20 am: Natural language text watermarking, M. Karahan, C. M. Taskiran, E. J. Delp III, Purdue Univ. .................................................. [5681-45]

Lunch/Exhibition Break ....................... 11:40 am to 1:10 pm

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SESSION 9
Conv. Ctr. Room C2/C3  ...............  Wed. 1:10 to 3:10 pm
Special Session: Biometrics
Chairs: Claus Vielhauer, Otto-von-Guericke-Univ. Magdeburg (Germany); Ton Kalker, Philips GmbH (Netherlands)
1:10 pm: Multilevel 2D bar codes: toward high-capacity storage modules for multimedia security and management, R. Villan, O. V. Koval, S. V. Voloshynovsky, T. Pun, Univ. de Genève (Switzerland) ............................... [5681-46]
1:30 pm: Hiding phase-quantized biometrics: a case of steganography for reduced-complexity correlation filter classifiers, P. Hennings, M. Savvides, B. V. Kumar, Carnegie Mellon Univ. ........................................... [5681-47]
2:10 pm: Quaternion correlation filters for color face recognition, C. Xie, B. Vijaya Kumar, Carnegie Mellon Univ. .......................... [5681-49]
2:30 pm: Watermarking algorithm for map and chart images, M. A. Masry, Cornell Univ. ................................................ [5681-50]
2:50 pm: Finding metadata in speech and handwriting biometrics, J. Dittmann, C. Vielhauer, Otto-von-Guericke-Univ. Magdeburg (Germany); P. K. Dutta, T. K. Basu, Indian Institute of Technology Kharagpur (India) ........................ [5681-51]
Coffee Break .............................. 3:10 to 3:40 pm

SESSION 10
Conv. Ctr. Room C2/C3  ...............  Wed. 3:40 to 6:00 pm
Watermarking Methods II
Chair: Ping Wah Wong, IDiap LLC
3:40 pm: Maximum likelihood amplitude scale estimation for quantization-based watermarking in the presence of dither, I. D. Shterev, R. L. Lagendijk, Technische Univ. Delft (Netherlands) ............................ [5681-52]
4:00 pm: Geometrically robust digital image watermarking using scale normalization and flowline curvature, C. Woo, J. Du, B. Pham, Queensland Univ. of Technology (Australia) ............................... [5681-53]
4:20 pm: Watermarking in JPEG bitstream, R. J. Berger II, B. G. Mobasseri, Villanova Univ. ................................................. [5681-54]
5:00 pm: Simple reversible watermarking schemes, D. Coltur, Univ. Valahia Targoviste (Romania); A. Treemeu, Univ. Jean Monnet (France) ................................. [5681-56]
5:20 pm: Robustness improvement of known-host-state watermarking using host statistics, O. Koval, S. V. Voloshynovsky, F. Deguilillaume, Univ. de Genève (Switzerland); F. Pérez-González, Univ. de Vigo (Spain); T. Pun, Univ. de Genève (Switzerland) ................................................. [5681-57]
5:40 pm: Illustration watermarking: an object based approach for digital images, T. Vogel, J. Dittmann, Otto-von-Guericke-Univ. Magdeburg (Germany) ........................... [5681-58]

Thursday 20 January
SESSION 11
Conv. Ctr. Room C2/C3  ...............  Thurs. 8:30 am to 12:00 pm
Steganography
Chair: Nazir D. Memon, Polytechnic Univ.
8:30 am: On the choice of risk optimal data embedding strategy, safe embedding rate, and passive steganalysis, R. Chandramouli, Stevens Institute of Technology (United States) ............................ [5681-59]
8:50 am: Maximum likelihood estimation of length of secret message embedded using +/- K steganography in spatial domain, J. Fridrich, D. Soukal, M. Goljan, State Univ. of New York/Binghamton ................................................. [5681-60]
9:10 am: Steganography and steganalysis in voice over IP scenarios: operational aspects and first experiences with a new steganalysis tool set, J. Dittmann, D. Hesse, V. Thomas, Otto-von-Guericke-Univ. Magdeburg (Germany) ........................... [5681-61]
9:30 am: Unitary embedding for data hiding with the SVD, C. Bergman, J. L. Davidson, Iowa State Univ. ................................................. [5681-62]
9:50 am: Forensic steganalysis: determining the stego key in spatial domain steganography, J. Fridrich, M. Goljan, D. Soukal, T. S. Holotyak, State Univ. of New York/Binghamton ................................................. [5681-63]
Coffee Break ................................ 10:10 to 10:40 am
10:40 am: On steganalysis of plus-minus one embedding of continuous-tone images, P. W. Wong, IDiap LLC; H. Chen, California State Univ./Hayward ................................................. [5681-64]
11:00 am: New multilevel DCT, feature vectors, and universal blind steganalysis, S. Agaian, H. Cai, Univ. of Texas/San Antonio ................................................. [5681-65]
11:20 am: Steganalysis in recorded speech, M. K. Johnson, S. Lyu, H. Farid, Dartmouth College ................................................. [5681-66]
Lunch Break ..................................................

SESSION 12
Conv. Ctr. Room C2/C3  ...............  Thurs. 1:30 to 4:20 pm
Special Session: Watermarking Security
Chairs: Mauro Barni, Univ. degli Studi di Siena (Italy); Fernando Pérez-González, Univ. de Vigo (Spain)
1:30 pm: Collusion issue in video watermarking, G. Dobler, J. Dugelay, Institut Eurécom (France) ................................................. [5681-68]
1:50 pm: Achieving computational and unconditional security in authentication watermarking: analysis, Insights, and algorithms, C. Fei, Univ. of Toronto (Canada); M. K. Mikhak, Microsoft Corp.; T. Pun, Univ. de Genève (Switzerland) ................................................. [5681-69]
2:10 pm: Security analysis of robust data hiding with geometrically structured codebooks, E. Topak, S. V. Voloshynovsky, D. Koval, Univ. de Genève (Switzerland); M. V. Muddha, Microsoft Corp.; T. Pun, Univ. de Genève (Switzerland) ................................................. [5681-70]
2:30 pm: Detection in quantization-based watermarking: performance and security issues, F. Pérez-González, L. L. Pérez-Freire, P. Comesaña Alfaro, Univ. de Vigo (Spain) ................................................. [5681-71]
2:50 pm: New sensitivity analysis attack, M. M. El Choubassi, P. Moulin, Univ. of Illinois/Urbana-Champaign ................................................. [5681-72]
Coffee Break ................................ 3:10 to 3:40 pm
3:40 pm: Watermarking security, part I: theory, F. Cayre, INRIA (France); F. Fontaine, Univ. des Sciences et Technologies de Lille and CNRS (France); T. Furon, INRIA (France) ................................................. [5681-73]
4:00 pm: Watermarking security, part II: practice, F. Cayre, INRIA (France); F. Fontaine, Univ. des Sciences et Technologies de Lille (France) and CNRS (France); T. Furon, INRIA (France) ................................................. [5681-74]

SESSION 13
Conv. Ctr. Room C2/C3  ...............  Thurs. 4:20 to 5:20 pm
Audio Watermarking
Chair: Reginald L. Lagendijk, Technische Univ. Delft (Netherlands)
4:20 pm: Investigation of robustness in nonlinear audio watermarking, F. B. O’Donovan, N. J. Hurley, G. C. M. Silvestre, Univ. College Dublin (Ireland) ........................... [5681-75]
4:40 pm: Audio watermarking and partial encryption, M. Steinbach, S. Zmudzinski, Fraunhofer-Institut für Integrierte Publications- und Informationssysteme (Germany) ................................................. [5681-76]
5:00 pm: High-capacity invertible data hiding algorithm for digital audio, A. M. Alattar, B. Bradley, Digimarc Corp. ................................................. [5681-77]
Storage and Retrieval Methods and Applications for Multimedia 2005

Tuesday 18 January

SESSIOm 1
Conv. Ctr. Room B1 ............... Tues. 9:30 to 10:10 am
Fast Storage Access
Chair: Rainer W. Lienhart, Univ. Augsburg (Germany)
9:30 am: Beowulf class parallel remote sensed image database retrieval system developed in ASSIST environment, V. Di Leccio, I. Guarino, A. Guerrero, Politecnico di Bari (Italy) ... [5682-01]
9:50 am: Fast and constant time random access decoding with (log2(n)) block seek time, Y. Cho, S. Cho, W. A. Pearlman, Rensselaer Polytechnic Institute ... [5682-02]
Coffee Break ........................................ 10:10 to 10:40 am

SESSIOm 2
Conv. Ctr. Room B1 ............... Tues. 10:40 to 12:00 pm
Storage Security
Chair: Ajay Divakaran, Mitsubishi Electric Research Labs.
10:40 am: Protecting multimedia data in storage: a survey of techniques emphasizing encryption, P. T. Stanton, Univ. of Illinois/Urbana-Champaign and National Ctr. for Supercomputing Applications and U.S. Army; W. Yurchik, Univ. of Illinois/Urbana-Champaign ... [5682-03]
11:00 am: Tamper-resistant storage techniques for multimedia systems, E. A. Haubert, Univ. of Illinois/Urbana-Champaign; J. Tucek, Univ. of Illinois/Urbana-Champaign and National Ctr. for Supercomputing Applications; L. J. Brumbaugh, W. Yurchik, Univ. of Illinois/Urbana-Champaign ... [5682-04]
11:20 am: Techniques and challenges of immutable storages with applications in multimedia, R. Hasan, National Ctr. for Supercomputing Applications and Univ. of Illinois/Urbana-Champaign; P. Stanton, Univ. of Illinois/Urbana-Champaign; J. Tucek, National Ctr. for Supercomputing Applications and Univ. of Illinois/Urbana-Champaign; W. Yurchik, J. Rosendale, National Ctr. for Supercomputing Applications; R. Boostra, National Ctr. for Supercomputing Applications and Argonne National Lab. and TREC ... [5682-05]
11:40 am: Human Identification using correlation metrics of Iris images, M. Celenk, M. Brown, Y. Luo, J. Kaufman, L. Ma, Q. Zhou, Ohio Univ. ... [5682-06]
Lunch/Exhibition Break ................. 12:00 to 1:15 pm
Conference 5682 • Conv. Ctr. Room B1

Wednesday 19 January

**SESSON 5**

Conv. Ctr. Room B1  Wed. 9:30 to 10:30 am

**Image Indexing**

Chair: Simone Santini, Univ. of California/San Diego

9:30 am: Efficiently querying spatial histograms, S. Santini, A. Gupta, Y. Wang, Univ. of California/San Diego  [5682-19]

9:50 am: Image retrieval using combination of color and multiresolution texture features, Y. D. Chun, J. K. Sung, N. C. Kim, Kyungpook National Univ. (South Korea)  [5682-20]

10:10 am: Image clustering method based on cross-correlation of color histograms, Y. Wu, K. Hudson, Hewlett-Packard Co.  [5682-21]

Coffee Break  10:30 to 11:00 am

**SESSON 6**

Conv. Ctr. Room B1  Wed. 11:00 am to 12:20 pm

**Image Retrieval**

Chair: Noboru Babaguchi, Osaka Univ. (Japan)

11:00 am: Automated situation clustering of home photos for digital aluming, S. Yang, Information and Communications Univ. (South Korea); S. Kim, Samsung Advanced Institute of Technology (South Korea); S. Yang, K. S. Seo, Y. M. Ro, Information and Communications Univ. (South Korea)  [5682-22]

11:20 am: Relevance feedback image retrieval scheme using multi-Instance and pseudo-image concepts, F. Chang, H. Hang, National Chiao Tung Univ. (Taiwan)  [5682-23]

11:40 am: Lightweight image retrieval system for paintings, T. Lombardi, S. Cha, C. C. Tappert, Pace Univ.  [5682-24]

12:00 pm: New method for similarity retrieval of Iconic Image database, S. Hsieh, Hwa-Hsia College of Technology and Commerce (Taiwan); C. Hsu, National Taiwan Univ. of Science and Technology (Taiwan)  [5682-25]

Lunch/Exhibition Break  12:20 to 1:40 pm

**SESSON 7**

Conv. Ctr. Room B1  Wed. 1:40 to 3:00 pm

**Audio Processing**

Chair: Jonathan T. Foote, FX Palo Alto Lab., Inc.

1:40 pm: Content-adaptive multistage decision approach to fuzzy musical genre classification (Invited Paper), Y. Shiu, C. C. J. Kuo, Univ. of Southern California  [5682-26]

2:00 pm: Modeling sports highlights using a time series clustering framework and model, R. Radhakrishnan, Polytechnic Univ.; A. Divakaran, Mitsubishi Electric Research Labs.; I. Otsuka, Mitsubishi Electric Corp. (Japan); Z. Xiong, Mitsubishi Electric Research Labs.  [5682-27]

2:20 pm: Toward automatic music transcription: note extraction based on independent subspace analysis, J. Wellhausen, M. Höynck, RWTH-Aachen (Germany)  [5682-28]

2:40 pm: MPEG-7 based description Infrastructure for an audiovisual content analysis and retrieval system, W. Bailer, R. Schallauer, M. Hausenblas, G. Thallinger, Joanneum Research (Austria)  [5682-29]

Coffee Break  3:00 to 3:30 pm
Embedded Processors for Multimedia and Communications II

Conference Chairs: Subramania Sudharsanan, Queen's Univ. (Canada); V. Michael Bove, Jr., Massachusetts Institute of Technology; Sutharanathan Panchanathan, Arizona State Univ.


Monday 17 January

SESSION 1
Conv. Ctr. Room B2 ................. Mon. 9:00 to 10:00 am
Low-Power Architectures and Analysis
9:00 am: Instruction-level power dissipation in the Intel Itanium embedded microprocessor, A. Varma, Intel Corp. and Univ. of Maryland/College Park; E. Debes, I. Kozintsev, Intel Corp.; B. L. Jacob, Univ. of Maryland/College Park ............... [5683-01]
9:20 am: Energy-oriented optimization over VLIW embedded multimedia systems, Y. Hu, Q. Li, C. J. J. Kuo, Univ. of Southern California ....................... [5683-02]
9:40 am: Low-power hybrid-FPGA architecture design for computationally intensive applications in multimedia processing, A. Akoglu, A. Dasu, S. Panchanathan, Arizona State Univ. .......... [5683-03]
Coffee Break .................................. 10:00 to 10:30 am

SESSION 2
Conv. Ctr. Room B2 ................. Mon. 10:30 am to 12:10 pm
Processor Architectures
10:30 am: Breaking the I/O bottleneck for high-compute performance processing with Itensa.LX configurable and extensible processor architecture, G. A. Ezer, Tensilica Inc. .................. [5683-05]
10:50 am: 32b RISC/DSP media processor: MediadSP3201, C. Shi, W. Wang, P. Liu, Q. Yao, Zhejiang Univ. (China) .................... [5683-06]
11:30 am: Reconfigurable coprocessor architectures for 3D wavelet MCTF-based scalable video decoder, V. Akella, G. Landge, M. van der Schara, Univ. of California/Davis; ........................................ [5683-08]
11:50 am: Novel predicated data flow analysis based memory design for data and control intensive multimedia applications, A. Sudarsanam, S. Panchanathan, Arizona State Univ. .................. [5683-09]
Lunch Break .................................. 12:10 to 1:30 pm

SESSION 3
Conv. Ctr. Room B2 ................. Mon. 1:30 to 3:10 pm
Processors for MPEG-4 and H.264
1:30 pm: Embedded architecture for fast implementation of H.264/AVC subpixel interpolation, P. P. Dang, STMicroelectronics Inc. .................. [5683-10]
1:50 pm: MediaBench II: Video: expediting the next generation of video systems research, J. E. Fritts, F. W. Stelling, Washington Univ.; J. A. Tucek, Univ. of Illinois/Urbana-Champaign ............... [5683-11]
2:10 pm: Efficient mapping of the H.264 encoding algorithm onto multiprocessor DSPs, A. Gulati, T. G. Campbell, Cradle Technologies ....................... [5683-12]
2:30 pm: A hardware architecture for a context adaptive binary arithmetic coder, S. I. Sudharsanan, A. Cohen, Queen's Univ. (Canada) ............. [5683-13]
2:50 pm: Parallel model analysis and implementation for MPEG-4 encoder, I. Assadad, STMicroelectronics (France) and VERIMAG (France); S. Yovine, VERIMAG (France) ...................... [5683-14]
Coffee Break .................................. 3:10 to 3:40 pm

Tuesday 18 January

SESSION 4
Conv. Ctr. Room B2 ................. Mon. 3:40 to 5:20 pm
Compiler and Software Tools for Embedded Processors
3:40 pm: Improved approach of register allocation via graph coloring, L. Gao, C. Shi, Zhejiang Univ. (China) ............... [5683-15]
4:00 pm: Content adaptive integrated motion estimation and interpolation for embedded systems, Q. Zhang, Y. Dai, Univ. of Southern California; Q. Li, Everfocus Electronics Corp.; C. C. J. Kuo, Univ. of Southern California ............... [5683-16]
4:20 pm: Complexity-based deblocking filter for embedded media processors, Y. Dai, Q. Zhang, Univ. of Southern California; Q. Li, Everfocus Electronics Corp.; C. C. J. Kuo, Univ. of Southern California ............... [5683-17]
4:40 pm: SHRED: a CPU scheduler for heterogeneous applications, G. Coulson, Lancaster Univ. (United Kingdom); O. Moonian, Univ. of Mauritius (Mauritius) .......... [5683-18]
5:00 pm: Pipelining and bypassing in a RISC/DSP processor, G. Yu, Q. Yao, P. Liu, Z. Jiang, Zhejiang Univ. (China); F. Li, Stanford Univ. ...................... [5683-19]

SESSION 5
Conv. Ctr. Room B2 ................. Tues. 9:30 to 11:20 am
Multimedia Systems
10:10 am: Wireless video transmission techniques on MPEG-4 streaming systems, S. Cheng, National Cheng Kung Univ. (Taiwan) ....................... [5683-22]
Coffee Break .................................. 10:30 to 11:00 am
11:00 am: PLASMA: a component-based framework for building self-adaptive multimedia applications, D. Layaida, D. Hagimont, Institut National de Recherche en Informatique et en Automatique (France) .... [5683-23]

SESSION 6
Conv. Ctr. Room B2 ................. Tues. 11:20 am to 12:40 pm
Multimedia Algorithms
11:20 am: Reduced complexity frequency domain acquisition of DS-SS signals for embedded applications, D. Akopian, P. K. Sagiraju, S. Agaian, G. V. Raju, Univ. of Texas/San Antonio .......... [5683-24]
11:40 am: Concurrent brightness and contrast scaling for minimizing power consumption of an AMOLED display, W. Cheng, M. Pedram, Univ. of Southern California .......... [5683-25]
12:00 pm: New algorithm for computation of DCT by pyramidal addition, S. C. Balam, Univ. of Illinois/Chicago; D. Schonfeld, Univ. Of Illinois/Chicago .......... [5683-26]
12:20 pm: Compression of CCD raw images for digital still cameras, P. Sriman, PortalPlayer, Inc.; S. I. Sudharsanan, Queen’s Univ. (Canada) ...................... [5683-27]
Monday 17 January

SESSION 1
Conv. Ctr. Room B4  -----------  Mon. 9:30 to 10:20 am
Compression Techniques for Mobile Devices
Chair: Reiner Creutzburg, Fachhochschule Brandenburg (Germany)
9:30 am: Multiple description scalable coding scheme for mobile wireless video transmission (Invited Paper), H. Zheng, L. Yu, Fuzhou Univ. (China); C. W. Chen, Florida Institute of Technology (Invited Paper) [5684-01]
10:00 am: Simplified three-dimensional discrete cosine transform based video codec, I. J. Koviussaari, J. H. Takala, Tampere Univ. of Technology (Finland) [5684-02]
Coffee Break .......................... 10:20 to 10:50 am

SESSION 2
Conv. Ctr. Room B4  -----------  Mon. 10:50 to 11:50 am
Multimedia Signal Processing for Mobile Devices
Chair: Jarmo H. Takala, Tampere Univ. of Technology (Finland)
10:50 am: Visualization of medical images over wireless handheld devices, M. Wu, Univ. of Missouri/Columbia and Florida Institute of Technology; C. W. Chen, Florida Institute of Technology [5684-03]
11:10 am: Video frame rate conversion for mobile devices, W. P. Lee, H. Belt, E. van der Tol, Royal Philips Research Labs. (South Korea) [5684-04]
11:30 am: Motion estimation algorithms based on complex half-band filters for OMAP platform, C. D. Katsch, A. R. Boev, A. P. Gotchev, K. O. Egiazarian, J. T. Astola, Tampere Univ. of Technology (Finland) [5684-05]
Lunch/Exhibition Break .......................... 11:50 am to 1:30 pm

SESSION 3
Conv. Ctr. Room B4  -----------  Mon. 1:30 to 3:00 pm
HCI Issues for Mobile Devices
Chair: Reiner Creutzburg, Fachhochschule Brandenburg (Germany)
1:30 pm: MPEG-4 based 2D facial animation for mobile devices (Invited Paper), T. B. Riegel, Siemens AG (Germany) [5684-06]
2:00 pm: Fusion strategies for speech and handwriting modalities in HCI, C. Vielhauer, S. Schimke, Otto-von-Guericke-Universität Magdeburg (Germany); V. Thanassis, Y. Stylianou, Univ. of Crete (Greece) [5684-07]
2:20 pm: MIKE’s CONKER: a collaborative nonlinear knowledge elicitation repository for mobile HCI practitioners, D. Mohamedally, City Univ. of London (United Kingdom); S. Edlich, Fachhochschule Brandenburg (Germany); P. Zaphiris, H. Petrie, City Univ. of London (United Kingdom) [5684-08]
2:40 pm: A 3D character animation engine for multimodal interaction on mobile devices, E. Sandali, F. Lavagetto, P. Pisano, Univ. degli Studi di Genova (Italy) [5684-09]
Coffee Break .......................... 3:00 to 3:30 pm

Tuesday 18 January

SESSION 5
Conv. Ctr. Room B4  -----------  Tues. 9:30 to 10:10 am
Connectivity for Mobile Multimedia
Chair: Jarmo H. Takala, Tampere Univ. of Technology (Finland)
9:30 am: Design of a multimedia gateway for mobile devices, R. Hens, S. Van Hoecke, T. Verdickt, T. Bouve, F. Gielen, P. M. A. Demeester, Univ. Gent (Belgium) [5684-16]
9:50 am: A multimedia session-aware QoS provisioning scheme for cellular networks, M. Rizvi, Christopher Newport Univ.; S. Olariu, Old Dominion Univ. [5684-17]
Coffee Break .......................... 10:10 to 10:40 am
SESSION 6
Conv. Ctr. Room B4  .................  Tues. 10:40 to 11:40 am
Middleware and Distributed Computing
Chair: Reiner Creutzburg, Fachhochschule Brandenburg (Germany)
10:40 am: Aorta: a management layer for mobile peer-to-peer massive multiplayer games, H. Hörling, BitingBit (Germany); S. Edlich, Univ. Brandenburg (Germany); R. Hörling, BitingBit (Germany) .......................... [5684-18]
11:00 am: Grid-based Interaction for effective image browsing on mobile devices, R. U. Rosenbaum, H. Schumann, Univ. Rostock (Germany) .......................... [5684-19]
11:20 am: An OSGi compatible implementation of a java resource monitor, B. Van Den Bossche, N. Goeminne, F. Gielen, Univ. Gent (Belgium) .......................... [5684-20]
Lunch/Exhibition Break .......................... 11:40 am to 1:30 pm

SESSION 7
Conv. Ctr. Room B4  .................  Tues. 1:30 to 3:00 pm
Mobile Multimedia Services
Chair: Stefan Edlich, Univ. Brandenburg (Germany)
1:30 pm: Using multimedia content in intelligent mobile services (Invited Paper), F. Koch, Univ. Utrecht (Netherlands) .......................... [5684-21]
2:00 pm: Visual object recognition for mobile tourist Information systems, L. Paletta, G. Fritzi, Joanneum Research (Austria) .......................... [5684-22]
2:20 pm: Translating statistical Images to text summaries for partially sighted persons on mobile devices, G. B. Williams, Univ. of East London (United Kingdom) .......................... [5684-23]
2:40 pm: Evaluating a mobile location-based multimodal game for first-year students, S. C. J. Boll, Univ. of Oldenburg (Germany); P. Klante, J. Kriösche, Oldenburg Research and Development Institute (Germany) .......................... [5684-24]
Coffee Break .................................. 3:00 to 3:30 pm

SESSION 8
Conv. Ctr. Room B4  .................  Tues. 3:30 to 5:10 pm
Metadata, XML, and Content Retrieval for Mobile Multimedia
Chair: Reiner Creutzburg, Fachhochschule Brandenburg (Germany)
3:30 pm: Personal video retrieval and browsing for mobile users, A. Sachinopoulou, S. Måkel, S. Järvinen, P. Pietarila, J. Peltola, M. Jurvansuu, VTT Electronics (Finland) .......................... [5684-25]
3:50 pm: What could be the HTML in wireless broadcasting to handhelds?, A. Lugmayr, S. Niransen, S. Kall, Tampere Univ. of Technology (Finland); R. Creutzburg, Fachhochschule Brandenburg (Germany) and Tampere Univ. of Technology (Finland) .......................... [5684-26]
4:10 pm: The construction and integration of XML editor to mobile browser, M. M. Palvainen, T. Laakko, VTT Electronics (Finland) .......................... [5684-27]
4:30 pm: The effect of TV content in subjective assessment of video quality on mobile devices, S. H. Jumisko, V. P. Ivonen, K. A. Väänänen-Vainio-Mattila, Tampere Univ. of Technology (Finland) .......................... [5684-28]
4:50 pm: Content-based image retrieval on mobile devices, I. Ahmad, Nokia Corp. (Finland) and Tampere Univ. of Technology (Finland); S. Abdallah, S. Kiranyaz, M. Gabbouj, Tampere Univ. of Technology (Finland) .......................... [5684-29]
Tuesday 18 January

Marriott Hotel: Ballroom IV ............ Tues. 11:00 to 11:40 am

Integrated lossy, near-lossless, and lossless compression of medical videos

Authors: C. Serrão, Instituto Superior de Ciencias do Trabalho e da Empresa

Session 2

Marriott Hotel: Ballroom IV ............ Tues. 11:45 to 12:30 pm

Adaptive SPIHT for image coding based on curved wavelet transform

Authors: ProVision Communication Technologies, Ltd. (United Kingdom)

Session 3

Marriott Hotel: Ballroom V/VI ............ Tues. 12:30 to 1:10 pm

Reduced memory multilayer component rate allocation for JPEG2000

Authors: P. Kulkarni, A. Bilgic, M. W. Marcellin, J. Dagher, Univ. of Arizona; T. J. Flohr, J. C. Rountree, Science Applications International Corp.

Coffee Break

3:05 to 3:35 pm

Chair: Janusz Konrad, Boston Univ.

Lunch/Exhibition Break

12:40 am to 1:15 pm

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SESSION 5
Marriott Hotel: Willow Glen Room I ....... Tues. 1:45 to 4:35 pm
Investigative Image Processing

Chairs: Zeno J. Geradts. Netherlands Forensic Institute (Netherlands);
Lenny I. Rudin, Cognitex, Inc.

1:45 pm: Did Georges de la Tour use optical projections while painting Christ in the
Carpenter's Studio?, D. G. Stork, Richov Innovations, Inc. and Stanford
University. .................................................. [5685-24]
2:05 pm: Computer-assisted handwriting style identification system for questioned
document examination, S. Cha, Pace Univ.; S. Yoon, Yonsei Univ. (South Korea); C. C.
Tappert, Pace Univ.; Y. Lee, Yonsei Univ. (South Korea). .................. [5685-25]
2:25 pm: Segmentation of cartridge cases based on illumination and focus series,
C. Bren, Univ. Karlsruhe (Germany) ............................... [5685-26]
2:45 pm: Semiautomatic reconstruction of strip-shredded documents, P. De Smet, J.
De Bock, W. Philips, Univ. Gent (Belgium) ...................... [5685-27]

Coffee Break ............................................. 3:05 to 3:35 pm

3:35 pm: HandShape: a deformable models approach for hand shape extraction and
matching, M. C. d'Ornellas, Univ. Federal de Santa Maria
(Brazil) ................................................... [5685-28]
3:55 pm: Determining digital image origin using sensor imperfections, I. Lukas, J.
Friedrich, State Univ. of New York/Binghampton......... [5685-29]
4:15 pm: Meaningful geometrical methods for accurate forensic videogrammetry and
generalized reverse projection registration: parts Ia and I, L. Rudin, Cognitex, Inc.
and Ecole Normal Superieure (France); P. Monasse, P. Yu, Cognitex, Inc. ................ [5685-30]

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

Image enhancement by frequency extrapolation using a multiscale edge
representation, T. Jin, P. Fieguth, L. Winger, Univ. of Waterloo (Canada). [5685-93]
Processor for MPEG decoder SoC: a software/hardware co-design approach, G.
Yu, Q. Yao, P. Liu, Z. Jiang, Zhejiang Univ. (China); F. I. Stanford University. [5685-84]
Improved color interpolation using discrete wavelet transform, G. Spaminato, A.
Bruna, ST Microelectronics (Italy); G. Sanguedolce, E. Ardizzone, M. La Cascia,
Univ. di Palermo (Italy) ......................................... [5685-85]

Combined data partitioning and fine granularity scalability for channel adaptive
video transmission, K. Wittig, Y. Chen, Philips Research; M. van der Schaar, Univ.
of California/Davis ........................................ [5685-86]
Efficient Intramode decision algorithm for H.264 I-frames video downsampling,
T. Qian, J. Sun, Y. Wang, Shanghai Jiaotong Univ. (China) ........ [5685-87]
Fuzzy logic recursive motion detection for tracking and denoising of video
sequences, V. Zlokoci, M. De Geyer, S. Schulte, A. Pizurica, W. Philips, E. Kerre,
Univ. Gent (Belgium) ........................................ [5685-88]
Parameterized sketches from stereo images, D. Markovic, E. Stavrakis, M.
Gelautz, Technische Univ. Wien (Austria) ...................... [5685-90]
B-picture coding with motion-compensated frame rate up-conversion, H. Sasai,
S. Kondo, Matsushita Electric Industrial Co., Ltd. (Japan) .... [5685-90]
Rate-distortion optimized video summary generation and transmission over
packet lossy networks, P. V. Pahalawatta, Northwestern Univ.; Z. L. Motorola
Labs.; F. Zhai, A. K. Catsaggelos, Northwestern Univ. ....... [5685-91]
Linear filtering of image subbands for low-complexity postprocessing of decoded
color images, U. Bayazit, Isik Univ. (Turkey) ..................... [5685-92]

Computational algebraic topology-based video restoration, A. Rochel, D. Ziou,
M. Aucclair-Forier, Univ. de Sherbrooke (Canada) ............. [5685-93]
Fast stereo sequence estimation using edge-directional joint disparity-motion
estimation, Y. Kim, Yongsei Univ. (South Korea); C. Park, J. Lee, Korean
Broadcasting System (South Korea); K. Sohn, Yongsei Univ. (South Korea) [5685-94]

Motion-based morphological segmentation of wildlife video, N. M. Thomas, N.
Canagarajah, Bristol Univ. (United Kingdom) .................. [5685-95]
MPEG-4 constant-quality constant-bit-rate control, C. Pai, W. E. Lynch, Concordia
University (Canada) ........................................ [5685-96]
Complete system for head tracking using motion-based particle filter and
randomly perturbed active contour, N. Bouaynaya, D. Schonfeld, Univ. of Illinois/
Chicago .................................................... [5685-97]

Server scheduler design for distributed VoD service in content delivery networks,
Y. Zhao, C. J. Kuo, Univ. of Southern California ................. [5685-98]
Summarization and compression of motion capture data, X. Huang, W. Xu,
McMaster Univ. (Canada) ...................................... [5685-99]
Joint-power-distortion control in video coding, J. Liang, I. Ahmad, J. Luo, Univ.
of Texas/Arlington ........................................... [5685-100]

Error-resilient video coding using composed reference frame, G. Zhang, R. L.
Stevenson, Univ. of Notre Dame ................................ [5685-101]

Vision-based speaker location detection, J. Lim, J. Park, C. Lee, Yongsei Univ.
(South Korea) ................................................ [5685-102]
Real-time head tracking based on color and shape information, D. Jeong, Y. K.
Yang, D. Kang, J. B. Ra, Korea Advanced Institute of Science and Technology
(South Korea) ................................................ [5685-103]

Wireless physical layer error reports for efficient video coding and
communications, D. Harmanli, Univ. of Rochester; A. M. Tekalp, Univ.
of Rochester and Koc Univ. (Turkey) ............................ [5685-104]
Image segmentation using thick-fluid watersheds, R. Pires, P. De Smet, J. De
Bock, W. Philips, Univ. Gent (Belgium) ........................ [5685-105]
Energy-efficient video summarization and transmission over a slow fading
wireless channel, Z. Li, Motorola Labs. and Northwestern Univ.; F. Zhai, A. K.
Catsaggelos, T. Pappas, Northwestern Univ. ........................ [5685-106]

New lossless resolution motion estimation algorithm using PDE, adaptive
matching scan, and spiral search, J. Kim, K. Kang, Pukyung National Univ. (South
Korea); K. Moon, Pukyung National Univ. (South Korea) .......... [5685-108]

Current texture feature extraction method for region-based image segmentation,
H. Zhang, J. Fritts, S. Goldman, Washington Univ. ............. [5685-109]

Skin color constancy for unsupervised indoor skin segmentation, R. Gottumukkal,
V. Asar, Old Dominion Univ. .................................... [5685-110]

Computations of the symmetric cosine transform using Foronyi and Cleverhans's
recurrence formulae, M. F. Aburdene, H. M. Le, Bucknell Univ.; J. E. Dorband, NASA
Goddard Space Flight Ctr. .................................... [5685-111]

Adaptive update using visual models for lifting-based motion-compensated
temporal filtering, S. Li, Shanghai Jiao Tong Univ. (China) ....... [5685-112]
Zero-motion vector-based cross-diamond search algorithm for rapid block
matching motion estimation, X. Yi, N. Ling, Santa Clara Univ. ........ [5685-113]

Adaptive multiviewfore for low-complexity video compression with a stationary
camera perspective, S. Sankaran, R. Ansari, A. A. Khokhar, Univ. of Illinois/
Chicago .................................................... [5685-114]

JPEG2000-based Image communication for modern browsing techniques, R. U.
Rosenbaum, H. Schumann, Univ. Rostock (Germany) ...... [5685-115]
Improved error resilient H.264 coding scheme using SP/SI macroblocks, X. Zhou,
W. Jhung, C. J. Kuo, Univ. of Southern California ............... [5685-117]
Compressed-domain registration techniques for MPEG video, M. Lee, M. Shen,
C. J. Kuo, Univ. of Southern California ......................... [5685-118]

Effective predictive motion search for H.264 encoder with multiple reference
frames, C. Kim, C. J. K. Kuo, Univ. of Southern California ....... [5685-119]
Low-complexity video encoding using B-frame direct modes, Y. Liu, Purdue Univ.;
J. Prades-Hebut, Univ. Politecnica de Valencia (Spain); H. Salama, Indiana Univ.–Purdue
Univ./Indianapolis; E. J. Delp III, Purdue Univ. .................. [5685-121]

Parallel Implementation of MPEG-2 video decoder, A. Sarkar, K. Saha, S. N. Maiti,
STMicroelectronics (India) ....................................... [5685-122]
Pappas, Northwestern Univ. .................................... [5685-123]

A genetic algorithm for multisource wireless video distribution, L. Cheok, A.
Eleftheriadis, Columbia Univ. .................................. [5685-124]

A multiresolutional algorithm for halftone detection, O. G. Guleryuz, Epson
Research and Development, Inc. ............................... [5685-125]

Hand based biomeetry, E. Yoruk, H. Dutagaci, B. Sanikur, Bogazici Univ.
(Turkey) ................................................... [5685-127]
Wednesday 19 January

SESSION 6
Marriott Hotel: Ballroom IV  ............... Wed. 9:30 to 11:40 am
Video Coding
Chair: Edward J. Delp III, Purdue Univ.
9:50 am: Using game theory for perceptually tuned rate control algorithm in video coding, J. Luo, I. Ahmad, Univ. of Texas/Arlington  ............... [5685-32]
Coffee Break  .................. 10:10 to 10:40 am
10:40 am: Analysis of motion compensated temporal filtering versus motion compensated prediction, Y. Wu, J. W. Woods, Rensselaer Polytechnic Institute; K. Wang, Qualcomm  .................. [5685-33]
11:00 am: Rate distortion performance of leaky prediction layered video coding: theoretic analysis and results, Y. Liu, Purdue Univ.; J. Prades-Nebot, Univ. Politécnica de Valencia (Spain); G. W. Cook, Purdue Univ.; P. Salama, Indiana Univ.–Purdue Univ./Indianapolis; E. J. Delp III, Purdue Univ.  ............... [5685-34]
11:20 am: Optimization of transform coefficient selection and motion vector estimation considering inter-frame dependencies in hybrid video coding, B. Schumitsch, Stanford Univ.; H. Schwarz, Heinrich-Hertz-Institut (Germany)  ............... [5685-35]

SESSION 8
Marriott Hotel: Ballroom V/VI  ............... Wed. 9:30 to 10:10 am
Selective Encryption for Image/Video
Chair: Dan Schonfeld, Univ. of Illinois/Chicago
9:30 am: Layered complexity-aware scalable video encryption scheme, L. Guo, M. van der Schaar, Univ. of California/Davis  ............... [5685-44]
9:50 am: Selective encryption, JPEG, and Huffman codes, T. D. Lookabaugh, Univ. of Colorado  ............... [5685-45]
Coffee Break  .................. 10:10 to 10:40 am

SESSION 9
Marriott Hotel: Ballroom V/VI  ............... Wed. 10:40 am to 12:00 pm
Object Tracking
Chair: Dan Schonfeld, Univ. of Illinois/Chicago
10:40 am: Detection-based particle filtering for real-time multiple-head tracking applications, W. Qu, D. Schonfeld, Univ. of Illinois/Chicago  ............... [5685-46]
11:00 am: Sensor specific distributions for improved tracking of people, R. Bellens, S. Gautier, J. P. D'Haeayer, Univ. Gent (Belgium)  ............... [5685-47]
11:20 am: Particle filtering with multiple cues for object tracking in video sequences, P. Brassett, L. Milhavova, N. Canagarajah, D. Bull, Univ. of Bristol (United Kingdom)  ............... [5685-48]
Lunch/Exhibition Break  .................. 11:40 am to 1:45 pm

Conference 5685 • Marriott Hotel: Ballroom IV and Ballroom V/VI

SESSION 7
Marriott Hotel: Ballroom IV  ............... Wed. 1:45 to 4:55 pm
Scalable Video Coding
Chair: John W. Woods, Rensselaer Polytechnic Institute
2:00 pm: Scalable video coding based on motion-compensated temporal lifting scheme and matching pursuit algorithm (Invited Paper), L. Guo, M. van der Schaar, Univ. of California/Davis; B. Olshausen, Redwood Neuroscience Institute; D. Warland, Univ. of California/Davis  ............... [5685-37]
2:35 pm: Importance of motion in motion-compensated temporal discrete wavelet transforms (Invited Paper), J. Konrad, N. Bozinovic, Boston Univ.  ............... [5685-38]
3:00 pm: Fully scalable video compression with sample-adaptive lifting and overlapped block motion (Invited Paper), D. S. Taubman, Univ. of New South Wales (Australia); R. Mathew, Univ. of New South Wales (Australia) and National ICT Australia, Ltd. (Australia); N. Mehrseresht, Univ. of New South Wales (Australia)  ............... [5685-39]
Coffee Break  .................. 3:25 to 3:55 pm
3:55 pm: Fully scalable video coding with packed stream, M. F. López Martínez, Univ. de Almería (Spain) and Max-Planck-Institut für Astronomie (Germany); S. García Rodríguez, J. M. Dana, V. González Ruiz, I. García Fernández, Univ. de Almería (Spain)  ............... [5685-41]
4:35 pm: Scalable video transmission over Rayleigh fading channels using LOPC codes, M. Bansal, L. P. Kondi, Univ. at Buffalo  ............... [5685-43]

SESSION 10
Marriott Hotel: Ballroom V/VI  ............... Wed. 1:45 to 4:55 pm
Computer Vision
Chair: Ajay Divakaran, Mitsubishi Electric Research Labs.
1:45 pm: Pixels to objects: a generic vision front end, C. Sullender, North Shore Circuit Design, LLP and Evermore Systems, Inc.  ............... [5685-50]
2:05 pm: Real-time 3D interface using uncalibrated cameras, N. L. Chang, Hewlett-Packard Labs.  ............... [5685-51]
2:25 pm: An accurate semiautomatic segmentation scheme based on watershed and change detection mask, C. De Roover, Univ. Catholique de Louvain (Belgium); M. Gabbouj, Tampere Univ. of Technology (Finland); B. Macq, Univ. Catholique de Louvain (Belgium)  ............... [5685-52]
2:45 pm: Optimized mean shift algorithm for color segmentation in image sequences, W. Bailer, P. Schallauer, Joanneum Research (Austria); H. Bergur Haraldsson, Tokyo Institute of Technology (Japan); H. Rehatschek, Joanneum Research (Austria)  ............... [5685-53]
Coffee Break  .................. 3:05 to 3:35 pm
3:35 pm: Estimating physical camera parameters based on quadrilaterals and multisprite motion estimation, D. Farin, Technische Univ. Eindhoven (Netherlands); P. H. N. de With, Technische Univ. Eindhoven (Netherlands) and LogicatCMG (Netherlands)  ............... [5685-54]
4:15 pm: Image morphing and interpolation using triangulation, X. Sun, E. Dubois, Univ. of Ottawa (Canada)  ............... [5685-56]
Thursday 20 January

**SESSION 11**
Marriott Hotel: Ballroom IV 9:00 to 11:55 am
Chair: Susie J. Wee, Hewlett-Packard Labs.

9:00 am: XML-based multimedia organization for adaptive presentation and transmission, Y. Chen, C. C. J. Kuo, Univ. of Southern California
9:20 am: Dynamic multi-act media sharing games in peer-to-peer networks, R. Sood, M. van der Schaar, Univ. of California/Davis
9:40 am: Image transmission system using adaptive joint source and channel decoding, W. Liu, D. G. Daut, Rutgers Univ.

Coffee Break 10:00 to 10:30 am

10:30 am: Multimedia proxy adaptive scheduler driven by perceptual quality for multi-user environment, M. Carli, A. Neri, S. Laureti, Univ. degli Studi di Roma Tre
10:50 am: Rate-distortion-based scheduling of video with multiple decoding paths, H. Wang, A. Ortega, Univ. of Southern California
11:10 am: Energy allocation and operational lifetime control for wireless video sensors, Z. He, Univ. of Missouri/Columbia
11:30 am: Multiple description distributed image coding with side information for mobile wireless transmission (Invited Paper), M. Wu, Univ. of Missouri/Columbia

11:50 am: Multilevel projective image registration technique, I. Guarneri, M. Nanni, Univ. degli Studi di Roma Tre; G. de Haan, Philips Research Eindhoven.

**SESSION 13**
Marriott Hotel: Ballroom V/VI 9:00 to 10:00 am
Chair: William A. Pearlman, Rensselaer Polytechnic Institute

9:00 am: Network-driven Wyner-Ziv video coding using forward prediction, L. Liu, Y. Liu, E. J. Delp III, Purdue Univ.
9:20 am: Video coding scheme using irregular binning and iterative decoding, K. Choi, Univ. of Southern California and Dalitech Co. (South Korea)
9:40 am: Systematic lossy forward error protection versus layered coding with unequal error protection, S. D. Rane, B. Girod, Stanford Univ.

Coffee Break 10:00 to 10:30 am

**SESSION 14**
Marriott Hotel: Ballroom V/VI 10:30 to 11:50 am
Chair: Erwin B. Bellers, Philips Semiconductors

10:30 am: Architectural implications for high-quality video format conversion, E. B. Bellers, J. Janssen, Philips Semiconductors
10:50 am: Subjective evaluation of de-interlacing techniques, M. Zhao, Technische Univ. Eindhoven (Netherlands); G. de Haan, Philips Research Eindhoven (Netherlands)
11:10 am: Multilevel projective image registration technique, I. Guarneri, M. Guamera, STMicroelectronics (Italy); G. Lupica, S. Casale, Univ. di Catania (Italy)
11:30 am: Improved adaptive deblocking filter for MPEG video decoder, D. Kwon, M. Shen, C. C. J. Kuo, Univ. of Southern California

Lunch Break 11:50 am to 1:30 pm

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Conference 5685 • Marriott Hotel: Ballroom IV and Ballroom V/VI

**SESSION 12**
Marriott Hotel: Ballroom IV 1:30 to 4:55 pm
Challenges in Real-World Media Streaming
Chair: Viswanathan Swaminathan, Sun Microsystems Inc.; John G. Apostolopoulos, Hewlett-Packard Labs.

1:30 pm: Robust media processing on non-real-time power-constrained systems (Invited Paper), J. McVeigh, Intel Corp.
1:55 pm: Building adaptive applications: on the need for congestion control (Invited Paper), C. Perkins, Univ. of Glasgow (United Kingdom)
2:20 pm: Media rights versus media security (Invited Paper), M. J. Baugher, Cisco Systems
2:45 pm: Technologies for a sustainable Internet streaming media marketplace (Invited Paper), M. D. Wise, America Online, Inc.

Coffee Break 3:10 to 3:40 pm

3:40 pm: Digital media in the home: technical and research challenges (Invited Paper), J. Ribas-Comera, Microsoft Corp.
4:05 pm: Networked media services in a media delivery infrastructure (Invited Paper), S. J. Wee, Hewlett Packard Labs.
4:30 pm: Challenges in media delivery systems and servers (Invited Paper), V. Swaminathan, Sun Microsystems Inc.

**SESSION 15**
Marriott Hotel: Ballroom V/VI 1:30 to 2:30 pm
Video Processing I
Chair: Robert L. Stevenson, Univ. of Notre Dame

1:30 pm: Motion estimation based on spatio-temporal correlations and pixel decimation, V. Sheinin, IBM Thomas J. Watson Research Ctr.
1:50 pm: Three-field motion estimation on interlaced video, C. Ciuhu, G. de Haan, Philips Research Labs. (Netherlands)
2:10 pm: Motion de-blurring by coupled nonlinear diffusion with discrete calculus adaptive to a motion direction, T. Saito, H. Harada, T. Komatsu, Kanagawa Univ. (Japan)

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Participants

Bozma, H. Isil [5671-24]S5
Bradley, Brett [5681-27]S13
Bradshaw, Michael K. [5680-13]S3
Bramble, Simon K. El123
ProComm
Brandt, Scott A. 5680
Braun, Dan [5680-08]S3
Brassnet, Paul [5685-48]S9
Braudaway, Gordon W. 5681
ProComm, 5681 S8
SessChr
Bredu, Jörg 5671 ProComm
Brein, Christopher [5685-26]S9
Brenner, Eli [5660-51]S11
Brill, Michael H. 5666
ProComm, 5666 S10
SessChr
Brinkschulte, Uwe 5669
ProComm
Brolly, Xavier L. C. [5666-50]S11
Broser, Philip I. [5672-05]S2
Brown, Barry A. T. 5684
ProComm
Brown, Michael 5682-06 S2
Brumbaugh, Larry J. [5682-04]S2
Bruna, Arcangelo [5678-12]S3, 5685-8]S16
Bryanston-Cross, Peter [5668-32]S6
Buchholz, Henrik [5669-06]S2
Bücklen, Anjo [5664A-44]S11
Buehrmann, Thomas [5666-63]S12
Bueltelhofer, Heinrich H. [5664-48]S11
Bues, Matthias 5664A-29]S7
Bui, Tien D. [5676-11]S3
Bull, Dave [5685-48]S9, 5684-05]S4
Bults, Richard 5680-19]S8
Buono, Paolo [5669-35]S8
Busch, Christoph [5680-17]S2, [5681-23]S4, 5681-42]S8
Bustamante, Fabian [5680-10]S5
Blüttgen, Bernhard [5665-01]S1
C
Caccia, Giuseppe [5685-19]S4
Caeli, Terry M. 5673
ProComm
Cai, Hong [5681-65]S11
Cai, Xinyuan [5677-25]S5
Cai, Zhen [5660-40]S13
Caignart, Olivier [5671-23]S5
Cairn, Stewart [5675-11]S2
Chang, Shih-Fu 5682
ProComm
Chang, Ti-chun [5667-59]S15
Chang, Undong [5673-39]S15
Chapman, Glenn H. [5677-11]S2
Charbon, Edouard [5685-33]S1
Chareyron, Gaël [5670-35]S9
Chaudhuri, Ajit [5665-36]S18, 5665-37]S9
Chaudhuri, Kapil [5687-10]S15
Chaudhuri, Siddhartha [5685-55]S10
Chellapilla, Rama 5673
ProComm, 5684-01]S1, 5684-03]S2, 5685 S4
SessChr, 5685-63]S11
Chen, Chang [5680-49]S4
Chen, Francine R. 5676
Chen, F. [5682-12]S3
Chen, Chun-Jen [5679-08]S2
Chen, Lihui [5671-12]S1
Cheng, Wei-Chung [5686-42]S9
Chow, Alix L.H. [5680-22]S6
Chow, Chun Tak [5684-31]S9
Chow, Alix L.H. [5686-42]S9
Chow, Alix L.H. [5686-42]S9
Chow, Alix L.H. [5686-42]S9
Chow, Alix L.H. [5686-42]S9
Chow, Alix L.H. [5686-42]S9
Chow, Alix L.H. [5686-42]S9
Yi, Xiaoquan [5685-113] S16
Yin, Haibin [5685-82] S
Yntnerman, Anders [5669-05] S2
Yokoyama, Hiroshi [5665-27] S6
Yoon, Ilmi [5670-21] S6, [5670-28] S8
Yoon, Sanghyuk [5670-21] S6
Yoon, Sungsoo [5685-25] S5
Yoruk, Erdem [5685-127] S16
Yoshida, Akiko [5666-13] S4
Yoshida, Olli [5672-45] S9
Ynnerman, Anders [5669-05] S2
Yokoyama, Hiroshi [5665-27] S6
Yoon, Ilmi [5670-21] S6, [5670-28] S8
Yoon, Sanghyuk [5670-21] S6
Yoon, Sungsoo [5685-25] S5
Yoruk, Erdem [5685-127] S16
Yoshida, Akiko [5666-13] S4
Yoshida, Tetsuo [5667-04] S1
Yoshitaka, Yoshihiro [5664A-01] S1
Yoshitaka, Hiroshi [5681-40] S7
Young, Larry A. [5671-22] S5
Yovine, Sergio [5683-14] S3
Yu, Bin [5680-21] S5
Yu, Guojun [5683-19] S4, [5685-84] S16
Yu, Longjiang [5681-07] S2
Yu, Lun [5684-01] S1
Yu, Min [5669-27] S11
Yu, Rong [5677-17] S3
Yu, Ting [5682-15] S4
Yu, Zhi [5665-43] S10
Yuan, Weiqi [5671-26] S6
Zaidi, Abdellatif [5681-13] S3
Zakhor, Avidh [5685] S
Zakhvatkov, Radek [5679-12] S3
Zaphiris, Panayiotis [5684-08] S5
Zbinden, Eric [5669-23] S10
Zeleny, Alexander A. [5667-09] S2
Zelkif, Bob [5679-12] S3
Zeng, Wenjun [5681-09] S2
Zeng, XiangYan [5667-17] S3
Zhai, Fan [5685-91] S16, [5685-106] S16
Zhang, Aidong [5682] S
Zhang, Bing [5679-09] S2
Zhang, Buyue [5668-12] S2
Zhang, G. G. [5675-11] S3
Zhang, Guangbin [5677-09] S2
Zhang, Guanjun [5688-03] S16
Zhang, Hongliang [5682] S
Zhang, Huakai [5685-20] S4
Zhang, Hui [5685-109] S16
Zhang, Jianping [5669-08] S2
Zhang, Jia [5670-27] S3
Zhang, Jinsong [5669-38] S13, [5674-03] S1, [5674-43] S8
Zhang, Leishi [5669-44] S12
Zhang, Li [5677-30] S5
Zhang, Lu [5665-46] S10
Zhang, Qi [5683-16] S4, [5683-17] S4
Zhang, Xiaodong [5680] S
Zhang, Xuemei [5678-09] S3, [5679-19] S5
Zhang, Ying [5677-25] S4
Zhang, Yu [5671-26] S6
Zhang, Zuxun [5669-08] S2
Zhao, Hongkai [5675-09] S2
Zhao, Huijie [5673-09] S2
Zhao, Meng [5685-76] S14
Zhao, Xiaoli [5677-17] S3
Zhao, Yincheng [5685-98] S16
Zhao, Zhongming [5667-68] S16
Zheng, Haifei [5684-01] S1
Zheng, Lanfen [5673-09] S2
Zheng, Yibin [5677] S
Zheng, Yifeng [5674] S
Zheng, Yufeng [5667-14] S4
Zheng, Zhong-Wei [5667-26] S7
Zhou, Jianping [5669-27] S11
Zhou, Qiang [5682-06] S2
Zhou, Samuel Z. [5664A S
Zhou, Xiaosong [5685-117] S16
Zhu, Mengxia [5669-02] S1
Zhuang, Xinhua [5681-09] S2
Zimet, Lior [5678-15] S4
Zimmermann, Roger [5680] S
Zioud, Djemel [5672-29] S8, [5685-93] S16
Zlokollka, Vladimir [5685-88] S16
Zmudzinski, Sascha [5681-76] S13
Zou, Jie [5670-10] S3
Zsombor-Murray, Paul [5674-36] S7
Zuffi, Silvia [5667-07] S2, [5667-22] S6
Zuk, Torre D. [5669-26] S11
General Information

Electronic Imaging 2005
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San Jose Marriott Hotel
301 S. Market Street, San Jose, CA 95113

Registration Location and Information Hours
Tutorial Registration Only
San Jose Convention Center, Concourse 1 Lobby
Sunday, January 16, 2005 . . . . . . . . . . . . . . . . . . . . . . 7:00 am to 10:00 am

Thereafter, all registrations are at:
San Jose Convention Center, Concourse 1 Lobby
Sunday, January 16 . . . . . . . . . . . . . . . . . . . . . . . . . . . 10:00 am to 4:00 pm
Monday through Wednesday, January 17-19 . . . . . . . . 7:00 am to 4:00 pm
Thursday, January 20 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7:00 am to Noon

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Full conference registration includes: Admittance to the conferences, poster sessions and the exhibit, coffee breaks, the Electronic Imaging Symposium Reception, and EI proceedings as applicable under the specific registration plans. EI proceedings purchased as part of your registration plan include any applicable tax and shipping charges.

Short Course-only registration includes your selected short course(s), course notes, coffee breaks, and admittance to the exhibition.

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San Jose Convention Center, Room E
Monday - Thursday, January 17-20 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7:30 am to 4:30 pm

Speakers who have requested to use LCD projection from their laptop, 35mm slide projection, a VHS video player, or an overhead projector are encouraged to preview their materials at the Audiovisual Desk prior to their presentation. Speakers who have requested special equipment beyond the standard equipment noted here are asked to report to the EI '05 Audiovisual Desk upon arrival at the meeting to confirm equipment requests. Speakers will be responsible for delivering visual materials to the conference room and may retrieve their presentation materials from the room monitor in the conference room immediately following the session.

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Short courses will take place in various meeting rooms at the San Jose Marriott Hotel and the San Jose Convention Center. Your room assignment will be given to you with a ticket in your registration materials. Registrants for short courses must exchange each course ticket received for their course notes in the course meeting room at the beginning of your class.

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Attendees should check the message boards at the message center daily to receive their messages.

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IS&T/SPIE is pleased to provide complimentary wireless access to the Internet for all conference attendees with wireless-enabled laptop computers or PDAs. Further information will be posted on the event website a month before the meeting and in the final program so you may update your computer’s settings.

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Marriott San Jose Hotel - Business Center. Self-service computers/printers, fax, copiers and internet access is available on 24 hr basis. Access is by your sleeping room key. All Marriott guest rooms include T-1 internet connections.
San Jose Convention Center - Business Center. Open 8:00 am to 5:00 pm daily. Services available include computers/printers, fax, copiers and internet access.

SPIE Bookstore and Membership Booth
Monday through Thursday, January 17-20
Open during registration hours
SPIE publishes a variety of technical books designed to meet diverse research, reference, and educational needs. Proceedings of SPIE technical conferences from this and related meetings may be purchased at the bookstore. Also available are related books in the SPIE PRESS Series, including Tutorial Texts, Milestone Series of Selected Reprints, Critical Reviews in Science & Technology, and Monographs & Handbooks.
Poster Session
San Jose Convention Center, Exhibit Hall 1

Tuesday, 18 January ................................. 5:30 pm to 7:00 pm

Conference attendees are invited to the poster session. Authors of poster papers will be on hand during this session to answer questions and provide in-depth discussion concerning their papers. Attendees are requested to wear their conference registration badges to the poster session.

Authors can set up posters after 10:00 am on Tuesday. Poster supplies (pushpins) will be available. Other supplies can be obtained from the Speakers’ Audio Visual Desk.

Posters can be previewed during the day of the event before the formal poster session begins at 5:30 pm.

Authors must remove their papers at the conclusion of the poster reception. It is the author’s responsibility to remove their posters immediately after the session. Papers not removed will be considered unwanted and will be disregarded. The Societies assume no responsibility for posters left up after the end of the poster reception.

All-Conference Reception

Wednesday, 19 January ............................. 7:30 pm to 9:30 pm

Plan to join us for this great opportunity to get to know your Electronic Imaging colleagues. All attendees are invited to relax, and enjoy a pleasant evening with friends old and new!

3D Phantogram Exhibit
San Jose Convention Center, Concourse 1 Lobby

Tuesday 18 January ................................. 10:00 am to 5:00 pm
Wednesday 19 January ............................. 10:00 am to 4:00 pm

Phantograms are a relatively new “3D art form” which place realistic three-dimensional images within hand’s reach of the observer. In some ways like a hologram, but in other ways not, phantograms use conventional stereoscopic display technology in a special way to present images that are enchanting. Be prepared to experience a new reality with this innovative combination of art and technology.

Exhibition, Product Demonstrations, and Bookfair
San Jose Convention Center, Concourse 1 Lobby

Tuesday, 18 January ................................. 10:00 am to 5:00 pm
Wednesday, 19 January ............................. 10:00 am to 4:00 pm

An intimate exhibit and bookfair will feature select Electronic Imaging companies showcasing their latest products and technologies.

2004 Exhibitors:

- 3D Consortium
- ABBYY USA Software House, Inc.
- Advanced Imaging Magazine
- Amerinex Applied Imaging, Inc.
- Davidson Optronics, Inc.
- Eastman Kodak Company (Discovery & Development)
- Eastman Kodak Company (Image Sensor Solutions)
- Photron USA
- Vision Systems Design

There is no charge to visit the exhibition hall; however, a registration badge is required for admittance. On-site registration is available for exhibition-only visitors.

For information about exhibiting or scheduling product demonstrations at this symposium, please contact Etz2005 Exhibitions Chair, Ufuk Agar at ufuka@garanti.com.tr, or IS&T Project Coordinator, Stacy Barrentine: telephone 703-642-9090 Ext. 105; fax: 703-642-9094.

IS&T Bookstore and Membership Booth

Monday through Thursday, January 17-20
Open during registration hours

IS&T publishes a variety of books to meet your needs. Proceedings of past IS&T conferences including Digital Printing Technologies, Color Imaging as well as Recent Progress series books will be available. IS&T also distributes selected titles from cooperating publishers of science and technology books in the imaging field. Information about upcoming IS&T conferences and IS&T membership benefits, sample journals, and newsletters are available.

Cash Cart: Breakfast Breads, Snacks and Quick Lunch

Breakfast Service
San Jose Convention Center, Concourse 1 Lobby
Tuesday through Thursday .......................... 7:30 to 8:30 am

Luncheon & Snack Service
San Jose Convention Center, Concourse 1 Lobby
Monday through Thursday .......................... 11:00 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 and pastries, and beverage. Attendees will need to make their own breakfast arrangements for Monday.

Child Care

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

1. Bay Area 2nd MOM Inc.
   Hotel Nanny Service
   Toll Free Phone: 1-888-926-3666, or (650) 858-2469, ext. 109.
   Fax: (650) 493-6598
   E-mail: info@2ndmom.com or oncall@2ndmom.com
   Website: www.2ndmom.com

2. Sitters Unlimited
   Toll Free Phone: (408) 452-0225
   E-mail: fosorio@peoplepc.com or www.sittersunlimited.com

Note: IS&T/SPIE does 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.

The Hotel

Thanks to airline
Travel Information

Park and Ride
VTA Light Rail connects downtown with South San Jose and North San Jose and many stations provide ample parking for those who want to park and ride. To see a full listing of Park and Ride lots, visit www.vta.org and click on "Schedules, Maps & Fares" and then "Park and Ride Lots." It is complimentary to park at all VTA Park and Ride lots.

Since parking at the Convention Center can be quite congested at times, try the Park and Ride alternative transportation method, utilizing VTA's complimentary Park & Ride parking lots to commute to the Convention Center. Maximum free regular Park & Ride parking is limited to 72 hours.

Park & Ride, with directions to the Convention Center:
**From the north,** park in the Evelyn Park-and-Ride Lot in Mountain View. Board the eastbound Tasman light rail with the headsign “Baypointe”. Get off at the Baypointe Station and transfer to the Guadalupe Line with the headsign “Santa Teresa”. Get off at the Convention Center Station.

**From the south,** park in the Santa Teresa Park-and-Ride lot located at the Santa Teresa Light Rail Station. Board the light rail with the headsign “Baypointe” and get off at the Convention Center Station.

**From the west,** park at the Valco Fashion Park Park-and-Ride lot. Board the eastbound Route 23, with the headsign “Downtown San Jose”, and get off at the Convention Center Station.

**From the east,** park in the Capitol and Alum Rock Avenue Park-and-Ride lot. Board the southbound Route 64, with the headsign “Almaden Light Rail Station” or “San Jose CalTrain”. Get off at the Market Street and Santa Clara Station, which is two blocks away from the Convention Center.

DASH (Downtown Area Shuttle)
Attendees may also use the DASH (Downtown Area Shuttle) to reach the Convention Center. The DASH operates free service between the San Jose Diridon CalTrain Bus Station and downtown San Jose, Monday through Friday, from 6:15 am to 6:55 pm every 10 minutes. Extra morning commute shuttles provide service every 5 minutes. For DASH routes and parking lots www.vta.org Click on “Schedules, Maps and Fares” then Click on All Shuttles, then Click on DASH. For more information, call The VTA Information Call Center at 408-321-2300.

Convention Center Parking
Parking at the San Jose Convention Center from 6am to 6pm is $10 per day with no in-and-out privileges. After 6pm, parking is $4. Day passes are available for $20 with all day in and out privileges. An attendant is on duty until 9:30 pm Monday-Friday. Cars can exit anytime during the day or evening, however, there is no overnight parking. Parking citations are usually given after 2:00 am allowing people to exit from theatres, clubs, etc.

Parking
* San Jose Marriott - Onsite valet parking available for $18 per day, $5 per hour.

Alternate Parking Downtown San Jose
Visit the VTA website www.sjdowntownparking.com. The map shows the location of additional parking facilities in close proximity to the convention center for lots offering convention center hourly parking rates or $15 to $18 maximum per day.

Driving to the Meeting
280 Southbound (from San Francisco or Stanford)
280 South to the Vine Street/Almaden Avenue exit
Turn left onto Almaden Boulevard
Convention Center will be on the right

101 Southbound (from San Francisco or Palo Alto)
101 South to the Guadalupe Parkway/87 Exit
Continue on Guadalupe Parkway.
Take Park Avenue/San Carlos Street exit, turn left. Turn right on Almaden Boulevard.
Convention Center is on your left.

17/880 Southbound (from Berkeley and Oakland)
17/880 South to the Coleman Exit
Turn left on Coleman Avenue and continue on Coleman.
Coleman becomes Market Street (toward downtown San Jose).
Cross San Carlos Street.
Convention Center is on your right.

101 Northbound (from Gilroy or Los Angeles)
101 North to San Jose
Take the 85 North exit towards downtown San Jose.
Merge onto 87 North.
Take the San Carlos Street/Auzerais Avenue exit.
Turn right onto Woz Way.
Turn left onto S. Almaden Boulevard.
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