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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 • Continuing Education • Technical Exhibitions

Symposium Chairs:
Thrasyvoulos N. Pappas, Northwestern Univ.
Andrew J. Woods, Ctr. for Marine Technology/
Curtin Univ. of Australia

3D Imaging, Interaction, and Measurement

Imaging, Visualization, and Perception

Image Processing

Digital Imaging Sensors and Applications

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Image and Video Communications and Processing

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Science and Technology

SPIE The International Society
for Optical Engineering

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Electronic Imaging
Science and Technology

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San Jose, California USA

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You're invited!

We invite you to join IS&T —The Society for Imaging Science and Technology and SPIE—The International Society for Optical Engineering for the 17th annual Symposium on Electronic Imaging: Science and Technology, to be held at the San Jose Convention Center in San Jose, California, 16-20 January 2005.

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 available at our fingertips 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.

The annual Symposium on Electronic Imaging: Science and Technology has become the premier international event in the area of electronic imaging. The 2005 symposium will host over two dozen individual conferences on a diverse collection of topics. By presenting your work at EI, you not only benefit from the opportunity of obtaining feedback from your peers, but you also open the door to many other opportunities. Many fruitful collaborations have been enabled by chance meetings at past EI symposiums. The symposium plenary sessions and conference keynote presentations provide an opportunity to hear and meet leaders in the field. 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.

The attendees of the EI Symposium are a rich and diverse crowd, with strong international representation from industry, government, and academic research communities. This composition ensures that the complete range of applied and academic research is in play throughout the symposium. The conference chairs and their technical committees represent a great resource for the newcomer who seeks ways of becoming connected 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.

Finally, the greater Bay Area, especially San Francisco, has much to offer in terms of culture, entertainment, and sightseeing. The weather in late January is often cool and sunny which makes for a most pleasant stay.

EI 2005 is a major event for the Electronic Imaging community. Plan now to be a part of this exciting Symposium. We urge you to review the call for papers for the various EI conferences—we are sure that you will find one that fits your interests. We are looking forward to seeing you in San Jose.

2005 Symposium Chairs

Thrasyvoulos N. Pappas,
Northwestern Univ.

Andrew J. Woods,
Ctr. for Marine Technology/
Curtin Univ. of Australia

Call for Papers

Symposium Chairs:

Thrasyvoulos N. Pappas, Northwestern Univ.
Andrew J. Woods, Ctr. for Marine Technology/
  Curtin Univ. of Australia

Symposium Organizing Committee:

Giordano B. Beretta, Hewlett-Packard Co.
Robert L. Stevenson, Univ. of Notre Dame

Short Course Chair:

Edward J. Delp III, Purdue Univ.

Exhibition Chair:

A. Ufuk Agar, Garanti Technologies (Turkey)

Technical Organizing Committee:

John G. Apostolopoulos, Hewlett-Packard Labs.
Jaakko T. Astola, Tampere Univ. of Technology
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Elisa H. Barney Smith, Boise State Univ.
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Katy Börner, Indiana Univ.
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Michael Bove Jr., Massachusetts Institute of
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Surendar Chandra, Univ. of Notre Dame
Edward Y. Chang, Univ. of California/Santa Barbara
Reiner Creutzburg, Fachhochschule Brandenburg
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Scott J. Daly, Sharp Labs. of America
Edward J. Delp III, Purdue Univ.
Jeffrey M. DiCarlo, Hewlett-Packard Labs.
Edward R. Dougherty, Texas A&M Univ.
Karen O. Egiazarian, Tampere Univ. of Technology
  (Finland)
Sabry F. El-Hakim, National Research Council
  Canada
Robert F. Erbacher, Utah State Univ.
Reiner Eschbach, Xerox Corp.
Zeno J. Geradts, Netherlands Forensic Institute
  Ministry of Justice (Netherlands)
Theo Gevers, Univ. of Amsterdam (Netherlands)
Matti T. Gröhn, CSC-Scientific Computing Ltd.
  (Finland)
Armin Gruen, ETH Zürich (Switzerland)
Nasser Kehtarnavaz, Univ. of Texas/Dallas
Phillip A. Laplante, The Pennsylvania State Univ.
Longin Jan Latecki, Temple Univ.
Rainer W. Lienhart, Intel Corp.

Ian E. McDowall, Fakespace Labs, Inc.
Gabriel G. Marcu, Apple Computer, Inc.
Fabrice Meriaudeau, Univ. de Bourgogne
  (France)
John O. Merritt, The Merritt Group
Eric L. Miller, Northeastern Univ.
Yoichi Miyake, Chiba Univ. (Japan)
Ricardo J. Motta, PIXIM, Inc.
David M. Mount, Univ. of Maryland/College
  Park
Nasser M. Nasrabadi, Army Research Lab.
Sethuraman Panchanathan, Arizona State
  Univ.
Jeffery R. Price, Oak Ridge National Lab.
Rene Rasmussen, Xerox Corp.
Syed A. Rizvi, Univ. of New York/Staten Island
Jonathan C. Roberts, Univ. of Kent (United
  Kingdom)
Bernice E. Rogowitz, IBM Thomas J. Watson
  Research Ctr.
Lenny I. Rudin, Cognitech, Inc.
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)
Matthew R. Stein, Roger Williams Univ.
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
Ping Wah Wong, IDzap LLC
Angela Y. Wu, American Univ.

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3D Imaging, Interaction, and Measurement

Stereoscopic Displays and Applications XVI (EI101)

Conference Chairs: **Andrew J. Woods**, Ctr. for Marine Science and Technology/Curtin Univ. of Technology (Australia); **John O. Merritt**, The Merritt Group

Program Committee: **Neil A. Dodgson**, Univ. of Cambridge (United Kingdom); **Gregg E. Favalora**, Actuality Systems, Inc.; **Janusz Konrad**, Boston Univ.; **Shojiro Nagata**, Intervision (Japan); **Lew B. Stelmach**, Communications Research Ctr. Canada; **Vivian K. Walworth**, Jasper Associates

This conference will focus on recent advances in stereoscopic imaging, covering topics such as 3D display hardware, developments in computer software and digital techniques, and applications that illustrate the user-interface issues and cost/benefit trade-offs of stereoscopic 3D displays. In both real-world and computer-generated imaging applications, stereoscopic 3D display technologies can enhance the user's ability to perceive objects in their correct spatial locations, to move through display space easily, and to manipulate objects efficiently and accurately. The parallel focus on human factors issues and applications requirements is intended to guide future display system development and task-based evaluation of 3D technologies. The conference will bring together practitioners and researchers from industry and academia to facilitate an exchange of current information on stereoscopic 3D techniques and applications. Hardware demonstrations of 3D technologies and applications are strongly encouraged at the conference demonstration session. Facilities for large-screen stereoscopic projection (both still and video) will be available for the presenters.

Papers are solicited for, but not limited to, the following topics:

- Advances in stereoscopic display technologies
  - autostereoscopic displays, super and high-density multiview displays, volumetric displays, stereoscopic projection, and other 3D displays
  - methods for recording, playback, transmission, and -processing of stereoscopic video
  - stereoscopic computer graphics and stereoscopic gaming
- Digital stereoscopic imaging
  - stereoscopic computer graphics
  - image processing and compression of stereoscopic imagery
  - stereoscopic image synthesis: 2D to 3D conversion, depth map generation, and multi-viewpoint generation
  - transmission standards supporting digital stereoscopic images
  - software and hardware issues for computer display of stereoscopic images
- 3D image acquisition/generation techniques
  - single- and multi-lens camera systems
  - motion parallax, volume projection, graphical construction, stereoscopic computer graphics, and other stereoscopic image generation techniques
  - guidelines for stereoscopic content development
- Design and development of stereoscopic display systems for teleoperation, telerobotics, telepresence, telesurgery, and augmented reality
- Applications of stereoscopic displays in areas such as scientific visualization, medical imaging, teleoperation and telepresence, industrial inspection, communications, entertainment, broadcast/cable TV, training, CAD/CAM, molecular modeling, advertising, and others
- Human factors issues in stereoscopic display systems
  - task performance comparisons between stereoscopic and non-stereoscopic displays
  - side-benefits of stereoscopic display techniques
  - evaluation methodologies (e.g., depth-acuity measurement) and task-performance testing
  - benefits for processing and compression of stereoscopic images
- User-interface issues in stereoscopic display system design
  - perceptual and cognitive guidelines for stereoscopic displays
  - 3D remote manipulation and control of viewpoint
  - ortho-stereo, hyper-stereo, and the geometry of 3D perceptual space
- Standards for stereoscopic imaging.

Visit the SD&A conference website for more information: http://www.stereoscopic.org

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IMPORTANT DATES

Abstract Due Date: 5 July 2004
See individual call for specific submission requirements.

Submissions imply the intent of at least one author to register, attend the symposium, present the paper (either orally or in poster format), and submit a full-length manuscript for publication in the conference Proceedings.

Manuscript Due Date for On-Site Proceedings: 25 October 2004

See individual call for specific conferences with Proceedings available at the symposium.

Manuscript Due Date: 20 December 2004

See individual call for specific conferences with Post-Meeting Proceedings.

Manuscripts will be peer-reviewed, and accepted papers will be published in the Proceedings.

Final Summary (200 words) Due Date: 15 November 2004

Final summaries received by this date, if accepted, will be distributed at the meeting.

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3D Imaging, Interaction, and Measurement

The Engineering Reality of Virtual Reality 2005 (EI102)

Post-Meeting Proceedings Due Dates:
Abstracts (500 words) Due: 5 July 2004
Final Summary (200 words): 15 November 2004
Manuscripts Due: 20 December 2004

Conference Chairs: **Mark T. Bolas**, **Ian E. McDowall**, Fakespace Labs., Inc.

Program Committee: **Nick England**, 3rdTech, Inc.; **Guillaume Moreau**, CNRS (France); **Shojiro Nagata**, InterVision (Japan); **Daniel J. Sandin**, Univ. of Illinois/Chicago; **Andreas Simon**, Fraunhofer Institute for Media Communication (Germany); **Henry A. Sowizral**, Sun Microsystems, Inc.

Virtual and augmented reality systems are evolving. In addition to research, the trend toward real applications continues and practitioners find that technologies and disciplines must be tailored and integrated for specific visualization and interactive applications. This conference serves as a forum where advances and practical advice toward this end is presented and discussed, and where research results can be presented. In addition to the general topic area, the 2005 conference is encouraging the submission of work in the following areas:

- Industrial Applications: Systems that solve real-world problems from a wide variety of disciplines are a mainstay of the conference. It especially promotes papers that describe systems which are important because of the problems they solve, and not the technology they use, and papers that describe systems which can quantify their utility. Practitioners in industry are highly encouraged to make submissions.
- Compelling Experiences: A compelling immersive experience transports the user to a place that is viscerally felt, not easily forgotten, yet completely synthetic. This requires subtle interplay between the technological and creative arts. Papers that present working systems or ongoing research into the delicate balance between these disciplines are desired.
- Stubborn Problems: Interaction, tracking, lag, rendering speed, field of view, resolution B these are but a few of the topic areas which vex the field every year. Papers presenting work improving the state of the art in these areas are encouraged. In addition, the 2005 conference is specifically seeking work that explores manual interaction in 3D environments.
- Demonstrations: A half-day joint session with the Stereoscopic Displays and Applications conference provides a welcome forum to present work with additional hands-on demonstrations. Past demonstrations have ranged from optical sub-assemblies to complete products ready for market. If desired, submitted abstracts should indicate interest in demonstration session participation.

- Late Breaking Progress: One to two presentations are allotted for exciting 'late breaking' work that is submitted after the formal paper deadline but within a month of the conference date. Papers reporting on work-in-progress, last minute results, or interesting but incomplete findings are welcome for these limited spots.

Peer Reviewed Papers: If you would like to submit your paper for a Reviewed Papers Section, please indicate such interest and submit a completed paper, as opposed to a simple abstract, by the abstract due date.

Telemanipulator and Telepresence Technologies IX (EI103)

New to Electronic Imaging

Post-Meeting Proceedings Due Dates:
Abstracts (500 words) Due: 5 July 2004
Final Summary (200 words): 15 November 2004
Manuscripts Due: 20 December 2004

Conference Chair: **Matthew R. Stein**, Roger Williams Univ.

Program Committee: **Greg R. Luecke**, Iowa State Univ.; **John O. Merritt**, The Merritt Group; **Barry Richardson**, Monash Univ. (Australia)

This program will address issues and recent advances in telemanipulator and telepresence technology. Common to all teleprescence systems is a human and computer physically interacting for the purpose of investigating or manipulating a remote environment.

Topics include fundamental research and application examples of telemanipulation and telepresence technology, including augmented reality, haptic and kinesthetic interfaces, telepresence system modeling, analysis, and control, and efficient operator interface designs. Of particular interest are systems using the Internet as a communication media and techniques addressing the inherent communication time delay.

Papers are solicited for, but not limited to, the following topics and related areas:

- research and applications in telemedicine and telesurgery
- systems in hazardous environments including space, underwater, construction, security, battlefield, and radioactive environments
- telemanipulation and teleprescence using the Internet
- assistive telerobotic systems for persons with disabilities
- multimodal user input and interface methods using combinations of speech, vision, kinesthesis, gesture recognition and text
- augmented reality, virtual environments in business, manufacturing, and entertainment
- reactive planning and subsumption approaches to teleoperation
- system experimental results and performance evaluation methodologies
- kinesthetic (force/position) and graphical displays
- human-machine interface issues, ergonomics and operator aids, including graphics visualization, human sensory perception/information processing and psychometrics
- Internet or Online robots and systems.

3D Imaging, Interaction, and Measurement

Videometrics IX (EI116)

Conference Chairs: **J. Angelo Beraldin**, **Sabry F. El-Hakim**, National Research Council Canada; **Armin Gruen**, ETH Zürich (Switzerland); **James S. Walton**, 4D Video

Program Committee: **Hirofumi Chikatsu**, Tokyo Denki Univ. (Japan); **Dieter Fritsch**, Univ. Stuttgart (Germany); **Joao G. M. Goncalves**, European Commission/Joint Research Ctr. (Italy); **Gabriele Guidi**, Univ. of Florence (Italy); **Henrik G. A. Haggren**, Helsinki Univ. of Technology (Finland); **George I. Karras**, Technical Univ. of Athens (Greece); **Hans-Gerd Maas**, Technische Univ. Dresden (Germany); **Lars S. Nyland**, Colorado School of Mines; **Mark R. Shortis**, RMIT Univ. (Australia); **Luc J. Van Gool**, Katholieke Univ. Leuven (Belgium)

For the past twelve years, the conference on Videometrics has been providing a unique forum for computer vision and Photogrammetry researchers and practitioners to present the latest advances in precise 3D measurement and modeling from imaging and range sensors. This conference was originally focused on the metric performance of sensors and algorithms to produce the most accurate and reliable geometric measurements and models. Topics such as sensor calibration, performance evaluation, and accurate object reconstruction were prevailing. This has now been expanded to encompass all phases of 3D imaging and modeling of real scenes including automation of data collection and processing, improving the visual quality and realism, visualization, animation, and data management for real-time manipulation. This is in response to the fast growing interest in 3D imaging and modeling technology and the increase in demand of such models in applications such as rapid product development, virtual museums, documentation of monuments and architecture for cultural heritage, marketing and tourism, human body modeling, medicine, and exploration of remote and hazardous sites, to name a few.

We invite submission of original research contributions, as well as demonstrations of successful applications in, but not limited to, the following technical areas:

3D Sensing and Calibration
- 3D sensing and scanning devices, systems, and methods
- advances in practical and automatic calibration techniques
- automatic data acquisition and strategies for next best view planning
- sensor and data fusion.

3D Processing and Modeling
- precise object, site, and complex environment modeling
- image-based 3D modeling
- assessment of model quality (including view registration and surface modeling)
- automatic matching and segmentation of structured and unstructured scenes
- projective vs. perspective transformations
- range data processing and modeling
- multiview registration and integration
- modeling of deformable surfaces
- 3D medical image analysis.

Visualization
- hybrid image- and model-based rendering
- multi-resolution 3D representations
- texture acquisition and integration
- viewpoint/illumination dependent texture mapping
- realistic rendering representations and techniques.

Motion Capture and Animation
- capture, storing, archiving, analysis, and display of image sequences
- procedures that facilitate the use of cameras as transducers
- image matching and tracking in motion analysis and surface deformation.

Applications (industrial, medical, cultural heritage, entertainment, etc.)

The program committee will review all submissions.

Imaging, Visualization, and Perception

Call for Papers

Human Vision and Electronic Imaging X (EI104)

Post-Meeting Proceedings Due Dates:
Abstracts (1,000 to 2,000 words) Due: 5 July 2004
Final Summary (200 words): 15 November 2004
Manuscripts Due: 20 December 2004

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; **Huib de Ridder**, Delft Univ. of Technology (Netherlands); **Gunilla A. Derefeldt**, 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 Cambridge (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.

The goal of this conference is to explore the role of human vision, perception, and cognition in the design, analysis, and use of computer-based image and data systems. Over the years, it has brought together researchers from a wide variety of disciplines, from all over the world, for a rich and lively exchange of ideas. This dialogue is based on the growing understanding that the human observer is a fundamental key to the advancement of image systems, and that advances in these systems and applications stimulate new research into the vision, perception, and cognition of the human observer. Papers are welcome on basic and applied research in:

1) Human perception and cognition
- Models and experimental research
- Psychophysical, neurophysiological, and computational approaches
- Fundamental contributions in spatial, temporal, and color vision
- Fundamental contributions in auditory, haptic, and chemical senses
- Multimodal perception (e.g., spatial/auditory interactions)
- Attention, memory, and learning
- Pattern recognition, visual organization, object perception

2) Color perception and its applications
- Computational and perceptual models of color vision
- Spatial/temporal/color interactions
- Perceptual approaches to device-independent color
- Effective use of color

3) Psychophysical evaluation of image and multimedia quality
- Perceptual and cognitive evaluation of image and video quality
- Perceptual metrics for compression and rendering
- Audio-visual interactions

4) Human vision-based algorithms for:
- Still image and video compression
- Image enhancement and restoration
- Image halftoning and rendering
- Computer graphics and animation

5) Image analysis and perception
- Image semantics, segmentation, and representation
- Perception of shape, texture, and color features
- Perceptual approaches to multimedia retrieval for digital libraries
- Perceptual image and video similarity metrics
- Visually-intuitive navigation through large databases
- Human vision-based approaches to face, gesture, and gait recognition

6) Perceptual issues in visualization and virtual reality
- Interactive exploration of data
- Visual cues for data mining
- Perceptual scaling and visual organization
- Incorporating intelligence into interactive systems

7) Art, aesthetics, and emotion in electronic imaging systems
- Exploiting perception in art
- Emotion and aesthetics in human-computer interfaces

8) Perceptual approaches in life sciences and medical imaging
- Perceptual features for data representation and analysis
- Image rendering and visualization
- Diagnostically-lossless medical image compression

9) Biological vision and comparative physiology

10) Visual prosthesis technology

HVEI conference information may also be found at www.ece.northwestern.edu/~pappas/hvei

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Imaging, Visualization, and Perception

Color Imaging: Processing, Hardcopy, and Applications X (EI105)

Conference Chairs: **Reiner Eschbach**, Xerox Corp.; **Gabriel G. Marcu**, Apple Computer, Inc.

Program Committee: **A. Ufuk Agar**, Garanti Technologies (Turkey); **Jan P. Allebach**, Purdue Univ.; **Jan Bares**, NexPress Solutions, LLC; **Phil J. Green**, London College of Printing (United Kingdom); **Roger-David Hersch**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Patrick G. Herzog**, RWTH-Aachen (Germany); **Hiroaki Ikegami**, Fuji Xerox Co., Ltd. (Japan); **Choon-Woo Kim**, Inha Univ. (South Korea); **Michael A. Kriss**, Sharp Labs. of America; **Shaun T. Love**, Lexmark International, Inc.; **Alessandro Rizzi**, Univ. degli Studi di Milano (Italy); **Shoji Tominaga**, Osaka Electro-Communication Univ. (Japan); **Chris Tuijn**, Agfa-Gevaert N.V. (Belgium)

Color imaging is ubiquitous and developing rapidly. The increased availability of computing resources, software, digital cameras, and the increasing usage of the Internet as a medium for exchanging color images and documents, has led to growing interest in color publication of electronic originals. This in turn has promoted development of technologies necessary for affordable color peripherals. In commercial publishing applications, advances in both digital image processing and printing now enable short run color printing to challenge high quality offset in some sectors. Image transfer between a variety of platforms from initial capture or creation to storage, display, and printing require technology that will preserve image appearance; this is a particular challenge in emerging media such as publishing on the World Wide Web and on mobile platforms.

This conference provides an opportunity for presenting, as well as getting acquainted with the most recent developments in color imaging technologies and applications. Focus of the conference is on color image input, color imaging, emphasizing color in context and color in images, and on the reproduction of images across local and remote devices. A tentative special session on multispectral imaging and its relevance for real world paying customers is planned. The conference covers software, media, and systems. Special attention is given to applications and requirements created by new disciplines. Areas of interest include:

- image processing for color input, hardcopy output and electronic publishing: halftoning, data compression and artifact reduction, automatic color correction, image preference processing, visual tolerance, quantization
- color reproduction: spatial aspects of color, color in context, color reproduction across devices, network color management, color appearance, color preference and estimation, chromatic adaptation, computational color science
- representation and encoding of compound documents: mixed raster content, multiplane imaging models, document compression
- device modeling and characterization: scanners, digital cameras, displays, systems, color models, lookup table methods, color conversion algorithms, gamut mapping, color correction, device limitations, device characterization, methodology, color metrology
- color image encoding and standards: interchange languages, file formats, color encoding, ICC profiles
- multispectral imaging and applications: relevance for real-world paying customers
- systems and architectures: device independent color implementation in commercial systems, color management, color matching device drivers, system performance, imaging workflow
- technology applications: raster imaging and digital image setting, short run printing, pre-press, color proofing, professional and consumer devices
- print quality: process control, color calibration and measurements on hardcopy systems, hardcopy media and supplies, print attribute preference, image quality assessment
- applications of color hard and soft copy: medical imaging, cartography, fine arts, use of color in documents, new communications media, knowledge delivery.

In deciding where to submit their papers, potential authors are advised to also consider such closely related EI 2005 conferences as the conference on Human Vision and Electronic Imaging X and Internet Imaging VI.

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Image Quality and System Performance II (EI106)

Conference Chairs: **Rene Rasmussen**, Xerox Corp.; **Yoichi Miyake**, Chiba Univ. (Japan)

Program Committee: **Peter G. J. Barten**, Barten Consultancy (Netherlands); **Peter D. Burns**, Eastman Kodak Co.; **Luke C. Cui**, Lexmark International, Inc.; **Mark D. Fairchild**, Rochester Institute of Technology; **Susan Farnand**, Eastman Kodak Co.; **Dirk Hertel**, Polaroid Corp.; **Robin B. Jenkin**, Cranfield Univ. (United Kingdom); **Steven V. Korol**, Xerox Corp.; **Eric K. Zeise**, NexPress Solutions LLC

This conference focuses on the study of image quality for electronic system specification, measurement and design. Application areas include image capture, compression, digital and conventional printing, display technologies and video. Papers are welcome on current research and applications including:

Image quality understanding, and simulation
- color and spatial attribute characterization and metrics
- device and system performance modeling
- image defect simulation
- statistical methods for system performance tolerancing.

Subjective image quality evaluation and modeling
- methods of psychometric scaling
- estimation of observer preference
- integration and interaction of various image quality attributes
- attribute modeling and metrics
- image quality survey design and statistical analysis; internet-based surveys.

Image quality standards for capture, print and display
- Emerging standards for image quality
- Digital versus analogue standards
- Performance of existing and proposed standards

System performance and modeling
- modeling and analysis of advances in image acquisition, sampling and encoding
- quality of computer based processing
- extraction of image quality measures from digital images
- instrumentation and industrial measurement systems
- measurement of print and display microstructure (dots, edges, color, resolution, distortion, etc).
- technology dependent characterization (banding, streaking, etc)
- image noise analysis and color error propagation
- methods for system performance benchmarking
- balancing image quality against cost, features and reliability.

When considering whether to submit a paper, potential authors are advised to also consider related conferences on Human Vision and Electronic Imaging, and Color and Imaging: Processing, Hardcopy and Applications.

Imaging, Visualization, and Perception

Call for Papers

Visualization and Data Analysis 2005 (EI107)

Post-Meeting Proceedings Due Dates:
Abstracts (full papers for review) Due: 5 July 2004
Final Summary (200 words): 15 November 2004
Final Manuscripts Due: 20 December 2004

Conference Chairs: **Robert F. Erbacher**, Utah State Univ.; **Jonathan C. Roberts**, Univ. of Kent (United Kingdom); **Matti T. Gröhn**, CSC-Scientific Computing Ltd. (Finland); **Katy Börner**, Indiana Univ.

Cochairs: **Ming C. Hao**, Hewlett-Packard Labs.; **Pak C. Wong**, Pacific Northwest National Lab.

Program Committee: **Uwe Brinkschulte**, Univ. Karlsruhe (Germany); **Philip C. Chen**, Future, Inc.; **L. E. Greenwade**, Idaho National Engineering and Environmental Lab.; **Hans-Georg Pagendarm**, German Aerospace Research Establishment DLR (Germany); **Alex Pang**, Univ. of California/Santa Cruz; **Christopher D. Shaw**, Georgia Institute of Technology; **Kalpathi R. Subramanian**, Univ. of North Carolina/Charlotte; **J. E. Swan II**, Naval Research Lab.; **Craig M. Wittenbrink**, NVIDIA; **Yingcai Xiao**, Univ. of Akron

This conference covers all aspects of visualization and issues affecting successful visualizations. The conference has grown rapidly over the years and has attracted participants from throughout the world. Submissions are peer reviewed with an acceptance rate of ~50% making the quality of the conference and its publications extremely high. We invite you to contribute quality papers covering research results as well as works-in-progress.

The papers from this conference will be published in a bound Proceedings. Authors of the best papers in the conference will have the option of having extended versions of their papers reviewed for publication in the Journal of Electronic Imaging or a future special issue of the Journal of Electronic Imaging focusing on visualization. Additional information can be found at: http://vw.indiana.edu/vda2005/.
Example topics include, but are not limited to:
- Internet imaging, medical imaging, image processing
- biomedical visualization and applications
- Internet, web, and security visualizations
- analysis techniques and data mining
- data exploration using classical and novel approaches
- databases and visualization
- high-performance computing and parallel rendering
- tools and applications exemplified by case studies
- virtual environments and data visualization
- information and scientific visualization
- volume and flow visualization
- interaction paradigms and human factors.
The conference organizers will also accept suggestions on poster-only presentations, panel topics, and suggestions for invited speakers. Full papers for review are due 5 July 2004.
Please contact IS&T/SPIE (ei@imaging.org) or Robert Erbacher (erbacher@cs.albany.edu) if you have any questions or require further information.

Internet Imaging VI (EI108)

On-site Proceedings Due Dates:
Abstracts (500 words) Due: 5 July 2004
Manuscripts Due: 25 October 2004
Final Summary (200 words): 15 November 2004

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

Program Committee: **Kobus Barnard**, Univ. of Arizona; **Jeffrey E. Boyd**, Univ. of Calgary (Canada); **Alberto Del Bimbo**, Univ. degli Studi di Firenze (Italy); **Jennifer Gille**, Raytheon Co.; **Hagit Z. Hel-Or**, Univ. of Haifa (Israel); **Roger-David Hersch**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Yasuyo G. Ichihara**, Hosen-Gakuen College (Japan); **Clement H. C. Leung**, Victoria Univ. of Technology (Australia); **Stéphane Marchand-Maillet**, Univ. de Genève (Switzerland); **Yong Rui**, Microsoft Research; **Simon Shim**, San Jose State Univ.; **Alain Trémeau**, Univ. Jean Monnet (France); **Luc J. Van Gool**, Katholieke Univ. Leuven (Belgium)

The Internet Imaging conference is an international forum for researchers and practitioners to discuss all aspects of the complex relation between the Internet and Imaging techniques. If it is true that we are moving in a post-Gutemberg era (with all the opportunities and the perils involved), the connection between the pervasiveness of the Internet and the semantic richness of images is certainly one of the major propellers of this change. The presence of images and graphical information on the Internet dates back at least ten years, but in the last few years there have been a number of significant developments that tightened the connection between the two significantly. A most significant event is the introduction of languages specifically designed to display graphical information on web browsers and to interact with it. Standard languages like Flash, and more recently, SVG, make it possible not only to display web based information in a graphic way but, maybe more importantly, to interact with it. Starting from these early developments, a whole discipline of web image-based interfaces and systems can be envisioned. These developments, in addition to their intrinsic interest, present a wealth of possible interactions with the traditional internet imaging problems of access to a wide and, as yet, largely untapped, repository of imaging information, from image archives to videos.

This conference is intended as a forum for discussing technologies, applications, and challenges of placing imaging information on the Internet and interacting with it. Special attention will be given to papers describing new applications or presenting well argumented vision statements on potentially revolutionary applications for images and video on the Internet, and on how these applications will take advantage of the opportunities and deal with the challenges of the medium.

Papers are solicited in the following areas:
- peer-to-peer imaging systems for the internet
- languages for describing and manipulating multimedia data
- video summarization and segmentation for Internet access
- data modeling and representation
- content-based retrieval of images and video on the Internet
- evaluation of imaging systems
- database techniques for content-based search on the Internet
- principles of experimental evaluation of internet imaging systems
- evaluation of practical Internet imaging systems
- standards for image and video data (SVG, SMIL, MPEG-7, etc.)
- image transmission
- image-based user interfaces
- applications: education, telemedicine, cultural heritage, digital libraries, collaborative systems, etc.
- multimedia presentation on the Internet: media integration, presentation, management, authoring
- web cameras: their impact on video analysis technology, applications
- social and legal issues for images on the Internet, including intellectual property, content rating, watermarking, authentication, non-repudiation, internalization, and varying cultural perception of content
- interactive image creation for the Internet: artistic expression.

IMPORTANT DATES

Abstract Due Date: **5 July 2004**
See individual call for specific submission requirements.
Submissions imply the intent of at least one author to register, attend the symposium, present the paper (either orally or in poster format), and submit a full-length manuscript for publication in the conference Proceedings.

Manuscript Due Date for On-Site Proceedings: **25 October 2004**
See individual call for specific conferences with Proceedings available at the symposium.

Manuscript Due Date: **20 December 2004**
See individual call for specific conferences with Post-Meeting Proceedings.
Manuscripts will be peer-reviewed, and accepted papers will be published in the Proceedings.

Final Summary (200 words) Due Date: **15 November 2004**
Final summaries received by this date, if accepted, will be distributed at the meeting.

Image Processing

Real-Time Imaging IX (EI109)

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

Program Committee: **Mohamed Akil**, Groupe ESIEE (France); **Aishy Amer**, Concordia Univ. (Canada); **Jörg Bredno**, Philips Research Labs. (Germany); **Matthias F. Carlsohn**, Computer Vision and Image Communication (Germany); **Luciano da Fontoura Costa**, Univ. de São Paulo (Brazil); **Philip P. Dang**, STMicroelectronics Inc.; **Edward R. Dougherty**, Texas A&M Univ.; **Martin Dulovits**, ARC Seibersdorf Research GmbH (Austria); **Colin J. Neill**, The Pennsylvania State Univ.; **Volodymyr I. Ponomaryov**, Instituto Politecnico Nacional (Mexico); **Fatih M. Porikli**, Mitsubishi Electric Research Labs.; **Purnendu Sinha**, Concordia Univ. (Canada); **Moira I. Smith**, Waterfall Solutions (United Kingdom)

Real-time imaging involves image processing/ analysis where timing constraints are as critical as being logically correct. The Real-Time Imaging conference is intended to bring together scientists and researchers working in real-time imaging and its applications. The conference provides a forum to become aware of new real-time imaging software and hardware as well as their scientific and industrial applications. Papers are solicited but not limited to the following areas:

- real-time image processing and analysis
- real-time image/video compression
- real-time machine vision and inspection
- real-time video surveillance and security
- real-time spectral imaging
- real-time medical imaging
- real-time imaging hardware
- real-time imaging systems and applications.

Image Processing: Algorithms and Systems IV (EI110)

Conference Chairs: **Edward R. Dougherty**, Texas A&M Univ.; **Jaakko T. Astola**, Tampere Univ. of Technology (Finland); **Karen O. Egiazarian**, Tampere Univ. of Technology (Finland)

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

The conference Image Processing: Algorithms and Systems IV continues the tradition of the conferences Nonlinear Image Processing and Pattern Analysis in exploring new image processing algorithms. It also reverberates the growing call for integration of the more theoretical research on image processing algorithms with the more applied research on image processing systems.

Specifically, the conference aims at highlighting the importance of interaction between linear, nonlinear, and transform-based approaches for creating sophisticated algorithms and building modern imaging systems for new and emerging applications.

The conference chairs and program committee invite high-quality submissions of papers discussing new results in, but not limited by, the following topics:

Methods
- nonlinear
  - filtering: median, alpha-trimmed, and L-filters; stack filtering
  - statistical estimation and modeling

Granulometries
- Neural networks
  - fussy systems
  - learning
- Bayesian
  - error estimation
  - networks
- Logical
  - binary and logical transforms and filters
  - decision diagrams
  - genomic modeling

- Linear
  - block transforms
  - multiresolution pyramids
  - wavelets
- Morphology
  - mathematical morphology
  - morphological machines

Applications
- affine transforms on images: interpolation, rescaling, rotation
- noise reduction (denoising), restoration and enhancement
- biological and medical image processing
- machine vision
- visual and multimedia communication
- data fusion
- shape, object and pattern recognition
- detection and structure identification
- human-machine interaction.

Note: Please follow the submission instructions and submit a two-page extended abstract plus Figures, Tables, etc., clarifying your approach. Full-length manuscript submission (up to 12 pages) is highly encouraged in order to help the peer-reviewing process.

Applications of Neural Networks and Machine Learning in Image Processing IX (EI111)

Post-Meeting Proceedings Due Dates:
Abstracts (500 words) Due: 5 July 2004
Final Summary (200 words): 15 November 2004
Manuscripts Due: 20 December 2004

Conference Chairs: **Nasser M. Nasrabadi**, Army Research Lab.; **Syed A. Rizvi**, Univ. of New York/ Staten Island

Program Committee: **Pierre Baldi**, California Institute of Technology; **Yoshua Bengio**, Univ. de Montréal (Canada); **Terry M. Caelli**, Curtin Univ. of Technology (Australia); **Rama Chellappa**, Univ. of Maryland/College Park; **Chang Y. Choo**, San Jose State Univ.; **Sandor Z. Der**, Army Research Lab.; **Edward R. Dougherty**, Texas A&M Univ.; **Kunihiko Fukushima**, Tokyo Univ. of Technology (Japan); **Erol Gelenbe**, Univ. of Central Florida; **David H. Haussler**, Univ. of California/Santa Cruz; **Nicolaos B. Karayiannis**, Univ. of Houston; **Christof Koch**, California Institute of Technology; **Bart Kosko**, Univ. of Southern California; **Sun-Yuan Kung**, Princeton Univ.; **Richard P. Lippmann**, MIT Lincoln Lab.; **Erkki Oja**, Helsinki Univ. of Technology (Finland); **Sankar K. Pal**, Indian Statistical Institute (India); **Tomaso A. Poggio**, MIT Artificial Intelligence Lab.; **Christoph von der Malsburg**, Univ. of Southern California; **Jacek M. Zurada**, Univ. of Louisville

Recent advances in neural networks and kernel-based learning theory has resulted in a large number of parallel techniques and non-linear models for real-world applications. Kernel-based learning theory allows one to solve complex non-linear vision problems using simpler learning algorithms. Kernel-based methods can be used to extend the conventional linear algorithms to non-linear versions. Kernelization of a large number of image processing algorithms are currently under investigation. Neural networks are parallel arrays of simple processing units that can be used for computationally complex tasks such as image processing, machine vision, and computer vision. Neural network models have been applied in low-level image processing, clustering techniques for image coding, image restoration and reconstruction, nonlinear image filtering, target detection, radar imaging, medical imaging, document analysis, character, signature, face and object recognition. The focus of this conference is on the emerging applications of neural networks and machine learning to image processing. The objective is to bring together researchers in the field of neural networks, machine learning and image processing to exchange ideas on their applications.
    Papers are solicited in the following areas:
- applications of neural networks in low-level image processing, filtering, image enhancement, compression segmentation, coding, and image reconstruction
- nonlinear filtering and neural network predictors
- object recognition, target recognition and face recognition
- neural-network-based character recognition, document image processing, medical image processing
- stochastic optimization algorithms applied to vision
- fuzzy clustering, fuzzy neural networks and their applications
- support vector machine, kernel clustering, kernel feature extraction, kernel principal component analysis, kernel-based discriminant analysis algorithms
- kernel-based learning algorithms applied to image processing applications
- Gaussian processes, committee models, Bayesian modeling and parameter estimation, data fusion
- Independent component analysis, blind source decomposition, dimensionality reduction procedures, and neural network clustering
- time-series networks and their applications.

IMPORTANT DATES

Abstract Due Date: 5 July 2004
See individual call for specific submission requirements.

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Manuscript Due Date for On-Site Proceedings: 25 October 2004

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Manuscript Due Date: 20 December 2004

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Image Processing

Computational Imaging III (EI112)

Conference Chairs: **Charles A. Bouman**, Purdue Univ.; **Eric L. Miller**, Northeastern Univ.

An ever increasing number of imaging modalities critically depend on computers in the image formation process. Relevant applications arise in fields as diverse as medical imaging, geophysical exploration, environmental monitoring, remote sensing, crystallography, and nondestructive evaluation. The imaging problems in these and related areas are remarkably similar in terms of the algorithmic tools required from disciplines such as computed tomography, inverse methods, statistical estimation, and more traditional image processing tasks such as segmentation, mosaicing, and image modeling. In all cases, the imaging pipelines depend on computationally demanding algorithms for the rending of high-quality images from the available data. Typically, such computational imaging systems require the solution of inverse problems to determine the desired image or characteristics of the unknown scene.

This conference focuses on algorithms and methods for optimizing the performance and quality of computational imaging methods and systems. The conference emphasizes the interplay between the mathematical theory, physical models, and computational algorithms that make these systems effective. Publications are solicited on topics ranging from fundamental theory to system level implementation. Areas of particular interest include:

Algorithmic Methods
- inverse methods
- Bayesian estimation methods
- projections onto convex sets (POCS)
- cross validation techniques
- multiscale processing and modeling
- optimization algorithms
- multigrid algorithms
- parameter and hyperparameter estimation
- imaging system modeling and simulation
- processing and validation on field data.

Motivating Problem Classes
- deblurring and high-resolution rendering
- image recovery
- image mosaicing
- image and color transformations
- computed tomography
- positron emission tomography
- confocal microscopy
- synthetic aperture radar
- acoustic imaging
- electrical resistance and impedance imaging
- imaging through scattering media
- optical coherence imaging
- optical diffusion imaging
- crystallography
- inverse problems in image analysis
- inverse problems in vision and perception.

Driving Applications
- medical imaging and image guided surgery
- geophysical exploration
- environmental remediating and monitoring
- nondestructive test and evaluation
- remote sensing
- surveillance, tracking and target identification
- microscopy.

Vision Geometry XIII (EI113)

Conference Chairs: **Longin J. Latecki**, Temple Univ.; **David M. Mount**, Univ. of Maryland/College Park; **Angela Y. Wu**, American Univ.

Program Committee: **Gady Agam**, Illinois Institute of Technology; **Gilles Bertrand**, Groupe ESIEE (France); **Atsushi Imiya**, Chiba Univ. (Japan); **Jack Koplowitz**, Clarkson Univ.; **Nathan S. Netanyahu**, Bar Ilan Univ. (Israel); **Mubarak A. Shah**, Univ. of Central Florida; **Peter Veelaert**, Hogeschool Gent (Belgium)

This conference is designed to bring together researchers who use geometric theory and techniques to solve problems related to computer vision. Regular contributions and session proposals on all geometric or topological topics of computer vision are very welcome, which include but are not limited to:

Applications of Vision Geometry:
- medical, industrial, entertainment
- inspection, surveillance, biometrics, robotics
- analysis of line/engineering drawings
- 3D data and view registration
- virtualized and augmented reality

Geometry of Digital Images:
- digital geometry and topology (2D and 3D)
- discrete geometry
- approximations of curves and surfaces
- image segmentation in 2D and 3D
- mathematical morphology
- object models, recognition, and features
- invariance and geometric transformations
- surface models and shape recovery

Multimedia Topics
- geometric shape representation, modeling, and shape similarity
- geometric methods in video analysis
- geometric problems in 3D reconstruction of the environment (e.g., from the laser range or camera data)

Computational Geometry:
- complexity of algorithms for vision and image processing
- object recognition and point pattern matching
- convexity problems
- Voronoi diagrams and Delaunay triangulations

Session proposals should include the names and addresses of invited speakers in addition to a short session abstract. It will be the responsibility of session organizers to arrange for abstract submission of all papers presented in their sessions.

This year's conference is dedicated to the memory of our dear friend and colleague Professor Azriel Rosenfeld. Professor Rosenfeld was truly one of the giants of the field of computer vision. He was an ardent supporter of mathematical methods in computer vision, and together with Bob Melter and Angela Wu was one of the founders of the series of Vision Geometry conferences, which date back to 1991. He was our keynote speaker in 1996 and was a member of the Vision Geometry program committee since 2000.

Document Recognition and Retrieval XII (EI117)

On-site Proceedings Due Dates:
Abbreviated papers (5-7 pages) Due: 5 July 2004
Full Manuscripts Due: 25 October 2004
Final Summary (200 words): 15 November 2004

Conference Chairs: **Elisa H. Barney Smith**, Boise State Univ.; **Kazem Taghva**, Univ. of Nevada/Las Vegas

Program Committee: **James Allan**, Univ. of Massachusetts/Amherst; **Tim Andersen**, Boise State Univ.; **Apostolos Antonacopoulos**, Univ. of Liverpool (United Kingdom); **Francine R. Chen**, Palo Alto Research Ctr.; **Xiaoqing Ding**, Tsinghua Univ. (China); **David S. Doermann**, Univ. of Maryland/College Park; **Hiromichi Fujisawa**, Hitachi, Ltd. (Japan); **Jianying Hu**, IBM Thomas J. Watson Research Ctr.; **Matthew F. Hurst**, Intelliseek, Inc.; **Tapas Kanungo**, IBM Almaden Research Ctr.; **Xiaofan Lin**, Hewlett-Packard Labs.; **Daniel P. Lopresti**, Lehigh Univ.; **Thomas A. Nartker**, Univ. of Nevada/Las Vegas; **Sargur N. Srihari**, Univ. at Buffalo; **George R. Thoma**, National Library of Medicine; **Marcel Worring**, Univ. van Amsterdam (Netherlands); **Berrin A. Yanikoglu**, Sabanci Univ. (Turkey)

The fields of document recognition and retrieval have grown rapidly in recent years. This development has been fueled by rising accuracy rates for omnifont and handprint optical character recognition (OCR), decreasing costs for the computational power needed to run such sophisticated algorithms, and the emergence of new application areas such as the World Wide Web (WWW), digital libraries, and video- and camera-based OCR. The use of OCR is spreading from high-volume, niche domains to more general tasks, including the processing of noisy "real-world" documents, photocopies, and faxes.

Beyond OCR, document recognition includes the recovery of a document's logical structure and format. This encompasses decomposing a document into its various fundamental components (sentences, paragraphs, figures, tables, etc.), tagging these units, and then determining a higher-level structure for the document as a whole. Advanced machine learning techniques may allow to fully recover the structure of tables and equations and thus understand their content, or the conversion of line drawings from raster to a vector format where the resulting graphical objects are endowed with semantic meaning. Syntactic representation of logical structure (e.g. using grammars) and syntax-directed recognition is another important area where research contributions are solicited.

One primary reason for digitizing existing paper materials is, of course, to simplify retrieval and organization of information. Therefore we are particularly interested in papers which address any of the following issues: (1) retrieval in the face of corrupted readings of the terms in a document; (2) retrieval based on sketches, images, tables, diagrams or other non-linguistic objects that appear in the document; (3) retrieval based on text appearing with non-standard alignment, in images or graphics; (4) recognition and tagging of mathematical arrays and equations which serve as indicators of subject content or methodology used in the document; (5) novel methods for retrieval and organization of information based on text or other information in a document. Papers addressing retrieval-specific issues are encouraged to use a standard methodology from either statistics (such as the ROC representation) or IR (such as precision versus recall) to assess the effectiveness of proposed techniques against the endpoint goal of correct recognition and retrieval of the entire document, or a section thereof.

Papers are solicited in the following areas:

Recognition

- algorithms and systems for machine-printed and handwritten character and word recognition, especially for degraded documents (e.g., faxes or old/historical documents)
- large-scale conversion of historical document collections
- quality assurance methods and systems in DRR
- character and word segmentation techniques
- identification and analysis of tables or equations
- page segmentation, including hierarchical decomposition of documents into text regions, colored/textured background, halftones, line-art, etc.
- logical structure analysis, linguistic representation of structure and syntax-directed recognition of logical structure
- raster-to-vector conversion of line-art, maps, and technical drawings
- filtering and enhancement techniques for document images
- document image compression
- document degradation models
- video- and camera-based OCR
- applications of document recognition to the WWW and digital libraries
- techniques to support spoken language access to document text (audio browsing of document databases)
- multilingual character recognition
- other topics relating to document analysis and character recognition.

Retrieval

- impact of recognition accuracy on retrieval effectiveness
- recovery and use of logical structure for retrieval
- information extraction from forms
- relevance feedback techniques for document retrieval
- cross-language and multi-lingual retrieval
- categorization of text documents and imaged documents
- summarization of text documents and imaged documents
- keyword spotting in document images
- approximate string matching algorithms for OCR text
- non-textual retrieval methods
- image and multimedia search
- interfaces for retrieval
- benchmarking and evaluation issues
- other topics relating to the retrieval of documents and document images.

Note: submissions to Document Recognition and Retrieval XII should be abbreviated papers (5-7 pages). The paper should be informative and address the following questions: i) What is the paper about? ii) What is the original contribution? iii) What is the most closely related work by others and how does this work differ? iv) How can others make use of this work? v) What are the main experimental/theoretical results? Full papers (10-12 pages) will be needed for the final proceedings.

IMPORTANT DATES

Abstract Due Date: 5 July 2004
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Image Processing

Investigative Image Processing III (EI123)

New to Electronic Imaging

Conference Chairs: **Zeno J. Geradts**, Netherlands Forensic Institute Ministry of Justice (Netherlands); **Lenny I. Rudin**, Cognitech, Inc.

Program Committee: **Jurrien Bijhold**, Netherlands Forensic Institute Ministry of Justice (Netherlands); **Simon K. Bramble**, British Scotland Yard Forensic Science Services (United Kingdom); **Lena M. Klasen**, Swedish Defence Research Establishment (Sweden); **Naoki Saitoh**, National Research Institute of Police Science (Japan)

This call has been organized by the working group Investigative Image Processing. 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. 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.

Software
- image enhancement/image restoration
- super resolution
- tracking
- videogrammetry
- content-based retrieval in video sequences and forensic image databases
- enhancing, extracting, and matching patterns (fingerprints, toolmarks, shoe prints, impressions).

Hardware
- Analog video and image investigation
The investigation of tapes and analysis of signals. The determination if a tape is an original or a copy, and improving the quality by analog means (e.g., Time base corrector). Recommendations on the analog image processing equipment and measurements that can be of use in forensic research. Furthermore the investigation of erased tapes, and analyzing how they have been erased. The determination if a signal is present on a tape.
- Digital imaging systems

JPEG, HDTV, MPEG 2/4/7 and other movie and image formats available on the Internet and in products are evaluated. The method of compression and the risks for analyzing these methods with loss of information are discussed. Furthermore, methods for reading out the digital video streams and encryption methods for digital video recordings are evaluated.

- Investigation of CCTV systems
There are different ways for evaluating the camera systems. There might be a camera that has been found with the suspect, and the court may wish to know if a camera has been used to record a certain (digital) video. Irregularities in the CCD and of the tape recorder in the camera can be used. Also the way of analyzing the data stream with manufacturers serial numbers or data hiding in video system are discussed. The video systems that are used in CCTV-systems are also investigated for their use on quality. Combining and splitting different cameras on one video stream that originate from Quad splitters and sequential switchers for multi-camera systems
- Cameras and digital processing
The cameras can have digital preprocessing in them. They can be used to improve visual quality. One forensic aspect is that they also might deliver artifacts in the final signal. Methods for measurement of these preprocessing steps are discussed.
- Digitization
For analog video and images, it is important to have good digitization equipment. What kind of resolution is needed, and what approaches are available to improve the quality? The different ways of evaluating these systems are discussed.

Miscellaneous
- Investigating integrity of images and video
The integrity of the video and image material can be requested in court. Questions have to be answered as if there has been manipulated with the video sequence.
- Identification of persons, cars, and other objects
Often questions are asked: is this person the person on the tape? The same question is asked for cars and other objects. Methods of comparison and 3D-techniques of faces and objects are handled in this section. Furthermore discussion of the accuracy of an image processing technique combined with the identification is used. One approach to comparing the information on the tape is by reconstruction.
- Interpretation of actions and movements
Sometimes a court asks questions on movements of objects. This is requested for homicides where the question arises of whether the suspect killed the victim with the object. The velocity of the object is the research topic.
- Extraction, formulation and explanation of conclusions
The conclusion in a report of forensic examination is important. Since often not all circumstances are known, care should be taken with the final conclusion. Also the use of image processing methods that introduce artifacts have to be considered. The presentation in court with digital means and testifying that the material is the same (for example by the use of hashing algorithms) are evaluated.

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Digital Imaging Sensors and Applications   <u>Call for Papers</u>

Sensors, Cameras, and Systems for Scientific/Industrial Applications VII (EI114)

Conference Chair: **Morley M. Blouke**, Ball Aerospace & Technologies Corp.

Program Committee: **Robin M. Dawson**, Sarnoff Corp.; **El-Sayed I. Eid**, Gentex Corp.; **Terrence S. Lomheim**, The Aerospace Corp.; **Gloria G. Putnam**, Eastman Kodak Co.; **Nobukazu Teranishi**, Matsushita Electronics Co. (Japan); **Orly Yadid-Pecht**, Ben-Gurion Univ. of the Negev (Israel)

Solid state optical sensors and solid state cameras have established themselves as the imaging systems of choice for many scientific and industrial applications. The advantages of low-power, low-noise, high-resolution, high-geometric fidelity, broad spectral sensitivity, and extremely high quantum efficiency have lead to a number of revolutionary uses.

This conference will focus on current work in the areas of solid state detectors, solid state cameras, and novel applications with emphasis given to the following subjects:

- large format and mosaic imagers for astronomical and medical applications
- high frame rate sensors for adaptive optics, plasma diagnostics, confocal microscopy, motion capture, and neural imaging
- CCDs, CIDs, and CMOS sensors and camera integration
- HDTV cameras and sensors
- new and novel processes for making CCD and CMOS arrays
- system-on-chip solutions for smart sensors and applications
- CMOS process and design enhancements for next generation active pixel sensors
- low-power imagers for portable applications
- color imaging sensors and cameras with improved dynamic range and resolution
- linear arrays used in cameras for industrial and airborne applications
- color and hyperspectral imaging sensors and sensor systems
- amorphous and polycrystalline silicon arrays for non-destructive test and medical imaging
- active pixel sensors and cameras
- smart sensors and applications
- sensors and cameras enhanced for increased UV and IR response
- e-beam, x-ray, EUV, and charge particle arrays and applications
- novel imaging devices and applications.

You are invited to submit papers on any of the above or related topics.

Digital Photography (EI115)

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

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

Digital photography is experiencing explosive growth both in the consumer and professional market place. Sales of digital cameras have already exceeded multi-use film camera sales, and we are seeing exciting new developments in cell-phone cameras and combined still-video products. Many advances, by way of new component technologies and image processing techniques, have been made of late. Thus, digital photography has become a reality for many consumers and professionals alike.

This conference serves to bring together researchers, scientists, and engineers working in the field to describe recent progress in digital photography and all its relevant areas, from input capture, processing, color, compression, transmission and applications, and to hard and soft image output.

Papers are solicited in the following areas:

Image sensor technologies
- CCD and CMOS image sensor advancements
- CFA (color filter array) architectures
- pixel signal conditioning and processing
- sensor characterization

Camera processing, display and system issues
- autofocus, autoexposure and white balance algorithms
- illuminant estimation techniques
- demosaicing techniques
- image-dependent enhancement techniques
- tone correction and color management techniques
- camera characterization and profiling techniques
- image sharpening and noise reduction techniques
- image compression standards and implementations
- image rendering techniques

Mobile imaging technologies
- implementation issues in cell-phone and PDA cameras
- storage, distribution and printing of cell phone and PDA images
- standards

Applications and solutions
- home printing
- digital photo-finishing
- image kiosks
- on-line photo services
- web cameras
- image archiving

Standards
- image communications
- ISO speed, MTF and color image encodings
- image storage technologies
- file formats and Image metadata
- sensor characterization

Microprocessor and silicon solutions
- digital camera processor requirements
- silicon chipset and platform solutions
- integration and future advancements.

IMPORTANT DATES

Digital Imaging Sensors and Applications

Machine Vision Applications in Industrial Inspection XIII (EI118)

Conference Chairs: **Jeffery R. Price**, Oak Ridge National Lab.; **Fabrice Meriaudeau**, Univ. de Bourgogne (France)

Program Committee: **Zachi I. Baharav**, Agilent Technologies; **Steven P. Floeder**, 3M Co.; **Ralph M. Ford**, Pennsylvania State Univ.; **Edmund Y. Lam**, Univ. of Hong Kong (Hong Kong China); **Kurt Niel**, Fachhochschule Wels (Austria); **Paul O'Leary**, Montan Univ. Leoben (Austria); **A. Ravishankar Rao**, IBM Thomas J. Watson Research Ctr.; **Hamed Sari-Sarraf**, Texas Tech Univ.; **Kenneth W. Tobin, Jr.**, Oak Ridge National Lab.; **Yvon Voisin**, Univ. de Bourgogne (France)

The goal of this conference is to bring together real-world practitioners and laboratory researchers in machine vision to share recent applications and developments. Topics of interest include the integration of imaging sensors, supporting hardware, computers, and algorithms for manufacturing inspection, characterization, and/or control. The decreased cost of computational power and vision sensors has motivated the rapid proliferation of machine vision technology in a variety of industries. Examples of such industries include aluminum, automotive, forest products, textiles, glass, steel, metal casting, and chemicals. Other industries, such as semiconductor and electronics manufacturing, have been employing machine vision technology for several years. For both new and existing industrial users of machine vision, there are numerous innovative methods to improve productivity, quality, and compliance with product standards.

There are several broad problem areas that have received significant attention in recent years. For example, some industries are collecting enormous amounts of image data from product monitoring systems. New and efficient methods are required to extract insight and to perform process diagnostics based on this historical record. Regarding the physical scale of the measurements, microscopy techniques are nearing resolution limits in fields such as semiconductors, biology, and other nano-scale technologies. Techniques such as resolution enhancement, model-based methods, and statistical imaging may provide the means to extend these systems beyond current capabilities. Furthermore, obtaining real-time and robust measurements in-line or at-line in harsh industrial environments is a challenge for machine vision researchers, especially when the manufacturer cannot make significant changes to their facility or process.

Abstracts are sought that are related to both novel applications of existing methodology and/or new algorithms or techniques. Abstracts are encouraged from, but not limited to, the following list of topics:
- image processing algorithms and applications
- image-related pattern recognition techniques and applications
- image-related data mining and knowledge discovery
- three-dimensional imaging (stereo, structure-from-motion, laser range-finding)
- thermal, color, and/or spectroscopic imaging algorithms and applications
- novel hardware designs
- vision system architectures
- imaging and inspection in harsh environments
- machine vision for process control/diagnosis, trend analysis, or preventative maintenance
- high-throughput systems for medical or biological applications
- case studies on the impact of machine vision in manufacturing
- machine vision applications for industrial research and development.

Abstract submissions should be ~500 words in length and should contain all of the following information: (1) a clear problem statement and motivation for the work, (2) methods, (3) experimental results (these may be preliminary), and (4) a summary or conclusion. Submissions that do not meet these requirements will not be considered. All abstracts will be peer reviewed. Papers of exceptional quality will be invited to submit revised, extended drafts to the IS&T/SPIE *Journal of Electronic Imaging.*

Multimedia Processing and Applications

Multimedia Computing and Networking 2005 (EI119)

In cooperation with
ACM SIG Multimedia

On-site Proceedings Due Dates:
Full Papers for Review Due: 5 July 2004
Final Summary (200 words): 15 November 2004
Final Manuscripts Due: 25 October 2004

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

Program Committee: **Wu-chi Feng**, Oregon Graduate Institute; **Carsten Griwodz**, Univ. of Oslo (Norway); **Kevin Jeffay**, Univ. of North Carolina/ Chapel Hill; **Baochun Li**, Univ. of Toronto (Canada); **Wei-Ying Ma**, Microsoft Research China (China); **Ragunathan Rajkumar**, Carnegie Mellon Univ.

The objective of this conference is to bring together researchers and practitioners contributing to all facets of multimedia computing and networking. We especially encourage full and original papers on emerging technologies such as home networking and digital appliances, multimedia and QoS support for 3G and UWB networks, multimedia in P2P environments, power-aware computing and communications, mobile and fixed wireless multimedia networks and content distribution networks. An exclusive industrial track will feature industrial design experiences and showcase tools for next-generation multimedia systems and applications. Presenters will be encouraged to make multimedia presentations and demonstrate their solutions in person.

Papers are solicited in all areas of multimedia, including, but not limited to:

Multimedia Computing
- multimedia OS services
- power-aware systems
- video-on-demand services
- peer-to-peer media systems

Multimedia Networking
- home, mobile and broadband networks
- QoS control and scheduling
- push technologies, content distribution and other emerging access technologies
- Internet data streaming, delivery and wide-area caching
- multimedia security and rights management

Measurement and Modeling
- performance measurement of multimedia systems
- statistical modeling of server traffic and server software
- multimedia system simulations and benchmark comparisons

Case Studies and Applications
- multimedia search engines
- entertainment and networked games
- distributed virtual reality
- multimedia authoring.

Authors are invited to submit both research and industrial papers on original, unpublished work describing current research and novel ideas in the area of multimedia computing and networking. Papers whose contributions are supported by experimental evaluations are strongly encouraged. Paper submissions should not exceed 15 single-spaced, single column pages including figures, tables, and references, using a typeface no smaller than 10 points. Papers must be electronically submitted to the conference website at www.electronicimaging.org as an attachment. Please also submit a 500-word text abstract with your paper submission that includes your submission area. MMCN meeting information may also be found at http://mmcn05.cse.nd.edu.

IMPORTANT DATES

Abstract Due Date: 5 July 2004
See individual call for specific submission requirements.

Submissions imply the intent of at least one author to register, attend the symposium, present the paper (either orally or in poster format), and submit a full-length manuscript for publication in the conference Proceedings.

Manuscript Due Date for On-Site Proceedings: 25 October 2004

See individual call for specific conferences with Proceedings available at the symposium.

Manuscript Due Date: 20 December 2004

See individual call for specific conferences with Post-Meeting Proceedings.

Manuscripts will be peer-reviewed, and accepted papers will be published in the Proceedings.

Final Summary (200 words) Due Date: 15 November 2004

Final summaries received by this date, if accepted, will be distributed at the meeting.

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Multimedia Processing and Applications

Security, Steganography, and Watermarking of Multimedia Contents VII (EI120)

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

Program Committee: **Adnan M. Alattar**, 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-Univ. Magdeburg (Germany); **Ahmet M. Eskicioglu**, Brooklyn College; **Jessica Fridrich**, State Univ. of New York/Binghamton; **Ton Kalker**, Philips GmbH (Netherlands) and Techinsche Univ. Eindhoven (Netherlands); **Martin Kutter**, AlpVision SA (Switzerland); **Inald L. Lagendijk**, Technische Univ. Delft (Netherlands); **Benoit 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-Univ. Magdeburg (Germany); **Min Wu**, Univ. of Maryland/College Park

The availability of multimedia contents in digital form, as well as the growth in popularity of communications channels such as the worldwide web and wireless systems, has brought a number of security issues to the forefront. This includes copyright protection, ownership assertion, authentication, access control, and secure communications. The importance of these issues has promoted research and innovative applications of secure technologies such as security protocols, cryptography, digital signature, digital watermarking, time stamping, smart card technology, data hiding and steganography, forgery detection, biometrics and others.

This conference provides an excellent opportunity for researchers and practitioners to present their work as well as to keep abreast with the latest developments in security, steganography and watermarking technologies for multimedia contents including text, audio, graphics, still image and video.

Submit your abstract online:
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Areas of interest include, but are not limited to:
- security architectures for multimedia contents
- server/client security protocols and systems
- smart card security systems
- secure publishing systems
- cryptography and digital signatures for multimedia
- watermarking technologies and algorithms forensic imaging algorithms and systems attacks on watermarks
- applications and benchmarking of watermarks
- implementations of security and watermarking systems
- steganography and data hiding forgery detection
- legal implications of watermarking and/or security systems content protection digital rights management (DRM) systems biometrics standardization aspects (e.g., MPEG IPMP).

Authors will be required to submit a 2500 word abstract for review. Authors are also encouraged to submit papers that involve demonstrations of their work.

Storage and Retrieval Methods and Applications for Multimedia 2005 (EI121)

Conference Chairs: **Rainer W. Lienhart**, Intel Corp.; **Noboru Babaguchi**, Osaka Univ. (Japan); **Edward Y. Chang**, Univ. of California/Santa Barbara

Program Committee: **Kiyoharu Aizawa**, Univ. of Tokyo (Japan); **Aya Aner-Wolf**, Weizmann Institute of Science (Israel); **Nozha Boujemaa**, INRIA Rocquencourt (France); **Pao-Chi Chang**, National Central Univ. (Taiwan); **Shih-Fu Chang**, Columbia Univ.; **Nevenka Dimitrova**, Philips Research; **Ajay Divakaran**, Mitsubishi Electric Research Labs.; **Wolfgang Effelsberg**, Univ. Mannheim (Germany); **Jonathan T. Foote**, FX Palo Alto Lab., Inc.; **Arun Hampapur**, IBM Thomas J. Watson Research Ctr.; **Alan Hanjalic**, Technische Univ. Delft (Netherlands); **Alexander G. Hauptmann**, Carnegie Mellon Univ.; **Anil K. Jain**, Michigan State Univ.; **Chung-Sheng Li**, IBM Corp.; **Wei-Ying Ma**, Microsoft Research China (China); **Bernard Merialdo**, Institut Eurecom (France); **Dragutin Petkovic**, San Francisco State Univ.; **Silvia Pfeiffer**, CSIRO Mathematical and Information Sciences (Australia); **Yong Rui**, Microsoft Research; **Alan F. Smeaton**, Dublin City Univ. (Ireland); **John R. Smith**, IBM Thomas J. Watson Research Ctr.; **Hari Sundaram**, Columbia Univ.; **A. Murat Tekalp**, Univ. of Rochester; **Stephen T. C. Wong**, Harvard Medical School; **Aidong Zhang**, Univ. at Buffalo; **Hongjiang Zhang**, Microsoft Research China (China)

Recent advances in computing and communications have made digital imagery, audio, video, and other sensory data become prevalent. It has led to the creation of large-scale databases of multimedia or multi-modal data in general. Such Multimedia databases and Multimedia data require effective methods and paradigms for analysis, processing, indexing (storage), sharing, and searching (retrieval). They are finding ready applications in a wide range of fields such as advertising and marketing, education and training, entertainment, medicine, surveillance, wearable computing, biometrics, and remote sensing. Because of the very nature of multimedia data, new and innovative methods are called for in modeling, processing, mining, organizing, and indexing of this data for efficient management, access and delivery of the content. The aim of this conference is to bring together the researchers who are developing such methods, and the users, who are defining the needs for such methods. Over the past few years, this conference has become a premium forum for quality papers addressing these issues. We are soliciting papers in all relevant areas including the following areas and topics:

Capture/Calibration
- multi-camera setups
- omni-directional vision
- distributed audio-visual sensors
- intelligent/active acquisition of training data

Content Analysis
- compressed-domain signal processing, feature extraction, and analysis
- image, video and audio similarity measures
- semantic modeling of content (semantic feature extraction and similarity measures, semantic-based retrievals)

Multimedia Processing and Applications

- semantic image/video/audio classification
- image, audio and video characterization
- integral processing of text, image, video and audio data (multi-modal analysis)

Search/Browsing
- active learning and relevance feedback techniques
- query models, paradigms, and languages for image/video retrieval
- browsing and visualization of multimedia data sets
- user interfaces for audio, music, image, and audio-visual databases
- search issues in distributed and heterogeneous systems, meta-search engines
- benchmarking (methods for evaluating retrieval effectiveness, retrieval evaluation test-beds, smart methods for determining ground-truth data)
- generation of video summaries and abstractions

Database management/distributed storage/content delivery
- efficient peer-to-peer storage and search techniques
- indexing and data organization
- high-performance text/audio/image/video indexing algorithms
- system optimization for search and retrieval
- storage hierarchy, scalable storage

Surveillance
- motion detection, motion tracking
- multi-camera calibration, omni-directional vision
- activity monitoring, object recognition
- face detection/recognition in unconstrained environments
- infrared imaging, fusion, archival and retrieval of video data
- threat assessment, military applications, civilian applications
- hardware and software architectures

Applications
- media commerce
- medical media databases
- bioinformatics
- ease of use of home media
- news and entertainment
- surveillance
- wearable computing
- management of meeting/presentation recordings
- biometrics (People identification using image, video and/or audio data)

Notes:

1) Please note that a 2,500 word extended summary which clearly highlights the contributions of the paper is required for application to this conference. The Proceedings for this conference will be made available on site at the symposium.

2) This year the conference will emphasize three important topics: (a) audio content analysis, (b) video mining, and (c) video surveillance. Submissions in these fields are highly encouraged. The invited and accepted papers will be arranged into three half-day special sessions.

3) The term multimedia is interpreted in a broad sense. It encompasses image, audio, and/or video as well as compound documents such as presentations (e.g., in PowerPoint), word documents, media emails, and web pages.

Embedded Processors for Multimedia and Communications II (EI122)

Post-Meeting Proceedings Due Dates:
Abstracts (500 words) Due: 5 July 2004
Final Summary (200 words): 15 November 2004
Manuscripts Due: 20 December 2004

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

Program Committee: **William Chen**, Epson Palo Alto Lab.; **Philip P. Dang**, STMicroelectronics Inc.; **Peter H. de With**, Technische Univ. Eindhoven (Netherlands); **Eric Debes**, Intel Corp.; **Jason E. Fritts**, Washington Univ.; **Parthasarathy Sriram**, PortalPlayer, Inc.

Progress in electronics and increasing consumer demand have brought in interesting possibilities for embedded processors in a variety of platforms. Highly integrated mobile devices with multi-media capabilities to powerful set-top boxes are prime examples of such embedded processor applications. These embedded processors depending on the market cover a space from highly tailored, low cost solutions to flexible, powerful multi-chip solutions.

We solicit papers for this conference that span design, analysis, programming, system architecture, and application aspects of such embedded processors.

Topics to be covered include, but are not limited to:
- processors for mobile phones, PDAs, digital cameras and portable media devices
- computational aspects of multi-media message handling
- networked and distributed media processing
- single chip integration of mobile phone processing elements
- low-power architectures
- configurable processors for embedded applications
- digital TV processors that handle communications, source decode, and post-processing
- set-top box designs including home media gateways and digital video recorders
- 2D and 3D Graphics processors for DTV, set-top box and gaming applications
- DVD playback and recordable processors
- novel CCD imaging and processing systems
- application of configurable processors for media and communications
- benchmarking and performance evaluation of embedded processors
- trade-off analysis among hardwired, programmable, and configurable approaches.

Multimedia on Mobile Devices (EI124)

New to Electronic Imaging

Post-Meeting Proceedings Due Dates:
Abstracts (2-3 page extended abstracts) Due: 5 July 2004
Final Summary (200 words): 15 November 2004
Manuscripts Due: 20 December 2004

Conference Chairs: **Reiner Creutzburg**, Fachhochschule Brandenburg (Germany); **Jarmo Takala**, Tampere Univ. of Technology (Finland)

Program Committee: **Barry A. T. Brown**, Univ. of Glasgow (United Kingdom); **Alan Chalmers**, Univ. of Bristol (United Kingdom); **Surendar Chandra**, Univ. of Notre Dame; **Chang Wen Chen**, Florida Institute of Technology; **Ken Crisler**, Motorola; **David S. Doermann**, Univ. of Maryland/College Park; **Uwe Dummann,** Siemens, AG (Germany); **Elizabeth Dykstra-Erickson,** Kinoma, Inc.; **Lajos Hanzo,** Univ. of Southampton (United Kingdom); Ja**mil Khan,** Massey Univ. (New Zealand); **Hannu Nieminen,** Nokia (Finland); **Sethuraman Panchanathan**, Arizona State Univ.; **Matthias Rauterberg,** Technische Univ. Eindhoven (Netherlands); **Phillip A. Regalia**, Institut National des Télécommunications (France); **Davis Squire,** Monash Univ. (Australia)

The goal of this new conference is to provide an international forum for presenting recent research results on multimedia for mobile devices, and to bring together experts from both academia and industry for a fruitful exchange of ideas and discussion on future challenges.

Submissions are solicited on, but are not limited to, the following topics on mobile and ubiquitous multimedia:
- multimedia signal processing and modern compression for mobile devices
- streaming mobile multimedia
- new compression techniques for mobile devices
- architectures, protocols, and algorithms to cope with mobility, roaming, limited bandwidth, or intermittent connectivity for mobile multimedia
- case studies, field trials and evaluations of new applications and services for mobile multimedia
- HCI, interaction design and techniques, user-centered studies for mobile devices
- wearable computers
- new displays for mobile and ubiquitous multimedia
- intelligent, aware, proactive, and attentive environments, perception, sensing, and modeling of the environment
- middleware and distributed computing support for mobile and ubiquitous multimedia
- power issues when transmitting multimedia content
- mobile computer graphics, games and entertainment
- novel adaptive/context-aware/mobile/ubiquitous/ambient/wireless multimedia applications and systems
- m-commerce and m-learning systems.

Image and Video Communications and Processing

Image and Video Communications and Processing III (EI125)

Conference Chairs: **John G. Apostolopoulos**, Hewlett-Packard Labs.; **Amir Said**, Hewlett-Packard Labs.

Program Committee: **Yen-Kuang Chen**, Intel Corp.; **Charles D. Creusere**, New Mexico State Univ.; **Gerard de Haan**, Philips Research Labs. (Netherlands); **Edward J. Delp III**, Purdue Univ.; **Eric Dubois**, Univ. of Ottawa (Canada); **Frederic Dufaux**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Touradj Ebrahimi**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Hsueh-Ming Hang**, National Chiao Tung Univ. (Taiwan); **T. Russell Hsing**, Telcordia Technologies, Inc.; **Janusz Konrad**, Boston Univ.; **C.-C. Jay Kuo**, Univ. of Southern California; **Ligang Lu**, IBM Thomas J. Watson Research Ctr.; **B. S. Manjunath**, Univ. of California/Santa Barbara; **Antonio Ortega**, Univ. of Southern California; **Sethuraman Panchanathan**, Arizona State Univ.; **William A. Pearlman**, Rensselaer Polytechnic Institute; **Béatrice Pesquet-Popescu**, Ecole Nationale Supérieure des Télécommunications (France); **Majid Rabbani**, Eastman Kodak Co.; **Kannan Ramchandran**, Univ. of California/ Berkeley; **Robert L. Stevenson**, Univ. of Notre Dame; **Thomas Stockhammer**, Technische Univ. München (Germany); **Huifang Sun**, Mitsubishi Electric Research Labs.; **Ming-Ting Sun**, Univ. of Washington; **A. Murat Tekalp**, Univ. of Rochester; **Andrew G. Tescher**, AGT Associates; **Mihaela van der Schaar**, Univ. of California/Davis; **Bhaskaran Vasudev**, Epson Palo Alto Lab.; **Zixiang Xiong**, Texas A&M Univ.; **Avideh Zakhor**, Univ. of California/Berkeley; **HongJiang Zhang**, Microsoft Research China (China)

Image and Video Communications as well as Image and Video Processing have become important engineering areas that attract interdisciplinary research interest. This conference is designed as a forum for presenting important research results as well as applications. Original and unpublished material is solicited on the following and related topics:

- Media coding: image, video, graphics, and object-based coding; emerging coding standards, e.g. MPEG-4 AVC/H.264, MPEG SVC, JPEG-2000, JPIP, JPSEC, JPWL; very-low bit rate coding, high-quality image/video/graphics coding, 3D coding.
- Media over networks: media streaming, video over 802.11 and 3G wireless networks, error resilience, scalability, quality of service, cross-layer optimization for improved media delivery, streaming media content delivery networks
- Image/video processing: filtering, interpolation, (e.g. deinterlacing, frame-rate conversion), restoration, compressed-domain processing, superresolution, multimodal media processing,
- Multiresolution analysis, subbands, wavelets
- Object segmentation and tracking, feature extraction
- Synthetic imaging and rendering: stereo, multiview and 3D video, synthetic image/video and graphics representations, 3D and animated 3D models, virtual reality
- Application systems: DTV, electronic cinema, multimedia content retrieval, man-machine interface, imaging/video surveillance
- Media system design: Hardware and software architectures and implementation issues.
- Scalable computations, low-power implementations
- Multimedia information security

Other timely topics related to image and video communication and processing.

Submit your abstract online:
www.electronicimaging.org

General Information

Registration

Registration fees for conferences and short courses, a registration form, and technical and general information for Electronic Imaging 2005 will be available in the Advance Technical Program.

Participant Registration Fee

Authors and coauthors are accorded a reduced symposium registration fee.

Advance Technical Program

Available in October 2004.
The comprehensive Advance Technical Program for this symposium will list conferences, paper titles, and authors in order of presentation; education program schedule, including course descriptions and instructor biographies; an outline of all planned special events; and information detailing the hotel reservations process. All those who submit an abstract will receive a copy, or contact SPIE or IS&T to request a copy.

Hotel Accommodations

Information concerning hotel reservations, as well as a hotel reservation form, will be included in the Advance Technical Program available in November 2004.

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Companies interested in exhibiting at this symposium may contact the Exhibitions Department at IS&T headquarters, +1 703 642 9090. Fax: +1 703 642 9094. E-mail: info@imaging.org.

About the Symposium Organizers

IS&T The Society for Imaging Science and Technology

IS&T—The Society for Imaging Science and Technology is an international non-profit society whose goal is to keep members up to date on the latest scientific and technological developments in the field of imaging through conferences, journals and other publications. We focus on imaging in all its aspects, with particular emphasis on digital printing, color imaging, electronic imaging, photofinishing, prepress technologies, image preservation, hybrid imaging systems, silver halide imaging, and imaging quality. IS&T membership dues are $90 domestic and $100 outside the U.S. per year.

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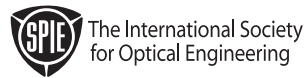
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About the IS&T/SPIE Electronic Imaging Technical Group

Electronic imaging encompasses diverse research, engineering, and specialized applications of electronic imaging devices or systems. Because of the diverse topical areas within electronic imaging, the technical group is divided into six subgroups that cover image processing, image capture, display and hardcopy, system integration, visualization, and low-light instrumentation. Application areas are just as far-reaching. They include industrial automation, graphic arts, aerospace sensing, remote sensing, high-resolution television, optimal fiber tele-imaging, document processing, medical imaging, and all areas of digital image processing, including restoration, compression, and analysis.

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.*

Contact SPIE or IS&T for more information or an application.

Submission of Abstracts

Abstract Due Date: **5 July 2004**

* *Manuscript Due Date for Onsite Proceedings:* **25 October 2004**

** *Manuscript Due Date:* **20 December 2004**

Final Summary Due Date: **15 November 2004**

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* On-site Proceedings are published in advance for distribution at the meeting.

Manuscripts for onsite books are due 12 weeks before the meeting.

**Post-meeting Proceedings are published approximately 8 to 12 weeks after the meeting. Manuscripts are due about 4 weeks before the meeting.

IMPORTANT!

Submissions imply the intent of at least one author to register, attend the symposium, present the paper (either orally or in poster format), and submit a full-length manuscript for publication in the conference Proceedings.

All authors (including invited or solicited speakers), program committee members, and session chairs are responsible for registering and paying the reduced author, session chair, program committee registration fee. (Current IS&T or SPIE Members receive a discount on the registration fee.)

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www.electronicimaging.org

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3. **PRESENTATION PREFERENCE** "Oral Presentation" or "Poster Presentation."
4. **PRINCIPAL AUTHOR'S BIOGRAPHY** Approximately 50 words.
5. **ABSTRACT TEXT** Please see individual Call for Papers for Submission requirements.
6. **KEYWORDS** Maximum of five keywords.

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IMPORTANT! To ensure proper processing of your abstract, the SUBJECT line must include only:

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Final Summary

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