SPIE Medical Imaging

Conferences + Courses: 13-18 February 2010
Town and Country Resort & Convention Center
San Diego, California, USA

Connecting minds for global solutions

The premier international forum on medical imaging

- Ultrasonic Imaging, Tomography, and Therapy
- Advanced PACS-based Imaging Informatics and Therapeutic Applications
- Image Perception, Observer Performance, and Technology Assessment
- Biomedical Applications in Molecular, Structural, and Functional Imaging
- Visualization, Image-guided Procedures and Modeling
- Computer-Aided Diagnosis
- Image Processing
- Physics of Medical Imaging

SPIE Medical Imaging

Conferences + Courses: 13-18 February 2010
Town and Country Resort & Convention Center
San Diego, California, USA

SPIE Connecting minds. Advancing light.

SPIE is the international society for optics and photonics founded in 1955 to advance light-based technologies. Serving more than 188,000 constituents from 138 countries, the Society advances emerging technologies through interdisciplinary information exchange, continuing education, publications, patent precedent, and career and professional growth.

Welcome to Medical Imaging 2010,

the premier conference for medical scientists, physicists, and practitioners in the field of imaging. This year's meeting features technical presentations on the most up-to-date research and development in the areas of physics of medical imaging; image processing; computer-aided diagnosis; image visualization, and image-guided procedures and modeling; biomedical applications in molecular, structural and functional imaging; image perception, observer performance, and technology assessment; advanced PACS-based imaging informatics and therapeutic applications; and ultrasonic imaging and signal processing.

Attend the many special events and workshops to enhance your conference experience. Join Roderic Pettigrew from the National Institute of Biomedical Imaging and Bioengineering and hear his plenary presentation on Perspectives on Biomedical Imaging and Its Role in Advancing Public Health.

Connect with colleagues, exchange research, take a course and earn CAMPEP credits, and attend special and technical events. Learn, network, and enjoy your time in San Diego, California.

Symposium Chairs:

Kevin Cleary
Georgetown Univ.
Medical Ctr.

Maryellen Giger
The Univ. of Chicago

Cooperating Organizations:

AAPM—American Association of Physicists in Medicine

APS—American Physiological Society

CARS—Computer Assisted Radiology and Surgery

IS&T—The Society for Imaging Science and Technology

MIPS—Medical Image Perception Society

RSNA—Radiological Society of North America

SIIM—Society for Imaging Informatics in Medicine

SMI—The Society for Molecular Imaging

The DICOM Standards Committee

Gold Sponsor

Medtronic

Silver Sponsors

AEROFLEX

HAMAMATSU

OpenXi

THP Tungsten HEAVY Powder, Inc.

Special Events

Technical Conferences

Professional Development

Daily Event Schedule

Saturday 13 February

SC828 **An Introduction to Finite Elements for Medical Imaging** *(Miga)* 8:30 am to 12:30 pm, $395 member / $445 non-member

SC086 **Fundamentals of Medical Image Processing and Analysis** *(Deserno)* 8:30 am to 5:30 pm, $530 member / $625 non-member

SC829 **MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU)** *(Mueller, Xu, Zheng, Xu)* 8:30 am to 5:30 pm, $530 member / $625 non-member

SC938 **Quantitative Characterization of Cancer Using in vivo Imaging** *(Quarles)* 8:30 am to 12:30 pm, $325 member / $375 non-member

SC986 NEW **Digital Radiography Image Processing and Image Quality** *(Wang, Foos)* 1:30 to 5:30 pm, $325 member / $375 non-member

SC884 **Validation in Medical Image Processing (VMIP)** *(Jannin)* 1:30 to 5:30 pm, $325 member / $375 non-member

WS776 **Writing for Publication in Medical Imaging** *(Hanson)* 1:30 to 5:30 pm, $100 member / $150 non-member

Sunday 14 February

7626 **Biomedical Applications in Molecular, Structural, and Functional Imaging** *(Molthen, Weaver)* p. 12

7623 **Image Processing** *(Dawant, Haynor)* p. 12

7625 **Visualization, Image-guided Procedures and Modeling** *(Wong, Miga)* p. 12

7629 **Ultrasonic Imaging and Signal Processing** *(D'hooge, McAleavey)* p. 13

SC939 **Exact Cone Beam Reconstruction: Theory and Practice** *(Zamyatin)* 8:30 am to 12:30 pm, $325 member / $375 non-member

SC471 **Principles and Advancements in X-ray Computed Tomography** *(Hsieh)* 8:30 am to 12:30 pm, $390 member / $440 non-member

WS757 **Early Career Professional Development in Medical Imaging** *(Krupinski)* 1:30 to 5:30 pm, $100 member / $150 non-member

SC987 NEW **Spectral CT Imaging** *(Heismann, Schmidt, Flohr)* 1:30 to 5:30 pm, $325 member / $375 non-member

SC358 **X-Ray Detector Performance: Principles and Measurements using a Linear Systems Approach** *(Cunningham)* 1:30 to 5:30 pm, $325 member / $375 non-member

NON TECHNICAL WORKSHOP: **Writing a Competitive NIH Application,** Workshop Chair: John W. Haller, National Institute of Biomedical Imaging and Bioengineering (USA); Speakers: NIH (NIBIB and NCI) Program and Review Staff, p. 6

TECHNICAL WORKSHOP: 7623 **Detecting and Quantifying Differences in Medical Images**, 5:45 to 7:45 pm, p. 6

TECHNICAL WORKSHOP: 7626 **Imaging-based Physiome Models for Quantitative Analysis of the Lung and Other Organ Systems,** 5:45 to 7:45 pm, p. 6

Monday 15 February

7622 **Physics of Medical Imaging** *(Samei, Hsieh)* p. 12

KEYNOTE PRESENTATION: 7622 **Integrated imaging for radiation therapy delivery** *(Jaffray)***,** 8:00 am, p. 4

KEYNOTE PRESENTATION: 7623 **Imaging the brain's connectome** *(Lichtman)*, 8:40 am, p. 4

SC613 **Statistical Methods in Medical Imaging and Bioengineering with Applications to Observer Performance Evaluation** *(Krupinski, Chakraborty)* 8:30 am to 5:30 pm, $530 member / $625

KEYNOTE PRESENTATION: 7629 **The potential of focused ultrasound for brain treatments** *(Hynynen)* 10:10 am, p. 5

Meet with NIH Staff, 12:10 to 1:20 pm, p. 9

KEYNOTE PRESENTATION: 7625 **Respiratory effects in PET/CT imaging: impact on diagnosis, quantitative estimation, and therapy** *(Kinahan)* 1:20 pm, p. 4

All Conference Plenary and Awards Session, 4:00 to 5:15 pm, p. 3

MICHAEL B. MERICKEL STUDENT PAPER AWARDS

PLENARY: **Perspectives on Biomedical Imaging and Its Role in Advancing Public Health**, Roderic Pettigrew

Interactive Poster Session and Reception, 5:15 to 6:45 pm, p. 8

Dessert with the Experts A Student Networking Event, 6:30 to 7:30 pm, p. 9

Tuesday 16 February

7624 **Computer-Aided Diagnosis** *(Karssemeijer, Summers)* p. 12

KEYNOTE PRESENTATION: 7624 **Computer-aided diagnosis in medical imaging: achievements and challenges** *(Doi)* 8:00 am, p. 4

KEYNOTE PRESENTATION: 7626 **Image analysis and computational physiology of the heart** *(Hunter)* 10:10 am, p. 5

Women's Networking Lunch, 12:10 to 1:20 pm, p 9

DEMO WORKSHOP: 7624 **Computer-Aided Diagnosis,** 5:30 to 7:45 pm, p. 7

DEMO WORKSHOP: 7627 **Observer-Based Methodologies for Experiments in Medical Image Perception**, 5:30 to 7:45 pm, p. 7

TECHNICAL WORKSHOP: 7628 **DICOM**, 5:45 to 7:45 pm, p. 7

TECHNICAL WORKSHOP: 7622 **Improving the Value and Practicality of Quantitative Imaging Biomarkers**, 5:45 to 7:45 pm, p. 7

Wednesday 17 February

7627 **Image Perception, Observer Performance, and Technology Assessment** *(Manning, Abbey)* p. 13

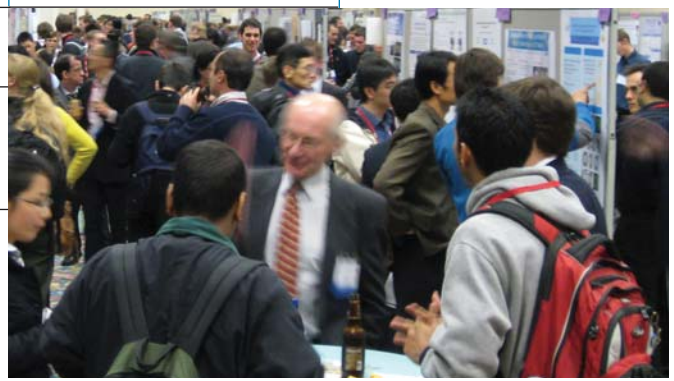
7628 **Advanced PACS-based Imaging Informatics and Therapeutic Applications** *(Liu, Boonn)* p. 13

KEYNOTE PRESENTATION: 7627 **Maintaining quality in the UK breast screening program** *(Gale)* 8:00 am, p. 5

Meet with NIH Staff, 12:10 to 1:20 pm, p. 9

KEYNOTE PRESENTATION: 7628 **Imaging informatics in the era of healthcare reform** *(Siddiqui)* 1:20 pm, p. 5

Interactive Poster Session and Reception, 5:30 to 7:00 pm, p. 8



Thursday 18 February

SPIE would like to express its deepest appreciation to the symposium chairs, conference chairs, program committees, session chairs, and authors who have so generously given of their time and advice to make this symposium possible.

The symposium, like our other conferences and activities, would not be possible without the dedicated contribution of our participants and members. This program is based on commitments received up to the time of publication and is subject to change without notice.

Monday 15 February · 4:00 to 5:15 pm · Town and Country Room

Session Chairs: **Kevin R. Cleary,** Georgetown Univ. Medical Ctr., United States; **Maryellen L. Giger,** The Univ. of Chicago, United States

Michael B. Merickel Student Paper Awards

The first and second place winners of the Michael B. Merickel Student Paper Award will be announced and conference finalists recognized. See page 7 for details.

Perspectives on Biomedical Imaging and Its Role in Advancing Public Health

Roderic Pettigrew

Director National Institute of Biomedical Imaging and Bioengineering (NIBIB)/National Institutes of Health

The biomedical landscape has experienced remarkable change over the past decade, made possible by impressive innovations. Despite many improvements in healthcare delivery, however, our goal of transforming healthcare by minimizing reliance on disease treatment-focused approaches and emphasizing early detection and prevention of major illness is still elusive. A critical need to be met by observational sciences is improved understanding of the molecular mechanisms that underlie disease, as can be provided by technological advances in molecular imaging. In addition, innovations such as image-guided minimally invasive methodologies, multi-scale imaging, and multi-modality imaging, and nanomedicine are transforming the diagnostic and therapeutic approaches to disease. More efficient, sensitive, and quantitative tools are expected to make remarkable improvements in healthcare delivery as the 21st century progresses.

Roderic I. Pettigrew, Ph.D., M.D., is the first Director of the National Institute of Biomedical Imaging and Bioengineering. Prior to his appointment, he was a Professor of Radiology Medicine (Cardiology) at Emory University, as well as Professor of Bioengineering at the Georgia Institute of Technology. He also served as Director of the Emory Center for Magnetic Resonance (MR) Research at Emory University School of Medicine in Atlanta, Georgia.

Dr. Pettigrew is known for his pioneering research at Emory University involving four-dimensional imaging of the heart using MR. He graduated cum laude with a B.S. in Physics from Morehouse College where he was a Merrill Scholar. He received an M.S. in Nuclear Science and Engineering from Rensselear Polytechnic Institute, and he received a Ph.D. in Applied Radiation Physics from the Massachusetts Institute of Technology as a Whitaker Harvard-MIT Health Sciences Scholar. Subsequently, he received an M.D. from the University of Miami School of Medicine in an accelerated two-year program, served an internship and residency in Internal Medicine at Emory University, and completed his residency in Nuclear Medicine at the University of California, San Diego. Dr. Pettigrew then spent a year as a Clinical Research Scientist with Picker International, the first manufacturer of MR equipment. In 1985, he joined Emory as a Robert Wood Johnson Foundation Fellow focusing in non-invasive cardiac imaging.

Conference Keynote Presentations

Physics of Medical Imaging

Conference 7622

Monday, 8:00 am · Room: Town and Country

Integrated imaging for radiation therapy delivery [7622-01]

Dr. David Jaffray,
University of Toronto (Canada)

Radiation therapy plays a significant role in the management of cancer and benign diseases. As a localized treatment modality, it is vulnerable to imprecision and inaccuracy in targeting of the dose within the human body. Conventional approaches rely upon poor geometric surrogates of internal anatomy, such as, skin marks, bony anatomy, or implanted fiducial markers. This approach, while successful in targeting, results in the irradiation of substantial volumes of normal surrounding tissues and limits aggressive dose escalation. The past ten years has seen an unprecedented period of change in the field with the development of a plethora of novel radiation treatment machines with integrated imaging for target localization and image-guided delivery. These include integrated megavoltage (MV) computed tomography, volumetric cone-beam CT, ultrasound imaging, and fluoroscopic tracking. These systems have altered clinical practice and are encouraging further developments to provide greater contrast-to-noise of relevant anatomy and the capacity to track mobile, deforming structures. In fact, there are currently several integrated MR-guided radiation treatment systems in development with the promise of reaching clinical application in the next 5 years. In this review, the motivation and current status of these integrated imaging systems will be examined and their impact on the development of the adaptive radiation therapy paradigm will be highlighted.

Biography: Dr. David Jaffray, Academic Ranks—Vice Chair and Professor, Department of Radiation Oncology, University of Toronto; Department of Medical Biophysics, University of Toronto

Professional Qualifications: American Board of Medical Physicists, Certification - Radiation Oncology; Ph.D. University of Western Ontario; Medical Biophysics B.Sc. (Hons.), University of Alberta Physics

Appointments: Head, Radiation Physics; Fidani Chair, Radiation Physics; Principal Investigator, Image-Guided Therapy Lab, Ontario Cancer Institute/Princess Margaret Hospital, University Health Network

Image Processing

Conference 7623

Monday, 8:40 am · Room: San Diego

Imaging the brain's connectome [7623-25]

Prof. Jeff Lichtman,
Harvard University (USA)

Connectional maps of the brain may have value in developing models of both how the brain works and how it fails when subsets of neurons or synapses are missing or misconnected. Such maps might also provide the first detailed information about how brain circuits develop and age. I am especially eager to obtain such maps from the developing nervous system because of a longstanding interest in the neuromuscular circuit changes during mammalian early postnatal life. In the neuromuscular system most axonal input to muscle fibers is pruned in early postnatal life. This so called 'synapse elimination' may be part of the process whereby the nervous system molds itself to a particular epigenetic landscape. The loss is driven by competition between multiple axons that temporarily share the same junction. The amount of resources available to each axon at a particular synapse may influence the competitive outcome. Because each axon has many branches all competing roughly at the same time, the resources available at one site are likely affected by the outcome of synaptic competitions at other neuromuscular junctions that are innervated by the same axons. We have developed techniques to observe all these synaptic interactions at different sites simultaneously by computer assisted axonal tracing and the generation of transgenic mice in which different axons are labeled different colors. These Brainbow mice (Livet et al., 2007) give us an opportunity to see the entire connectional maps (or 'connectomes') for muscles and other neuronal circuits. Thin sectioning is required however to disambiguate the many overlapping axons. My colleagues Ken Hayworth and N. Bobby Kasthuri have developed a new kind of microtome (and an electron imaging strategy) that allows automated high resolution imaging of thousands of ultra thin (<30 nm) sections that are very large (~4 mm^2). This approach aims at making large scale serial microscopic analysis of volumes routine.

Biography: Jeff Lichtman has an AB from Bowdoin (1973), and an M.D. and Ph.D. from Washington University (1980) where he worked for 30 years and was most recently a Professor of Neurobiology. In 2004 he moved to Harvard where he is a Professor in the Department of Molecular and Cellular Biology. He is a member of the newly established Center for Brain Science. Lichtman's research interests revolve around the question of how mammalian brains accommodate information based on their early experiences. He has focused on the dramatic rewiring of neural connections that takes place in early postnatal development. This work has required development of techniques to visualize the patterns of connections in the nervous system and how they are altered over time.

Computer-Aided Diagnosis

Conference 7624

Tuesday, 8:00 am · Room: Golden West

Computer-aided diagnosis in medical imaging: achievements and challenges [7624-01]

Prof. Kunio Doi,
The University of Chicago (USA)

Computer-aided diagnosis (CAD) has become one of the major research subjects in medical imaging and diagnostic radiology. Many different types of CAD schemes are being developed for detection and/or characterization of various lesions in medical imaging, including conventional projection radiography, CT, MRI and ultrasound imaging. Organs that are subjected to research for CAD include the breast, chest, colon, brain, liver, kidney, and the vascular and skeletal systems. More than 10,000 commercial CAD systems have been used at many hospitals, clinics, and screening centers for assisting radiologists in their task of detecting breast cancers. From prospective studies, CAD has provided a gain of approximately 10-20% in the early detection of breast cancers on mammograms. CAD may be defined as a diagnosis made by a physician who takes into account the computer output as a "second opinion". The purpose of CAD is to improve the quality and productivity of physicians in their interpretation of radiologic images. The computer output is derived from quantitative analysis of radiologic images by use of various methods and techniques in computer vision, artificial intelligence, and artificial neural networks. The computer output may indicate a number of important parameters such as the locations of potential lesions and the likelihood of malignancy of detected lesions. Because the basic concept of CAD is broad and general, CAD is applicable to all imaging modalities, and to all kinds of examinations and images.

Biography: Kunio Doi received his Ph.D. degree from Waseda University, Tokyo, Japan in 1969. He then joined the Department of Radiology at The University of Chicago where he is Professor and Director of the Kurt Rossmann Laboratories for Radiologic Image Research, and the Ralph W. Gerard Professor in the Division of Biological Sciences. Dr. Doi has served as a Commission Member of the International Commission of Radiation Units and Measurements (ICRU), an Integration Panel member of the Department of Defense's Breast Cancer Research Program, Associate Chair for Research in Radiology, Director of the Graduate Programs in Medical Physics. He has received numerous honors including the Memorial Lecture Award from the Upstate New York Chapter of the AAPM, the Landauer Memorial Award from the San Francisco Chapter of AAPM, the Eugene P. Pendergrass Lecture at the University of Pennsylvania, and the Umetani Award of the Japanese Society of Radiological Technology. Dr. Doi has published over 550 papers in Journals and Proceedings.

Visualization, Image-Guided Procedures, and Modeling

Conference 7625

Monday, 1:20 pm · Room: California

Respiratory effects in PET/CT imaging: impact on diagnosis, quantitative estimation, and therapy [7625-30]

Prof. Paul E. Kinahan,
University of Washington (USA)

Multi-modality imaging with PET/CT scanners has had a tremendous impact on cancer management over the last decade. Future roles include treatment planning, cardiac imaging, and quantitative estimation of response to therapy. However, respiratory motion introduces several confounding aspects that can limit the utility of PET/CT imaging procedures. We review the current and potential uses of PET/CT imaging and the impact of respiratory motion from both the CT and PET components of an imaging study. The small amount of data on respiratory patterns during extended imaging procedures and methods of acquisition will be reviewed. A hierarchy of available and potential respiratory motion compensation methods is outlined, where the cost and complexity of the method can depend on the diagnostic or therapeutic task.

Biography: Paul Kinahan, PhD is a Professor of Radiology, Electrical Engineering, and Bioengineering at the University of Washington in Seattle. His is the director of PET/CT physics at the University of Washington Medical Center. He was part of the group that built the first prototype combined PET/CT scanner. He has been a member of or chaired of several national committees on medical imaging physics. Currently he is president of the Society of Nuclear Medicine's Computer and Instrumentation Council and a member of the Science Council of the American Association of Physicists in Medicine.

Biomedical Applications in Molecular, Structural, and Functional Imaging

Conference 7626

Tuesday, 10:10 am · Room: Royal Palm I-III

Image analysis and computational physiology of the heart [7626-46]

Dr. Peter Hunter,
University of Auckland (New Zealand)

Multi-scale models of the heart and other organs are being developed under the umbrella of the Physiome Project of the International Union of Physiological Sciences (IUPS) and the Virtual Physiological Human (VPH) project funded by the European Commission. These computational physiology models deal with multiple physical processes (coupled tissue mechanics, electrical activity, fluid flow, etc) and multiple spatial and temporal scales. They are intended both to help understand physiological function and to provide a basis for diagnosing and treating pathologies in a clinical setting. A long term goal of the project is to use computational modeling to analyze integrative biological function in terms of underlying structure and molecular mechanisms. It is also establishing web-accessible physiological databases dealing with model-related data at the cell, tissue, organ and organ system levels.

Two major developments in current medicine are, on the one hand, the revolution in genomics and proteomics and, on the other, the revolution in medical imaging in which the physiological function of the human body can be studied with a plethora of imaging devices such as MRI, CT, PET, ultrasound, electrical mapping, etc.

The talk will describe current progress in the development of the VPH/Physiome project, particularly in its application to the heart.

Biography: Prof. Hunter holds engineering degrees from Auckland University and a DPhil (PhD) in Physiology from Oxford University. He is currently a Professor of Engineering Science and Director of the Bioengineering Institute at the University of Auckland, and Director of Computational Physiology at Oxford University. As the current co-Chair of the Physiome Committee of the International Union of Physiological Sciences he is helping to lead the international Physiome Project which aims to use computational methods for understanding the integrated physiological function of the body in terms of the structure and function of tissues, cells and proteins.

Image Perception, Observer Performance, and Technology Assessment

Conference 7627

Wednesday, 8:00 am · Room: San Diego

Maintaining quality in the UK breast screening program [7627-01]

Prof. Alastair Gale,
University of Loughborough (United Kingdom)

Breast screening in the UK has been implemented for over 20 years and annually nearly two million women are screened with an estimated 1,400 lives saved. Nationally, some 700 individuals interpret mammograms in 110 screening centers. Currently, women aged 50 to 70 are invited for screening every three years and by 2012 this age range will increase to 47 - 73 years. There is a rapid ongoing transition from using film mammograms to full field digital mammography such that in 2010 every screening centre will be partly digital. An early, and long running, concern has been how to ensure the highest quality of imaging interpretation across the UK given the use of a three year screening interval. To partly address this question a self assessment scheme was developed in 1988 and subsequently implemented nationally in the UK as a mandatory activity. The scheme will be detailed from its wholly accidental beginnings, through its various developments to current incarnation and future plans. This encompasses both radiological (single view screening, two view screening, mammographic film and full field digital mammography) as well as design changes (cases reported by means of: form filling; PDA; tablet PC; iPhone, and the internet). The scheme gives rise to a rich data source which is regularly plundered to examine different aspects of radiological performance. Overall it represents the real world trials and tribulations of conducting medical imaging investigations in an everyday clinical screening situation.

Biography: Alastair completed BSc and PhD degrees in psychology at Durham University before moving to Nottingham, Derby and then Loughborough Universities where he now heads his own Applied Vision Research Centre. He has had a life fascination with human performance, especially when examining images and his research encompasses medical imaging, homeland security, assistive technology, medication errors, and transportation. His mother had always encouraged him to find a proper job—something he has yet to achieve.

Advanced PACS-based Imaging Informatics, and Therapeutic Applications

Conference 7628

Wednesday, 1:20 pm · Room: California

Imaging informatics in the era of health care reform [7628-01]

Dr. Khan Siddiqui, Microsoft Corp. (USA)

Abstract not available at this time.

Biography: Dr. Khan Siddiqui**,** Radiologist and Imaging CIO with extensive experience in imaging informatics, computer applications in medical imaging, healthcare IT, healthcare search, work flow optimization and startup incubation. Currently helping develop medical imaging product line at Microsoft, Corp.

Ultrasonic Imaging, Tomography, and Therapy

Conference 7629

Monday, 10:10 am · Room: Royal Palm I-III

The potential of focused ultrasound for brain treatments [7629-28]

Dr. Kullervo Hynynen, Univ. of Toronto and Sunnybrook Health Sciences Ctr. (Canada)

Focused Ultrasound is a noninvasive method to deliver highly concentrated mechanical energy deep in the body and it has been explored for tissue ablation for over half a century. Safe clinical use requires that the focus is guided by an imaging method. Magnetic Resonance Imaging (MRI) provides such features as excellent soft tissue contrast, which make it well suited for the guidance of focused energy delivery.

Animal experiments have shown that focused ultrasound exposures can induce transient and local increase in the cell membrane or blood vessel wall permeability. This may allow localization of the treatment based on imaging information. This potential for delivering large molecules into an image defined location has especially high potential in the brain where the Blood-Brain barrier (BBB) prevents the diffusion of most therapeutic and imaging agents into the brain from the blood vessels. Focused ultrasound has now been explored by several research groups for the disruption the blood-brain barrier for targeted delivery of therapy agents. This method coupled with the development of phased array methods for focusing ultrasound exposures through intact skull may have significant potential in future clinical patient care.

In this talk the basic concepts of ultrasound induced BBB disruption will be reviewed. The animal experiments conducted so far for the utilization of the method for the treatment of brain will be summarized.

Biography: Dr. Hynynen received his Ph.D. from the University of Aberdeen, United Kingdom. After completing his postdoctoral training in biomedical ultrasound also at the University of Aberdeen, he accepted a faculty position at the University of Arizona in 1984. He joined the faculty at the Harvard Medical School, and Brigham and Women's Hospital in Boston, MA 1993. There he reached the rank of full Professor, and founded and directed the Focused Ultrasound Laboratory. In 2006 he moved to University of Toronto. He is currently the Director of Imaging Research at the Sunnybrook Health Sciences Centre and a Professor in the Department of Medical Biophysics at University of Toronto, Toronto, Ontario, Canada. He holds a Tier 1 Canada Research Chair in Imaging Systems and Image-Guided Therapy awarded by the Government of Canada. Dr. Hynynen served as the General Chairman for the 5th International Symposium on Therapeutic Ultrasound in Boston, MA, USA in October 2005 and served as the president of the International Society of the Therapeutic Ultrasound in 2006-9.

Sunday Workshops

14 February

Image Processing
Conference 7623
5:45 to 7:45 pm · San Diego Room

Detecting and Quantifying Differences in Medical Images

Workshop Chair: **David R. Haynor,** Univ. of Washington (USA)

Panel Members: **James C. Gee,** Univ. of Pennsylvania (USA); **Wiro J. Niessen,** Erasmus MC (Netherlands); **Martin A. Styner,** The Univ. of North Carolina at Chapel Hill (USA); **Colin Studholme,** Univ. of California, San Francisco (USA)

Measuring and quantifying temporal changes in serial medical images, e.g., change in tumor or ventricular volume, MS lesions size or number, or stenosis severity, is part of the clinical radiologist daily routine. There is also an increasing demand for routine quantitative analysis of changes and differences in medical images driven by oncology or the use of image-based endpoints in clinical trials, e.g., measuring the effect of drugs on structural changes in the brain. A number of methods and techniques have been developed over the years by the medical image processing and analysis community but few of these methods are in routine use. In this workshop, clinical needs will be identified, a range of measurement methods will be presented, and barriers to the routine utilization of techniques used in research environments will be discussed.

Biomedical Applications in Molecular, Structural, and Functional Imaging
Conference 7626
5:45 to 7:45 pm · Golden West Room

Imaging-based Physiome Models for Quantitative Analysis of the Lung and Other Organ Systems

Workshop Chair: **Merryn H. Tawhai,** The Univ. of Auckland (New Zealand)

Panel Members: **Eric A. Hoffman,** The Univ. of Iowa (USA); **Ching-Long Lin,** The Univ. of Iowa (USA); **Kim Prisk,** Univ. of California, San Diego (USA)

Synergy between the IUPS Physiome project and the Human Lung Atlas project has given rise to advanced computational modeling tools that are being used to add a new level of insight to image and functional databases of the lung. In this technical workshop we will present advances in methods for developing predictive computational models from volumetric imaging, and demonstrate their application in understanding ventilation distribution, perfusion in the lung, and soft tissue deformation. These technical advances will be discussed in the context of current and future imaging capabilities.

A series of presentations will be followed by discussion.

Translation of quantitative imaging of the lung to predictive models of structure and function, Merryn H. Tawhai, The Univ. of Auckland (New Zealand)

Quantitative imaging of lung structure and function for the Human Lung Atlas, Eric A. Hoffman, The Univ. of Iowa (USA)

Advanced computational fluid dynamics in 3D-1D multi-scale models of the lung, Ching-Long Lin, The Univ. of Iowa (USA)

Spatial ventilation and perfusion measured with proton MRI, Kim Prisk, Univ. of California, San Diego (USA)

Writing a Competitive NIH Application

5:45 to 7:45 pm · California Room

Workshop Chair: **John W. Haller,** National Institute of Biomedical Imaging and Bioengineering (USA)

Speakers: NIH (NIBIB and NCI) Program and Review Staff

TOPICS:
- Effective grant writing skills
- Special suggestions for early career investigators
- The NIH grant application review process
- Who and when to contact NIH Program staff
- Finding the right study section to review your application
- What type of grant to apply for (R03, R21, R01,etc.)
- Special emphasis on Specific Aims and impact

DESCRIPTION:
This workshop will focus on writing a high-quality grant application. Participants will acquire the knowledge and skills needed to write competitive applications for funding from the NIH. The workshop will be led by the National Institute of Biomedical Imaging and Bioengineering (NIBIB) and the National Cancer Institute (NCI). In the first hour of the workshop, informative talks will be presented, followed by ample time for questions and answers. Presentations will explore the peer review process - including recent changes in the review and scoring process at the NIH - and how to structure, write, and fine-tune a competitive application for funding consideration.

Topics will include:
- Suggestions for early career investigators as well as seasoned grant applicants
- What reviewers really want to know
- Contacting appropriate NIH Program staff
- Finding the right study section to review your application
- Developing a compelling problem statement or hypothesis
- Presenting a significant or innovative idea
- Technology-driven applications
- Varieties of grant mechanisms (R03, R21, R01, etc.)
- Presenting focused Specific Aims
- What to include in a cover letter
- Resubmitting your amended application

The second hour of the workshop will be a hands-on exercise on how to write the critical Specific Aims of a high-quality application.

Tuesday Workshops

16 February

Physics of Medical Imaging
Conference 7622
5:45 to 7:45 pm · Town and Country Room

Improving the Value and Practicality of Quantitative Imaging Biomarkers

Workshop Chair: **Daniel C. Sullivan,** Duke Univ. (USA)

Imaging biomarkers are increasingly used as primary or secondary endpoints in therapeutic trials. Validation of imaging methods as biomarkers is complicated by the variability within and between patients, by the human observer component, by the variability across imaging devices from different manufacturers, and by the need to standardize methods across institutions and centers.

There are many academic institutions, professional organizations, industry groups and federal agencies addressing one or more components or issues associated with imaging biomarkers. Communication and coordination of efforts has been problematic, but is improving. For example, the RSNA now coordinates an Imaging Biomarkers Roundtable to establish ongoing communication among these organizations, and to develop a roadmap of activities and goals. NIH, NIST, FDA, SNM, ISMRM, and AAPM, among others, either support or are actively involved in various programs addressing one or more issues related to evaluation of imaging biomarkers. With regard to the accuracy and precision of quantitative results from imaging scans, the Quantitative Imaging Biomarkers Alliance (QIBA) was formed to study the errors contributing to variability and develop methods or recommendations to reduce them where possible.

In this workshop, accomplishments of these various groups and future plans will be discussed.

- Overview, Daniel C. Sullivan, Duke Univ. (USA)
- Clinical Trial Requirements, Nola M. Hylton, Univ. of California, San Francisco (USA)
- Physicists' Perspective, Michael F. McNitt-Gray, Univ. of California, Los Angeles (USA)

Panelists:
Clinical, **Daniel C. Sullivan,** Duke Univ. (USA) and **Nola M. Hylton,** Univ. of California, San Francisco (USA); NIH/NCI, **Laurence Clarke,** National Cancer Institute (USA); CAD, **Maryellen L. Giger,** The Univ. of Chicago (USA); MRI, **Edward F. Jackson,** The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); CT, **Michael F. McNitt-Gray,** Univ. of California, Los Angeles (USA); PET, **Paul E. Kinahan,** Univ. of Washington (USA); Device Industry, **Jiang Hsieh,** GE Healthcare (USA)

Discussion

DEMO WORKSHOP

Computer-Aided Diagnosis
Conference 7624
5:30 to 7:45 pm · Grand Exhibit Hall

Computer-Aided Diagnosis

Workshop Chairs: **Heang-Ping Chan,** Univ. of Michigan (USA); **Stephen R. Aylward,** Kitware, Inc. (USA)

This year's CAD workshop will continue the successful workshops organized at the previous meetings. Live demonstrations will be given by teams of CAD developers, both from academia and from industry, showing their computer-aided detection and/or computer-aided diagnosis systems in mammography, lung CT, colon CT and many other areas.

The workshop will start with a short overview of the participating teams and systems. Next, the audience can interact with the researchers during live demonstrations of the systems.

Participation in this workshop provides a unique opportunity to see and experience how advanced CAD systems perform and to discuss their design and use with developers

DEMO WORKSHOP

Image Perception, Observer Performance, and Technology Assessment
Conference 7627
5:30 to 7:45 pm · Grand Exhibit Hall

Observer-Based Methodologies for Experiments in Medical Image Perception

Workshop Chairs: **David J. Manning,** Univ. of Cumbria (United Kingdom); **Anthony J. Maeder,** Univ. of Western Sydney (Australia)

Aim: To provide 'hands-on' experience and demonstrate a variety of observer methodologies related to medical image perception.

Format: The format of the workshop will be up to 12 stations set up and hosted by applicants from the perception community. Each station will be free-standing and will involve delegate participation to demonstrate a particular principle, technique or data-collection method.

After a brief introduction and an explanation of the aims of the workshop, delegates will be invited to visit stations of their choice and to participate in the activities.

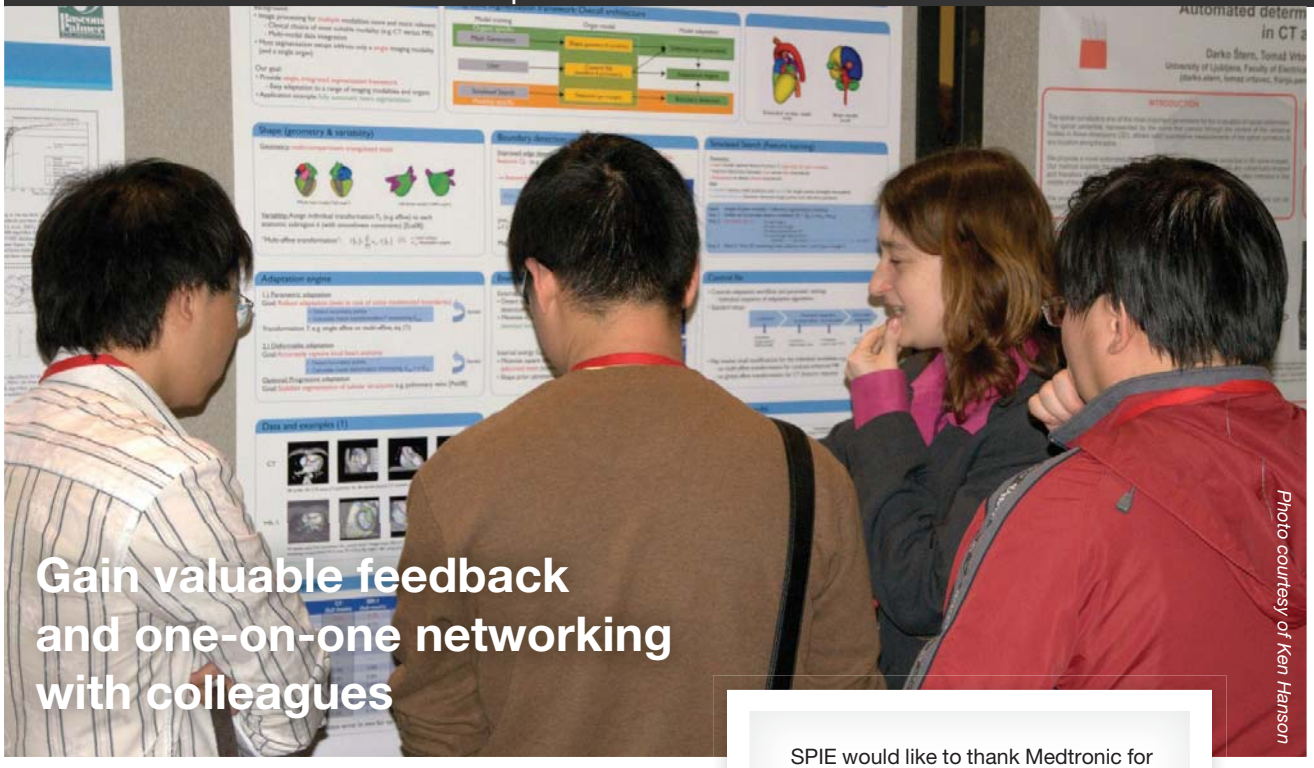
Advanced PACS-based Imaging Informatics and Therapeutic Applications
Conference 7628
5:45 to 7:45 pm · California Room

DICOM

Workshop Chair: **Steven C. Horii,** The Univ. of Pennsylvania Health System (USA)

The DICOM Workshop will include a brief overview of the major new material in the DICOM Standard. Detailed discussions of the new material in the Standard as well as an explanation of some of the ongoing debates over expansion of the Standard to cover new types of images will be guided by the most recent Working Group activities. There will be an opportunity to ask questions of the presenters and the other DICOM experts in attendance.

Attendees of the workshop should have some familiarity with the DICOM standard and may expect to learn about the newest developments and directions from the participants in the DICOM effort.



Each conference review committee recognizes a selected poster at the cum laude level for the best poster presentation in their conference.

SPIE would like to thank Medtronic for their generous support for the Poster Session.

Medtronic

Poster Session Information

Location: Grand Exhibit Hall

Two poster sessions are scheduled. Poster authors will be in attendance during the Interactive Poster Sessions to answer questions. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field.

SUNDAY/MONDAY POSTER SESSION

Poster presentations from the Image Processing; Visualization, Image-guided Procedures, and Modeling; Biomedical Applications in Molecular, Structural, and Functional Imaging; and Ultrasonic Imaging, Tomography, and Therapy conferences will be included.

Author Set-Up Time: Sunday from Noon to 1:30 pm. Posters should remain on display until the end of the Interactive Poster Session on Monday.

Interactive Poster Session and Reception:
Monday from 5:15 to 6:45 pm

TUESDAY/WEDNESDAY POSTER SESSION

Poster presentations from the Physics of Medical Imaging; Computer-Aided Diagnosis; Image Perception, Observer Performance, and Technology Assessment; Advanced PACS-based Imaging Informatics, and Therapeutic Applications conferences will be included.

Author Set-Up Time: Tuesday from 9:40 to 10:10 am. Posters should remain on display until the end of the interactive poster session on Wednesday.

Interactive Poster Session and Reception:
Wednesday from 5:30 to 7:00 pm

Poster Awards

Poster Awards in Conference Rooms

Check conference schedules for times and locations.

Each conference will recognize selected poster papers of exceptional quality at either the Cum Laude or Honorable Mention level. Winners will be chosen by members of conference review committees.

The winning posters will be identified during the receptions with award ribbons. Winners will be recognized and certificates distributed in the conference meeting rooms. Check conference schedules for times and locations.

In addition, cum laude poster award recipients will be recognized in the Proceedings of SPIE volumes and the following year's Call for Papers.

RECOGNITION LEVELS:

Each conference will recognize a selected poster at the cum laude level for the quality of work presented as well as the presentation. A number of posters, limited to no more than five percent, will receive honorable mention.

BASIS FOR SELECTION:

1. Work should be of a standard of excellence as judged by the quality and quantity of results presented. It should include results that are both significant and new to the field of study. Conclusions should be well supported by the results, and relevant references should be cited.
2. Presentation should be well organized, clear, and concise. It should be self-contained, giving adequate background, concise results, and relevant references. Graphic design will be considered only to the extent that it contributes to the clarity of presentation.
3. A conference may give preference to first authors who are students or who are within five years of their terminal degrees.

The Michael B. Merickel

Best Student Paper Award

Join us on Monday at 4:00 pm in the Town and Country Room for the announcement of the first and second place winners.

Congratulations to the following student authors whose papers were chosen from 50 submissions to advance to the final round in the competition.

Physics of Medical Imaging

Xiaolan Wang, The Johns Hopkins Univ. (USA)
Microcomputed tomography with a second generation photon-counting x-ray detector: contrast enhancement and material separation (Paper 7622-46)

Dominic J. Crotty, Duke Univ. Medical Ctr. (United States) and Duke Univ. (USA)
Investigating the dose distribution in the uncompressed breast with a dedicated CT mammotomography system (Paper 7622-80)

Image Processing

Jack H. Noble, Vanderbilt Univ. (United States)
Modeling and segmentation of intra-cochlear anatomy in conventional CT (Paper 7623-1)

Nora Baka, Erasmus MC (Netherlands) and Leids Univ. Medisch Ctr. (Netherlands)
Correspondence free 3D statistical shape model fitting to sparse x-ray projections (Paper 7623-12)

Computer-Aided Diagnosis

Pui Shan (Candy) Ho, Univ. of Oxford (United Kingdom)
The reconstruction of microcalcification clusters in digital breast tomosynthesis (Paper 7624-48)

Visualization, Image-Guided Procedures, and Modeling

Reuben R. Shamir, The Hebrew Univ. of Jerusalem (Israel)
Trajectory planning method for reduced patient risk in image-guided neurosurgery: concept and preliminary results (Paper 7625-17)

Biomedical Applications in Molecular, Structural, and Functional Imaging

Tobias Knopp, Univ. zu Lübeck (Germany)
Limitations of measurement-based system functions in magnetic particle imaging (Paper 7626-50)

Image Perception, Observer Performance, and Technology Assessment

Abhinav K. Jha, The Univ. of Arizona (United States)
Evaluating segmentation algorithms for diffusion-weighted MR images: a task-based approach (Paper 7627-20)

Advanced PACS-based and Imaging Informatics and Therapeutic Applications

Rouzbeh Maani, Univ. of Manitoba (Canada)
A practical fast method for medical imaging transmission based on the DICOM protocol (Paper 7628-20)

Ultrasonic Imaging and Signal Processing

Ji Zhang, Huazhong Univ. of Science and Technology (China)
Replace-approximation method for ambiguous solutions in factor analysis of ultrasonic hepatic perfusion (Paper 7629-36)

Dessert with the Experts

A Student Networking Event

FREE
Students receive one complimentary ticket with registration.

Monday 15 February · 6:30 to 7:30 pm
Location: Royal Palms IV-VI

See ticket for location.
First come, first served.

Enjoy a dessert and casual atmosphere while networking with some of the best and brightest minds in medical imaging. Exchange ideas, share experiences, and make valuable contacts at this complimentary student event. Students receive one free ticket with registration.

Women's Networking Lunch

Tuesday 16 February · 12:10 to 1:20 pm
Location: Royal Palms V

Lunch tickets required. Sign-up at registration required before coffee break on Tuesday.

Join other women in the field for informal discussions and networking during the scheduled lunch on Tuesday.

Meet with NIH Staff

Monday 15 February and
Wednesday 17 February · 12:10 to 1:20 pm
Location: Royal Palms V

Lunch tickets are required.

There will be two sessions where investigators will be able to meet with individual NIH staff members to discuss specific questions about the NIH application and review process.

ASK QUESTIONS REGARDING:

- NIH support for scientific areas
  - Image processing, computer-aided diagnosis, image-guided procedures, imaging informatics, imaging technologies, structural/functional/molecular imaging, optical imaging, ultrasound, MRI, PET, etc.
- Grant mechanisms
  - R03, R21, R01, etc.
- Training grant opportunities
  - Career (K) and Pathway to Independence Awards (K99-R00), Fellowships
    (F awards), support for non-U.S. citizens
- Review and application process of the NIH.

WHO SHOULD ATTEND:

- New investigators, early-career scientists and seasoned grant applicants who want to learn about new initiatives, funding opportunities and how to increase their possibilities of funding
- Grantees interested in hearing about changes in the NIH review system
- Academics interested in funding for critical programs and projects

SPIE COURSES

SPIE INSTRUCTORS ARE THE BEST IN THE BUSINESS.

GET THE TRAINING YOU NEED at SPIE Medical Imaging. Choose from 13 courses on fundamental concepts and emerging research in medical imaging.

Earn Course Credits: SPIE has been approved to offer MPCECs (Medical Physics Continuing Education Credits) for its courses at Medical Imaging 2010. If you attend one of our Medical Imaging Courses and meet CAMPEP's qualifications, you may apply for these credits at no charge. CAMPEP is a continuing professional education accreditation organization specific to the medical imaging community.

Register for a course:

- Take advantage of the industry's best instructors
- Further your career through ongoing education
- Earn CEUs for your continuing education

Money-back Guarantee

We are confident that once you experience an SPIE course for yourself you will look to SPIE for your future education needs. However, if for any reason you are dissatisfied, SPIE will gladly refund your money. We just ask that you tell us what you did not like; suggestions for improvement are always welcome.

Continuing Education Units

SPIE has been approved as an authorized provider of CEUs by IACET, The International Association for Continuing Education and Training (Provider #1002091). In obtaining this approval, SPIE has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice.

SPIE reserves the right to cancel a course due to insufficient advance registration.

Spectral CT Imaging SC987

NEW

Course level: Intermediate
CEU .35 $325 member / $375 non-member USD
Sunday 1:30 to 5:30 pm

Instructors: **Björn Heismann**, **Bernhard Schmidt,** and **Thomas Flohr**

Digital Radiography Image Processing and Image Quality SC986

NEW

Course level: Intermediate
CEU .35 $325 member / $375 non-member USD
Saturday 1:30 to 5:30 pm

Instructors: **Xiaohui Wang** and **David Foos**

Exact Cone Beam Reconstruction: Theory and Practice SC939

Course level: Intermediate
CEU .35 $325 member / $375 non-member USD
Sunday 8:30 am to 12:30 pm

Instructor: **Alexander Zamyatin**

Quantitative Characterization of Cancer Using in vivo Imaging SC938

Course level: Introductory
CEU .35 $325 member / $375 non-member USD
Saturday 8:30 am to 12:30 pm

Instructor: **C. Chad Quarles**

Validation in Medical Image Processing (VMIP) SC884

Course level: Intermediate
CEU .35 $325 member / $375 non-member USD
Saturday 1:30 to 5:30 pm

Instructor: **Pierre Jannin**

MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU) SC829

Course level: Intermediate
CEU .65 $530 member / $625 non-member USD
Saturday 8:30 am to 5:30 pm

Instructors: **Klaus Mueller**, **Fang Xu, Ziyi Zheng**, and **Wei Xu**

An Introduction to Finite Elements for Medical Imaging SC828

Course level: Introductory
CEU .35 $395 member / $445 non-member USD
Saturday 8:30 am to 12:30 pm

Instructor: **Michael Miga**

Statistical Methods in Medical Imaging and Bioengineering with Applications to Observer Performance Evaluation SC613

Course level: Intermediate
CEU .65 $530 member / $625 non-member USD
Monday 8:30 am to 5:30 pm

Instructor: **Elizabeth Krupinski** and **Dev Chakraborty**

X-Ray Detector Performance: Principles and Measurements using a Linear Systems Approach SC358

Course level: Advanced
CEU .35 $325 member / $375 non-member USD
Sunday 1:30 to 5:30 pm

Instructor: **Ian Cunningham**

Principles and Advancements in X-ray Computed Tomography SC471

Course level: Introductory
CEU .35
$390 member / $440 non-member USD
Sunday 8:30 am to 12:30 pm

Instructor: **Jiang Hsieh**

Fundamentals of Medical Image Processing and Analysis SC086

Course level: Intermediate
CEU .65
$530 member / $625 non-member USD
Saturday 8:30 am to 5:30 pm

Instructor: **Thomas Deserno**

Writing for Publication in Medical Imaging WS776

Course level: Introductory
CEU .35 $100 member / $150 non-member USD
Saturday 1:30 to 5:30 pm

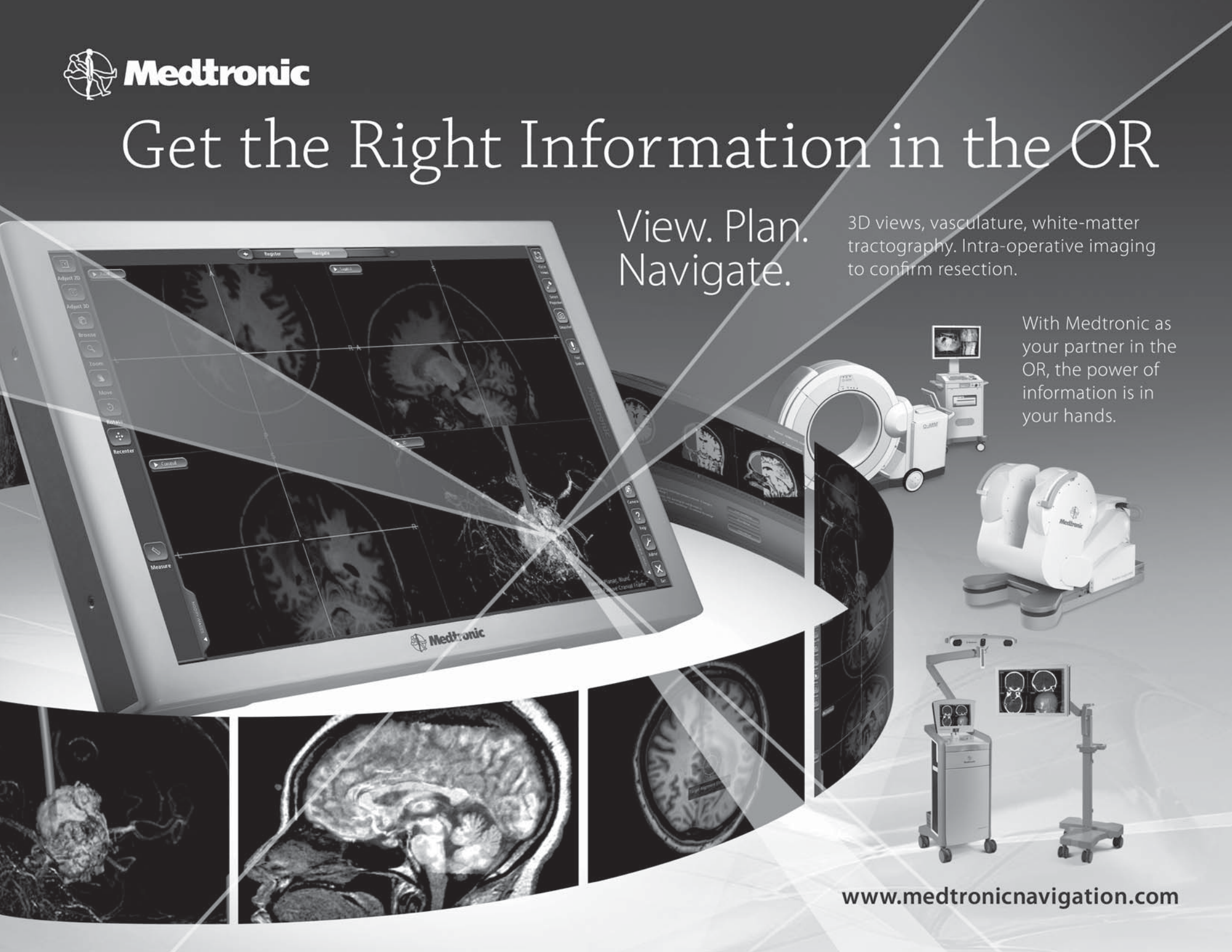
Instructor: **Kenneth Hanson**

Early Career Professional Development in Medical Imaging WS757

Course level: Introductory
CEU .35 $100 member / $150 non-member USD
Sunday 1:30 to 5:30 pm

Instructor: **Elizabeth Krupinski**

Registration Required
See SPIE Cashier to register


Medtronic
Get the Right Information in the OR
View. Plan.
Navigate.
3D views, vasculature, white-matter tractography. Intra-operative imaging to confirm resection.
With Medtronic as your partner in the OR, the power of information is in your hands.
www.medtronicnavigation.com

Conference 7622

Room: Town & Country

Monday-Thursday 15-18 Feb. 2010
Proceedings of SPIE Vol. 7622

Physics of Medical Imaging

Conference Chairs: **Ehsan Samei,** Duke Univ.; **Norbert J. Pelc,** Stanford Univ.

Program Committee: **Guang-Hong Chen,** Univ. of Wisconsin-Madison; **Dianna D. Cody,** The Univ. of Texas M.D. Anderson Cancer Ctr.; **Mats E. Danielsson,** Royal Institute of Technology (Sweden); **Thomas G. Flohr,** Siemens Medical Solutions GmbH (Germany); **Stephen J. Glick,** Univ. of Massachusetts Medical School; **Michael Grass,** Philips Research (Germany); **Christoph Hoeschen,** Helmholtz Zentrum München, GmbH (Germany); **Hee-Joung Kim,** Yonsei Univ. (Korea, Republic of); **Iacovos S. Kyprianou,** U.S. Food and Drug Administration; **Robert M. Nishikawa,** The Univ. of Chicago; **Jinyi Qi,** Univ. of California, Davis; **John A. Rowlands,** Thunder Bay Regional Research Institute (Canada); **John M. Sabol,** GE Healthcare; **Jeffrey H. Siewerdsen,** The Johns Hopkins Univ. and Princess Margaret Hospital; **Katsuyuki Taguchi,** The Johns Hopkins Univ.; **Bruce R. Whiting,** Washington Univ. in St. Louis; **John Yorkston,** Carestream Health, Inc.

Posters for this conference will be on display Tuesday and Wednesday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be announced in the conference meeting room on Thursday morning. See Technical Events for additional information.

7622 continues on page 00

Conference 7623

Rooms: San Diego

Sunday-Tuesday 14-16 Feb. 2010
Proceedings of SPIE Vol. 7623

Image Processing

Conference Chairs: **Benoit M. Dawant,** Vanderbilt Univ.; **David R. Haynor,** Univ. of Washington

Program Committee: **Kyongtae T. Bae,** Univ. of Pittsburgh; **Christian Barillot,** Institut de Recherche en Informatique et Systèmes Aléatoires (France); **Aaron Fenster,** Robarts Research Institute (Canada); **Bernd Fischer,** Univ. zu Lübeck (Germany); **Alejandro F. Frangi,** Univ. Pompeu Fabra (Spain); **Baowei Fei,** Emory Univ. School of Medicine; **James C. Gee,** Univ. of Pennsylvania; **Guido Gerig,** The Univ. of Utah; **Tianhu Lei,** The Children's Hospital of Philadelphia; **Boudewijn P. F. Lelieveldt,** Leids Univ. Medisch Ctr. (Netherlands); **Boštjan Likar,** Univ. of Ljubljana (Slovenia); **Murray H. Loew,** The George Washington Univ.; **Cristian Lorenz,** Philips GmbH (Germany); **Frederik Maes,** Katholieke Univ. Leuven (Belgium); **Vincent A. Magnotta,** The Univ. of Iowa Hospitals and Clinics; **Sunanda D. Mitra,** Texas Tech Univ.; **Kensaku Mori,** Nagoya Univ. (Japan); **Mads Nielsen,** Copenhagen Univ. (Denmark); **Sébastien Ourselin,** Univ. College London (UK); **Josien P. Pluim,** Univ. Medical Ctr. Utrecht (Netherlands); **Joseph M. Reinhardt,** The Univ. of Iowa; **Daniel Rueckert,** Imperial College London (UK); **Punam K. Saha,** The Univ. of Iowa; **Olivier Salvado,** Commonwealth Scientific and Industrial Research Organisation (Australia); **Julia A. Schnabel,** Univ. of Oxford (UK); **Colin Studholme,** Univ. of California, San Francisco; **Martin A. Styner,** The Univ. of North Carolina at Chapel Hill; **Philippe Thevenaz,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Jayaram K. Udupa,** Univ. of Pennsylvania; **Bram van Ginneken,** Univ. Medical Ctr. Utrecht (Netherlands); **Andreas Wahle,** The Univ. of Iowa

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:15 to 6:45 pm. Poster awards will be announced in the conference meeting room on Tuesday morning. See Technical Events for additional information.

7623 continues on page 14

Conference 7624

Room: Golden West

Tuesday-Thursday 16-18 Feb. 2010
Proceedings of SPIE Vol. 7624

Computer-Aided Diagnosis

Conference Chairs: **Nico Karssemeijer,** Radboud Univ. Nijmegen Medical Ctr. (Netherlands); **Ronald M. Summers,** National Institutes of Health

Program Committee: **Samuel G. Armato III,** The Univ. of Chicago; **Susan M. Astley,** The Univ. of Manchester (UK); **Stephen R. Aylward,** Kitware, Inc.; **Kyongtae T. Bae,** Univ. of Pittsburgh; **Heang-Ping Chan,** Univ. of Michigan; **Marleen de Bruijne,** Copenhagen Univ. (Denmark); **Hiroshi Fujita,** Gifu Univ. School of Medicine (Japan); **Horst K. Hahn,** Fraunhofer MEVIS (Germany); **Joseph Y. Lo,** Duke Univ.; **Michael F. McNitt-Gray,** Univ. of California, Los Angeles; **Kensaku Mori,** Nagoya Univ. (Japan); **Noboru Niki,** Univ. of Tokushima (Japan); **Carol L. Novak,** Siemens Corporate Research; **Janne J. Nappi,** Massachusetts General Hospital; **Nicholas A. Petrick,** U.S. Food and Drug Administration; **Kenji Suzuki,** The Univ. of Chicago; **Bram van Ginneken,** Univ. Medical Ctr. Utrecht (Netherlands); **Rafael Wiemker,** Philips GmbH (Germany); **Axel Wismueller,** Univ. of Rochester

Posters for this conference will be on display Tuesday and Wednesday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be announced in the conference meeting room on Thursday morning. See Technical Events for additional information.

7624 continues on page 26

Conference 7625

Room: California

Sunday-Tuesday 14-16 Feb. 2010
Proceedings of SPIE Vol. 7625

Visualization, Image-guided Procedures and Modeling

Conference Chairs: **Kenneth H. Wong,** Virginia Tech-National Capital Region; **Michael I. Miga,** Vanderbilt Univ.

Program Committee: **Purang Abolmaesumi,** Queen's Univ. (Canada); **Wolfgang Birkfellner,** Medizinische Univ. Wien (Austria); **Kevin R. Cleary,** Georgetown Univ. Medical Ctr.; **Alexandre X. Falcao,** Univ. Estadual de Campinas (Brazil); **Baowei Fei,** Emory Univ. School of Medicine; **Robert L. Galloway, Jr.,** Vanderbilt Univ.; **George J. Grevera,** St. Joseph's Univ.; **Steven L. Hartmann,** Medtronic Navigation; **David R. Haynor,** Univ. of Washington; **William E. Higgins,** The Pennsylvania State Univ.; **David R. Holmes III,** Mayo Clinic; **Pierre Jannin,** Univ. de Rennes I (France); **Terry M. Peters,** Robarts Research Institute (Canada); **Frank Sauer,** Siemens Corporate Research; **Eric J. Seibel,** Univ. of Washington; **Guy Shechter,** Philips Research; **Jayaram K. Udupa,** Univ. of Pennsylvania; **Jay B. West,** Accuray, Inc.; **Ivo Wolf,** Deutsches Krebsforschungszentrum (Germany); **Ziv R. Yaniv,** Georgetown Univ.

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:15 to 6:45 pm. Poster awards will be announced in the conference meeting room on Tuesday morning. See Technical Events for additional information.

7625 continues on page 14

Conference 7626

Room: Sun-Mon: Golden West & Tues: Royal Palm I-III

Sunday-Tuesday 14-16 Feb. 2010
Proceedings of SPIE Vol. 7626

Biomedical Applications in Molecular, Structural, and Functional Imaging

Conference Chairs: **Robert C. Molthen,** Medical College of Wisconsin; **John B. Weaver,** Dartmouth Hitchcock Medical Ctr.

Program Committee: **Amir A. Amini,** Univ. of Louisville; **Juan R. Cebral,** George Mason Univ.; **Yu Chen,** Univ. of Maryland, College Park; **Anne V. Clough,** Marquette Univ.; **Andreas H. Hielscher,** Columbia Univ.; **Eric A. Hoffman,** The Univ. of Iowa Hospitals and Clinics; **Xiaoping P. Hu,** Emory Univ.; **John F. LaDisa, Jr.,** Marquette Univ. and Medical College of Wisconsin and Childlren's Hospital of Wisconsin; **Armando Manduca,** Mayo Clinic College of Medicine; **Erik L. Ritman,** Mayo Clinic College of Medicine; **Ronald M. Summers,** National Institutes of Health; **Merryn H. Tawhai,** The Univ. of Auckland (New Zealand); **Axel Wismueller,** Univ. of Rochester

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:15 to 6:45 pm. Poster awards will be announced in the conference meeting room on Tuesday morning. See Technical Events for additional information.

7626 continues on page 14

Conference 7627

Room: San Diego

Wednesday-Thursday 17-18 Feb. 2010
Proceedings of SPIE Vol. 7627

Image Perception, Observer Performance, and Technology Assessment

Conference Chairs: **David J. Manning,** Univ. of Cumbria (UK); **Craig K. Abbey,** Univ. of California, Santa Barbara

Program Committee: **Kevin S. Berbaum,** The Univ. of Iowa Hospitals and Clinics; **Darrin C. Edwards,** The Univ. of Chicago; **Brandon D. Gallas,** U.S. Food and Drug Administration; **Matthew A. Kupinski,** College of Optical Sciences, The Univ. of Arizona; **Anthony J. Maeder,** Univ. of Western Sydney (Australia); **Claudia R. Mello-Thoms,** Univ. of Pittsburgh; **Berkman Sahiner,** Univ. of Michigan; **David L. Wilson,** Case Western Reserve Univ.

DEMO WORKSHOP

Observer-Based Methodologies for Experiments in Medical Image Perception

Tues. 5:30 to 7:45 pm · Grand Exhibit Hall

See Special Events for additional information.

Posters for this conference will be on display Tuesday and Wednesday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be announced in the conference meeting room on Thursday morning. See Technical Events for additional information.

7627 continues on page 39

Conference 7628

Room: California

Wednesday-Thursday 17-18 Feb. 2010
Proceedings of SPIE Vol. 7628

Advanced PACS-based Imaging Informatics and Therapeutic Applications

Conference Chairs: **Brent J. Liu,** The Univ. of Southern California; **William W. Boonn,** Hospital of the Univ. of Pennsylvania

Program Committee: **Katherine P. Andriole,** Harvard Medical School; **Kevin R. Cleary,** Georgetown Univ. Medical Ctr.; **Janice C. Honeyman-Buck,** Univ. of Florida; **Steven C. Horii,** The Univ. of Pennsylvania Health System; **Heinz U. Lemke,** Computer Assisted Radiology and Surgery (Germany); **Khan M. Siddiqui,** Microsoft Corp.; **Eliot L. Siegel,** Univ. of Maryland Medical Ctr.; **John B. Strauss,** Consultant; **Wyatt Tellis,** Univ. of California, San Francisco

WORKSHOP

DICOM

Tues. 5:45 to 7:45 pm · California Room

Workshop Chair: **Brent J. Liu,** The Univ. of Southern California

See Technical Events for additional information.

Posters for this conference will be on display Tuesday and Wednesday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be announced in the conference meeting room on Thursday morning. See Technical Events for additional information.

7628 continues on page 41

Conference 7629

Room: Royal Palm I-III

Sunday-Monday 14-15 Feb. 2010
Proceedings of SPIE Vol. 7629

Ultrasonic Imaging and Signal Processing

Conference Chairs: **Jan D'hooge,** Katholieke Univ. Leuven (Belgium); **Stephen A. McAleavey,** Univ. of Rochester

Program Committee: **Jeffrey C. Bamber,** Univ. of London (UK); **Johan G. Bosch,** Erasmus Univ. Rotterdam (Netherlands); **Stanislav Y. Emelianov,** The Univ. of Texas at Austin; **James F. Greenleaf,** Mayo Clinic; **Michael F. Insana,** Univ. of Illinois at Urbana-Champaign; **Jørgen A. Jensen,** Technical Univ. of Denmark (Denmark); **K. Kirk Shung,** The Univ. of Southern California; **Kai E. Thomenius,** General Electric Co.; **William F. Walker,** Univ. of Virginia

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:15 to 6:45 pm. Poster awards will be announced in the conference meeting room on Tuesday morning. See Technical Events for additional information.

7629 continues on page 14

SPIE Membership

A long-term investment that pays off

3-Year and Lifetime Memberships

3-year- $297 | Lifetime- $995

- Networking and access to information
- Discounts on events, courses, and publications
- Career advancement and peer recognition

Make SPIE your resource.
Join or renew online today.

spie.org/membership

SPIE
Connecting minds. Advancing light.

customerservice@spie.org
+1 360 676 3290
Fax: +1 360 647 1445

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 1
Room: San Diego . . . . . Sun. 8:00 to 9:40 am

Atlas-based Methods

Session Chair: **Colin Studholme,** Univ. of California, San Francisco

8:00 am: **Modeling and segmentation of intra-cochlear anatomy in conventional CT**, Jack H. Noble, Robert Rutherford, Vanderbilt Univ. (USA); Robert F. Labadie, Vanderbilt Univ. Medical Ctr. (USA); Omid Majdani, Medizinische Hochschule Hannover (Germany); Benoit M. Dawant, Vanderbilt Univ. (USA) . . . .[7623-01]

8:20 am: **A structural-functional MRI-based disease atlas: application to computer-aided-diagnosis of prostate cancer**, Gaoyu Xiao, Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA) .[7623-61]

8:40 am: **Manifold parameterization of the left lentricle for a statistical modeling of its complete anatomy**, Debora Gil, Jaume Garcia-Barnés, Aura Hernández-Sabaté, Enric Martí, Univ. Autònoma de Barcelona (Spain) . . . . . .[7623-02]

9:00 am: **Fully automatic cardiac segmentation from 3D CTA data: a multi-atlas based approach**, Hortense A. Kirisli, Michiel Schaap, Stefan Klein, Lisan Neefjes, Annick Weustink, Theo Van Walsum, Wiro J. Niessen, Erasmus MC (Netherlands) . . . . . .[7623-03]

9:20 am: **Model guided diffeomorphic demons for atlas based segmentation**, Karl D. Fritscher, Benedikt Schuler, Univ. für Gesundheitswissenschaften, Medizinische Informatik und Technik (Austria); Tobias Roth, Christian Kammerlander, Michael Blauth, Medical Univ. Innsbruck (Austria); Rainer Schubert, Univ. für Gesundheitswissenschaften, Medizinische Informatik und Technik (Austria). . . . . .[7623-05]

Coffee Break . . . . . .9:40 to 10:10 am

7623 continues on page 15

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 1
Room: California . . . . . Sun. 8:00 to 9:40 am

Image-guided Procedures I

Session Chairs: **David R. Holmes III,** Mayo Clinic; **Robert L. Galloway, Jr.,** Vanderbilt Univ.

8:00 am: **The OCT penlight: in-situ image guidance for microsurgery**, John Galeotti, Carnegie Mellon Univ. (USA); Areej Sajjad, Bo Wang, Larry E. Kagemann, Jr., Gaurav Shukla, Univ. of Pittsburgh (USA); Mel Siegel, Bing Wu, Roberta Klatzky, Carnegie Mellon Univ. (USA); Gadi Wollstein M.D., Joel S. Schuman M.D., Univ. of Pittsburgh Medical Ctr. (USA); George D. Stetten, Univ. of Pittsburgh (USA) . . . . . .[7625-01]

8:20 am: **Fusion of intraoperative cone-beam CT and endoscopic video for image-guided procedures**, Michael J. Daly, Harley Chan, Ontario Cancer Institute (Canada); Eitan Prisman, Univ. of Toronto, St. George Campus (Canada); Sajendra Nithiananthan, Univ. of Toronto (Canada); Robert A. Weersink, Ontario Cancer Institute (Canada); Jonathan C. Irish M.D., Univ. of Toronto (Canada); Jeffrey Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . .[7625-02]

8:40 am: **Integrating the visualization concept of the medical imaging interaction toolkit (MITK) into the XIP-builder visual programming environment**, Ivo Wolf, Univ. Mannheim (Germany) and Deutsches Krebsforschungszentrum (Germany); Marco Nolden, Tobias Schwarz, Hans-Peter Meinzer, Deutsches Krebsforschungszentrum (Germany). . . . . .[7625-03]

9:00 am: **High-accuracy registration of intraoperative CT imaging**, Anton Oentoro, Randy E. Ellis, Queen's Univ. (Canada) . . . . . .[7625-04]

9:20 am: **Intraoperative positioning of mobile C-arms using artificial fluoroscopy**, Philipp Dressel, Lejing Wang, Oliver Kutter, Joerg Traub, Technische Univ. München (Germany); Sandro-Michael Heining, Ludwig-Maximilians-Univ. München (Germany); Nassir Navab, Technische Univ. München (Germany) . . . . . .[7625-05]

Coffee Break . . . . . .9:40 to 10:10 am

7625 continues on page 15

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 1
Room: Sun-Mon: Golden West. . Sun. 8:00 to 9:40 am

MRI Applications

Session Chairs: **Xiaoping P. Hu,** Emory Univ.; **John B. Weaver,** Dartmouth Hitchcock Medical Ctr.

8:00 am: **Strain correction in interleaved strain-encoded (SENC) cardiac MR**, Abdallah G. Motaal, Nile Univ. (Egypt); Nael F. Osman, The Johns Hopkins Univ. (USA) . . . . . .[7626-01]

8:20 am: **Multimodal image registration: matching MRI with histology**, Lejla Alic, Joost Haeck, Stefan Klein, Karin Bol, Sandra van Tiel, Piotr Wielopolski, Magda Bijster, Wiro J. Niessen, Monique Bernsen, Jifke Veenland, Marion de Jong, Erasmus MC (Netherlands) . . . . . .[7626-02]

8:40 am: **Quantitative evaluation of liver function using gadoxetate disodium (Gd-EOB-DTPA) enhanced MR imaging**, Akira Yamada, The Univ. of Chicago (USA) and Shinshu Univ. School of Medicine (Japan); Takeshi Hara, Feng Li, Kunio Doi, The Univ. of Chicago (USA) . . . . . .[7626-03]

9:00 am: **Development of image processing methods to quantify spatial and temporal ventilation dynamics using hyperpolarized 3He magnetic resonance imaging in chronic obstructive pulmonary disease**, Miranda Kirby, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); Andrew Wheatley, Robarts Research Institute (Canada); David G. McCormack M.D., The Univ. of Western Ontario (Canada); Grace Parraga, Robarts Research Institute (Canada) . . . . . .[7626-04]

9:20 am: **The improvement of ICA with projection technique in multitask fMRI data analysis**, Zhiying Long, Rui Li, Beijing Normal Univ. (China); Kewei Chen, Banner Alzheimer's Institute (USA); Li Yao, Beijing Normal Univ. (China) . . . . . .[7626-05]

Coffee Break . . . . . .9:40 to 10:10 am

7626 continues on page 15

Conference 7629 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 1
Room: Royal Palm I-III . . . . . Sun. 8:00 to 9:40 am

3D Imaging

Session Chair: **Stephen A. McAleavey,** Univ. of Rochester

8:00 am: **Automated 3D whole-breast ultrasound imaging, a novel technology using 3D spatial compounding of ultrasound volumes: results of a clinical pilot study**, Anais Leproux, Michiel van Beek, Philips Research Nederland B.V. (Netherlands); Ute de Vries, Martin Wasser, Leids Univ. Medisch Ctr. (Netherlands); Leon Bakker, Philips Research (China); Olivier Cuisenaire, Philips Medical Systems (France); Martin B. van der Mark, Philips Research Nederland B.V. (Netherlands); Robert Entrekin, Philips Medical Systems (USA) . . . . . .[7629-01]

8:20 am: **Reconstruction error in 3D ultrasound imaging with mechanical probes**, Ji Cao, Kerem Karadayi, Univ. of Washington (USA); Ravi A. Managuli, Univ. of Washington (USA) and Hitachi Medical Systems America (USA); Yongmin Kim, Univ. of Washington (USA) . . . . . .[7629-02]

8:40 am: **3D motion and strain estimation of the heart: initial clinical findings**, Daniel Barbosa, Krassimira Hristova, Dirk Loeckx, Frank Rademakers, Piet Claus, Jan D'hooge, Katholieke Univ. Leuven (Belgium) . . . . . .[7629-03]

9:00 am: **Registration of x-ray mammograms and three-dimensional speed of sound images of the female breast**, Torsten Hopp, Nicole V. Ruiter, Marie Holzapfel, Forschungszentrum Karlsruhe GmbH (Germany); Nebojsa Duric, Cuiping Li, Karmanos Cancer Institute (USA) . . . . . .[7629-04]

9:20 am: **Breast imaging with ultrasound tomography: a comparative study with MRI**, Peter J. Littrup, Nebojsa Duric, Bryan Ranger, Karmanos Cancer Institute (USA) . . . . . .[7629-05]

Coffee Break . . . . . .9:40 to 10:10 am

7629 continues on page 15

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 2
Room: San Diego . . . . Sun. 10:10 am to 12:10 pm

Registration I

Session Chair: **Sébastien Ourselin,** Univ. College London (UK)

10:10 am: **Deformable multimodal image registration by maximizing Renyi's statistical dependence measure**, Jiangli Shi, Yunmei Chen, Murali Rao, Jinseop Lee, Univ. of Florida (USA) . . . . . .[7623-06]

10:30 am: **Image processing and registration in a point set representation**, Yi Gao, Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . . .[7623-45]

10:50 am: **Tissue volume and vesselness measure preserving nonrigid registration of lung CT images**, Kunlin Cao, Kai Ding, Gary E. Christensen, Joseph M. Reinhardt, The Univ. of Iowa (USA). . . . . .[7623-08]

11:10 am: **Multimodal registration of MR images with a novel least-squares distance measure**, Stefan Heldmann, Univ. zu Lübeck (Germany) and Fraunhofer MEVIS (Germany) . . . . . .[7623-09]

11:30 am: **Extending the quadratic taxonomy of regularizers for nonparametric registration**, Nathan D. Cahill, Rochester Institute of Technology (USA); Alison Noble, Univ. of Oxford (UK); David J. Hawkes, Univ. College London (UK) . . . . . .[7623-10]

11:50 am: **Coupling tumor growth with brain deformation: a constrained parametric non-rigid registration problem**, Andreas Mang, Stefan Becker, Alina Toma, Thorsten M. Buzug, Univ. zu Lübeck (Germany) . . . . . .[7623-11]

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

7623 continues on page 16

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 2
Room: California . . . . . Sun. 10:10 am to 12:10 pm

Cardiovascular

Session Chairs: **Frank Sauer,** Siemens Corporate Research; **Purang Abolmaesumi,** Queen's Univ. (Canada)

10:10 am: **3D model-based catheter tracking for motion compensation in EP procedures**, Alexander B. Brost, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Rui Liao, Siemens Corporate Research (USA); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (USA); Norbert K. Strobel, Siemens Medical Solutions GmbH (Germany). . . . . .[7625-06]

10:30 am: **Respiratory motion compensated overlay of surface models from cardiac MR on interventional x-ray fluoroscopy for guidance of cardiac resynchronization therapy procedures**, Robert M. Manzke, Philips Research (USA); Axel Bornstedt M.D., Anja Lutz, Universitätsklinikum Ulm (Germany); Marcel Schenderlein, Univ. Ulm (Germany); Vinzenz Hombach, Ludwig Binner, Volker Rasche, Universitätsklinikum Ulm (Germany) . . . . . .[7625-07]

10:50 am: **Estimating heart shift and morphological changes during minimally invasive cardiac interventions**, Cristian A. Linte, Robarts Research Institute (Canada); Mathew Carias, Univ. of Western Ontario (Canada); S. Daniel Cho, Danielle F. Pace, John T. Moore, Robarts Research Institute (Canada); Daniel Bainbridge, The Univ. of Western Ontario (Canada); Terry M. Peters, Robarts Research Institute (Canada) . . . . . .[7625-08]

11:10 am: **Artifact reduction method for improved visualization of 3D coronary artery reconstructions from rotational angiography acquisitions**, Anne M. Neubauer, Philips Research (USA) and Univ. of Colorado Health Sciences Ctr. (USA); Eberhard Hansis, Philips Research (Germany); John D. Carroll M.D., Philips Research (USA) and Univ. of Colorado Health Sciences Ctr. (USA); Michael Grass, Philips Research (Germany) . . . . . .[7625-09]

11:30 am: **Semi-automatic segmentation of major aorto-pulmonary collateral arteries (MAPCAs) for image-guided procedures**, David Rivest-Henault, Luc Duong, Mohamed Cheriet, Ecole de Technologie Supérieure (Canada) . . . . . .[7625-10]

11:50 am: **Endoclamp balloon visualization and automatic placement system**, Hugo D. Furtado, Jožef Stefan Institute (Slovenia) and Medical Univ. Vienna (Austria); Thomas P. Stüdeli, Delft Univ. of Technology (Netherlands); Mauro Sette, Katholieke Univ. Leuven (Belgium); Eigil Samset, Univ. of Oslo (Norway); Borut Gersak, Univ. Medical Ctr. Ljubljana (Slovenia) [7625-11]

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

7625 continues on page 16

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 2
Room: Golden West . . Sun. 10:10 am to 12:10 pm

MRI Brain Imaging

Session Chair: **Axel Wismueller,** Univ. of Rochester Medical Ctr.

10:10 am: **Bayesian network analysis applied to grey matter volumes of cortical regions**, Anand A. Joshi, The Univ. of Southern California (USA); Shantanu Joshi, Ivo D. Dinov, Arthur W. Toga, Univ. of California, Los Angeles (USA) . . . . . .[7626-06]

10:30 am: **Magnetic resonance imaging for white matter degradation in fornix following mild traumatic brain injury**, Wang Zhan, Lauren Boreta, Grant Gauger, Univ. of California, San Francisco (USA). . . . . .[7626-07]

10:50 am: **Statistical shape analysis of gender differences in the lateral ventricles**, Qing He, Dmitriy Karpman, Ye Duan, Univ. of Missouri-Columbia (USA) . . . . . .[7626-08]

11:10 am: **Shape analysis of corpus callosum in phenylketonuria using a new 3D correspondence algorithm**, Qing He, Shawn E. Christ, Kevin Karsch, Dawn Peck, Ye Duan, Univ. of Missouri-Columbia (USA) . . . . . .[7626-09]

11:30 am: **Mapping gray matter volume and cortical thickness in Alzheimer's disease**, Ziyi Li, Beijing Normal Univ. (China); Kewei Chen, Banner Alzheimer's Institute (USA); Li Yao, Beijing Normal Univ. (China); ZhiQun Wang, KunChen Li, Xuanwu Hospital (China); Xiaojuan Guo, Beijing Normal Univ. (China) . . .[7626-10]

11:50 am: **The posterior cingulate cortex consistently plays the pivotal role in the default mode network across different healthy subjects under different fMRI scan parameters**, Rui Li, Juan Li, Xiaoyan Miao, Li Yao, Xia Wu, Beijing Normal Univ. (China) . .[7626-11]

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

7626 continues on page 16

Conference 7629 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 2
Room: Royal Palm I-III Sun. 10:10 am to 12:10 pm

Image Processing

Session Chair: **Johan G. Bosch,** Erasmus Univ. Rotterdam (Netherlands)

10:10 am: **A 1D wavelet filtering for ultrasound images despeckling**, Sonia Dahdouh, Mathieu Dubois, Emmanuelle Frenoux, Angel Osorio, Lab. d'Informatique pour la Mécanique et les Sciences de l'Ingénieur (France) . . . . . .[7629-06]

10:30 am: **Advanced noise reduction in placental ultrasound imaging using CPU and GPU: a comparative study**, Gergely Zombori, John T. Ryan, Univ. College Dublin (Ireland); Fionnuala McAuliffe M.D., National Maternity Hospital (Ireland); Louise A. Rainford, Mary C. Moran M.D., Univ. College Dublin (Ireland); Patrick C. Brennan, The Univ. of Sydney (Australia). . . . . .[7629-07]

10:50 am: **Automatic detection and measurement of femur length from fetal ultrasonography**, Prateep Mukherjee, GE Global Research (India) and International Institute of Information Technologies (India); Gokul Swamy, GE Global Research (India); Madhumita Gupta, GE Healthcare (India); Uday Patil, GE Global Research (India) and Manipal Hospital (India); Kajoli B. Krishnan, GE Global Research (India) . . . . . .[7629-08]

11:10 am: **Trajectory-based deformation correction in ultrasound images**, Brian W. Anthony, Shih-Yu Sun, Matthew W. Gilbertson, Massachusetts Institute of Technology (USA) . . . . . .[7629-09]

11:30 am: **Real-time ultrasound simulation for low cost training simulators**, Sjur U. Gjerald, Norwegian Univ. of Science and Technology (Norway); Reidar Brekken, Toril A. N. Hernes, SINTEF (Norway) and Norwegian Univ. of Science and Technology (Norway) . . . . . .[7629-10]

11:50 am: **Ultrasound image quality assessment: a framework for evaluation of clinical image quality**, Martin C. Hemmsen, Technical Univ. of Denmark (Denmark) and BK Medical (Denmark); Mads M. Petersen, Rigshospitalet (Denmark); Svetoslav I. Nikolov, BK Medical (Denmark); Jørgen A. Jensen, Technical Univ. of Denmark (Denmark) . . . . . .[7629-11]

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

7629 continues on page 16

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 3
Room: San Diego . . . . . Sun. 1:20 to 3:00 pm

Model-based Segmentation

Session Chair: **Olivier Salvado,** Australian e-Health Research Ctr. (Australia)

1:20 pm: **Correspondence free 3D statistical shape model fitting to sparse x-ray projections**, Nora Baka, Erasmus MC (Netherlands) and Leids Univ. Medisch Ctr. (Netherlands); Wiro J. Niessen, Erasmus MC (Netherlands); Bart L. Kaptein, Leids Univ. Medisch Ctr. (Netherlands); Theo van Walsum, Erasmus MC (Netherlands); Luca Ferrarini, Johan H. C. Reiber, Boudewijn P. F. Lelieveldt, Leids Univ. Medisch Ctr. (Netherlands) . . . . . .[7623-12]

1:40 pm: **4D reconstruction of cardiac gated SPECT images using a content-adaptive deformable mesh model**, Thibault Marin, Miles N. Wernick, Yongyi Yang, Jovan G. Brankov, Illinois Institute of Technology (USA) . . . . . .[7623-13]

2:00 pm: **3D shape reconstruction of bone from two x-ray images using 2D/3D non-rigid registration based on moving least-squares deformation**, Thierry Cresson, Dominic Branchaud, Ramnada Chav, Benoit Godbout, Jacques A. de Guise, Univ. du Québec (Canada) . . . . . .[7623-14]

2:20 pm: **Abdominal arteries recognition in x-ray using a structural model**, Olivier Nempont, Raoul Florent, Philips France (France). . . . . .[7623-15]

2:40 pm: **Robust extraction of the aorta and pulmonary artery from 3D MDCT image data**, William E. Higgins, Pinyo Taeprasartsit, The Pennsylvania State Univ. (USA) . . . . . .[7623-16]

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

7623 continues on page 17

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 3
Room: California . . . . . Sun. 1:20 to 3:00 pm

Registration, Visualization, Modeling

Session Chairs: **Wolfgang Birkfellner,** Medizinische Univ. Wien (Austria); **George J. Grevera,** St. Joseph's Univ.

1:20 pm: **Evaluation of popular volume rendering algorithms revisited**, Stephan D. Neunreither, Otto-von-Guericke-Univ. Magdeburg (Germany); Manfred Weiler, Visage Imaging GmbH (Germany). . . . .[7625-12]

1:40 pm: **Bladder wall flattening with conformal mapping for MR cystography**, Ruirui Jiang, Hongbin Zhu, Wei Zeng, Xiaokang Yu, Yi Fan, Xianfeng Gu, Zhengrong Liang, Stony Brook Univ. (USA) . . .[7625-13]

2:00 pm: **General approach to error prediction in rigid point registration**, Andrei Danilchenko, J. Michael Fitzpatrick, Vanderbilt Univ. (USA) . . . . . .[7625-14]

2:20 pm: **Correlation of hemodynamical forces and atherosclerotic plaque components**, Gador Canton, Bernard Chiu, Chun Yuan, William S. Kerwin, Univ. of Washington (USA) . . . . . .[7625-15]

2:40 pm: **Aortic valve and ascending aortic root modeling from 3D and 3D+t CT**, Sasa Grbic, Yefeng Zheng, Dominik Zaeuner, Razvan I. Ionasec, Bogdan Georgescu, Dorin Comaniciu, Siemens Corporate Research (USA) . . . . . .[7625-16]

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

7625 continues on page 17

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 3
Room: Golden West . . . . . 1:20 to 3:00 pm

Brain and Cranial Imaging

Session Chair: **Armando Manduca,** Mayo Clinic College of Medicine

1:20 pm: **A review of multivariate methods in brain imaging data fusion**, Jing Sui, The Univ. of New Mexico (USA); Tülay Adali, Univ. of Maryland, Baltimore County (USA); Honghui Yang, Northwestern Polytechnical Univ. (China); Yi-Ou Li, Univ. of Maryland, Baltimore County (USA); Vince D. Calhoun, The Univ. of New Mexico (USA) . . . . . .[7626-12]

1:40 pm: **Improving visualization of intracranial arteries at the skull base for CT angiography with calcified plaques**, Adam Huang, National Central Univ. (Taiwan); Chung-Wei Lee M.D., National Taiwan Univ. Hospital (Taiwan); Chung-Yi Yang M.D., Hon-Man Liu M.D., National Taiwan Univ. Hospital (Taiwan) .[7626-13]

2:00 pm: **Intraoperative prediction of tumor cell concentration from mass spectrometry imaging**, Vandana Mohan, Georgia Institute of Technology (USA); Nathalie Agar, Ferenc A. Jolesz, Brigham and Women's Hospital (USA); Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . . .[7626-14]

2:20 pm: **Retrospective analysis of application of compressive sensing to 1H MR metabolic imaging**, Sairam Geethanath, Joint Program in Biomedical Engineering at The Univ. of Texas (USA); Hyeonman Baek, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Vikram Kodibagkar, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA) and Joint Program in Biomedical Engineering at The Univ. of Texas (USA). . . . . .[7626-15]

2:40 pm: **Improved estimation of parametric images of cerebral glucose metabolic rate from dynamic FDG-PET using volume-wise principle component analysis**, Xiaoqian Dai, Jie Tian, Zhe Chen, Institute of Automation (China) . . . . . .[7626-16]

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

7626 continues on page 17

Conference 7629 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 3
Room: Royal Palm I-III . . . . . Sun. 1:20 to 3:00 pm

Ultrasound Image Formation

Session Chair: **Jan D'hooge,** Katholieke Univ. Leuven (Belgium)

1:20 pm: **Accurate step-FMCW ultrasound ranging and comparison with pulse-echo signaling methods**, Shyam Natarajan, Univ. of California, Los Angeles (USA); Rahul S. Singh, Univ. of California, Santa Barbara (USA) and Univ. of California, Los Angeles (USA); Michael Lee, Brian P. Cox, Martin O. Culjat, Warren S. Grundfest M.D., Univ. of California, Los Angeles (USA); Hua Lee, Univ. of California, Santa Barbara (USA). . . . . .[7629-12]

1:40 pm: **Optoacoustic spectroscopic imaging of radiolucent foreign bodies**, Leland Page, Saher M. Maswadi, Randolph D. Glickman, The Univ. of Texas Health Science Ctr. at San Antonio (USA). . . . .[7629-13]

2:00 pm: **Tomographic reconstruction of the pulse-echo spatial impulse response**, Nghia Q. Nguyen, Rebecca D. Yapp, Univ. of Illinois at Urbana-Champaign (USA); Craig K. Abbey, Univ. of California, Santa Barbara (USA); Michael F. Insana, Univ. of Illinois at Urbana-Champaign (USA). . . . . .[7629-14]

2:20 pm: **Assessment of harmonic source correction for ultrasound medical imaging**, Scott W. Dianis, Olaf T. von Ramm, Duke Univ. (USA) . . . . . .[7629-15]

2:40 pm: **Detection of multiple electrical sources in tissue using ultrasound current source density imaging**, Zhaohui Wang, Ragnar Olafsson, Pier M. Ingram, Russell S. Witte, The Univ. of Arizona (USA); Qian Li, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . .[7629-16]

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

7629 continues on page 17

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 4
Room: San Diego . . . . . Sun. 3:30 to 5:30 pm

Image Enhancement
Session Chair: **Bram van Ginneken,** Univ. Medical Ctr. Utrecht (Netherlands)

3:30 pm: **Combining short-axis and long-axis cardiac MR images by applying a super-resolution reconstruction algorithm**, Sami U. Rahman, Stefan Wesarg, Technische Univ. Darmstadt (Germany) . . . . . .[7623-17]

3:50 pm: **Synthesizing MR contrast and resolution through a patch matching technique**, Snehashis Roy, Aaron Carass, Jerry L. Prince, The Johns Hopkins Univ. (USA) . . . . . .[7623-18]

4:10 pm: **A variational approach for the correction of field-inhomogeneities in EPI sequences**, Janine Olesch, Univ. zu Lübeck (Germany); Lars Ruthotto, Harald Kugel, Westfälische Wilhelms-Univ Münster (Germany); Bernd Fischer, Univ. zu Lübeck (Germany); Carsten H. Wolters, Westfälische Wilhelms-Univ Münster (Germany) . . . . . .[7623-19]

4:30 pm: **Denoising arterial spin labeling MRI using tissue partial volume**, Jan Petr, Institut de Recherche en Informatique et Systèmes Aléatoires (France); Jean-Christophe Ferre, Jean-Yves Gauvrit, Ctr. Hospitalier Univ. de Rennes (France); Christian Barillot, Institut de Recherche en Informatique et Systèmes Aléatoires (France) . . . . . .[7623-20]

4:50 pm: **An adaptive nonlocal means algorithm for medical image denoising**, Tanaphol Thaipanich, C.-C. Jay Kuo, The Univ. of Southern California (USA) . . . . . .[7623-21]

5:10 pm: **Noise filtering in thin-slice 4D cerebral CT perfusion scans,** Adrienne Mendrik, Evert-Jan P. A. Vonken, Jan-Willem Dankbaar, Mathias Prokop, Bram van Ginneken, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . .[7623-22]

WORKSHOP
Detecting and Quantifying Differences in Medical Images
San Diego Room · Sun. 5:45 to 7:45 pm
David R. Haynor, Univ. of Washington

7623 continues on page 24

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 4
Room: California . . . . . Sun. 3:30 to 5:30 pm

Head and Neck
Session Chairs: **David R. Haynor,** Univ. of Washington; **Guy Shechter,** Philips Research

3:30 pm: **Trajectory planning method for reduced patient risk in image-guided neurosurgery: concept and preliminary results**, Reuben R. Shamir, Ran Roth, Leo Joskowicz, The Hebrew Univ. of Jerusalem (Israel); Luca Antiga, Istituto di Ricerche Farmacologiche Mario Negri (Italy); Roberto I. Foroni, Univ. degli Studi di Verona Ospedale (Italy); Yigal Shoshan, Hadassah Univ. Hospital (Israel) . . . . . .[7625-17]

3:50 pm: **Enhancement of subsurface brain shift model accuracy: a preliminary study**, Ishita Garg, Siyi Ding, Aaron M. Coffey, Prashanth Dumpuri, Reid C. Thompson M.D., Benoit M. Dawant, Michael I. Miga, Vanderbilt Univ. (USA) . . . . . .[7625-18]

4:10 pm: **Evaluating the feasibility of C-arm CT for brain perfusion imaging: an in vitro study**, Arundhuti Ganguly, Stanford Univ. (USA); Andreas Fieselmann, Christopher Rohkohl, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and Siemens AG (Germany); Jan Boese, Siemens Medical Solutions GmbH (Germany); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Rebecca Fahrig, Stanford Univ. (USA) . . . . . .[7625-19]

4:30 pm: **Demons deformable registration for cone-beam CT guidance: registration of pre and intraoperative images**, Sajendra Nithiananthan, Univ. of Toronto (Canada); Kristy K. Brock, Univ. of Toronto (Canada) and Ontario Cancer Institute (Canada); Michael J. Daly, Harley Chan, Ontario Cancer Institute (Canada); Jonathan C. Irish M.D., Princess Margaret Hospital (Canada); Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . .[7625-20]

4:50 pm: **Biomechanical based image registration for head and neck radiation treatment**, Adil Al-Mayah, Joanne L. Moseley, Lily Chau, Stephen Breen, Kristy K. Brock, Princess Margaret Hospital (Canada) . .[7625-21]

5:10 pm: **Real-time fiber selection using the Wii remote**, Jan Klein, Mike Scholl, Alexander Köhn, Horst K. Hahn, Fraunhofer MEVIS (Germany) . . . . . .[7625-22]

7625 continues on page 24

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 4
Room: Golden West . . . . . Sun. 3:30 to 5:30 pm

Heart and Vascular Imaging
Session Chair: **Amir A. Amini,** Univ. of Louisville

3:30 pm: **Assessment of contrast flow modification in aneurysms treated with closed-cell, self-expanding asymmetric vascular stents (SAVS)**, Ciprian N. Ionita, Weiyuan Wang, Univ. at Buffalo (USA); Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke Research Ctr. (USA) . . . . . .[7626-17]

3:50 pm: **A new image-based process for quantifying hemodynamic contributions to long-term morbidity in a rabbit model of aortic coarctation**, David C. Wendell, Ronak J. Dholakia, Marquette Univ. (USA); Paul M. Larsen, Tulane Univ. (USA); Arjun R. Menon, Marquette Univ. (USA); John F. LaDisa, Jr., Marquette Univ. (USA) and Children's Hospital of Wisconsin (USA) and Medical College of Wisconsin (USA) . . . . .[7626-18]

4:10 pm: **Computational blood flow and vessel wall modeling in a CT-based thoracic aorta after stent-graft implantation**, Dilana Hazer, Markus Stoll, Eduard Schmidt, Univ. Karlsruhe (Germany); Goetz-Martin Richter, Katharinen Hospital (Germany); Rüdiger Dillmann, Univ. Karlsruhe (Germany). . . . . .[7626-19]

4:30 pm: **Optical imaging of steady flow in a phantom model of iliac stenosis: comparison of CFD simulations with PIV measurements**, Mostafa Shakeri, Iman Khodarahmi, Michael K. Sharp, Amir A. Amini, Univ. of Louisville (USA) . . . . . .[7626-20]

4:50 pm: **Accurate 2D cardiac motion tracking using scattered data fitting incorporating phase information from MRI**, Hui Wang, Amir A. Amini, Univ. of Louisville (USA) . . . . . .[7626-21]

5:10 pm: **Comparison of myocardial motion estimation methods based on simulated echocardiographic B-mode and RF data,** Vahid Tavakoli, Jamie D. Kemp, Buddha Dawn, Marcus F. Stoddard, Amir A. Amini, Univ. of Louisville (USA) . . . . . .[7626-22]

WORKSHOP
Imaging-based Physiome Models for Quantitative Analysis of the Lung and Other Organ Systems
Golden West Room · Sun. 5:45 to 7:45 pm
Merryn H. Tawhai, The Univ. of Auckland (New Zealand)

7626 continues on page 24

Conference 7629 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 4
Room: Royal Palm I-III . . . . . Sun. 3:30 to 5:30 pm

Ultrasound Tomography
Session Chair: **Kullervo H. Hynynen,** Sunnybrook Health Sciences Ctr. (Canada)

3:30 pm: **On sound speed estimation using wave-based ultrasound tomography**, Olivier Roy, Ivana Jovanovic, Ali Hormati, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Martin Vetterli, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and Univ. of California, Berkeley (USA) . . . . . .[7629-17]

3:50 pm: **Robust ultrasound travel-time tomography using the bent-ray model**, Ali Hormati, Ivana Jovanovic, Olivier Roy, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Martin Vetterli, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and Univ. of California, Berkeley (USA) . . . . . .[7629-18]

4:10 pm: **Inverse scattering and refraction corrected reflection for breast cancer imaging**, James W. Wiskin, TechniScan Medical Systems, Inc. (USA) and Univ. of Utah (USA); David T. Borup, Steven A. Johnson, Karleen Callahan, Jessica Smith, Barry Hanover, John Klock M.D., TechniScan Medical Systems, Inc. (USA) . . . . . .[7629-19]

4:30 pm: **The different structural scales of the breast and their impact on time-of-flight and diffraction tomography**, Peter Huthwaite, Francesco Simonetti, Imperial College London (UK); Lianjie Huang, Los Alamos National Lab. (USA) . . . . . .[7629-20]

4:50 pm: **In vivo imaging results with ultrasound tomography: report on an ongoing study at the Karmanos Cancer Institute**, Nebojsa Duric, Peter J. Littrup, Cuiping Li, Karmanos Cancer Institute (USA) . . . . . .[7629-21]

5:10 pm: **Volumetric, quantitative ultrasound measurements of the breast: the role of sound speed in assessing breast cancer risk**, Lukasz Myc, Nebojsa Duric, Peter J. Littrup, Karmanos Cancer Institute (USA) . . . . . .[7629-22]

7629 continues on page 24

The following posters will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:15 to 6:45 pm. Poster awards will be announced in the conference meeting room on Tuesday morning.

Conference 7623 Posters
Image Processing

Atlases

Segmentation of lymph node regions in head-and-neck CT images using a combination of registration and active shape model, Antong Chen, Matthew A. Deeley, Kenneth J. Niermann, Luigi Moretti, Benoit M. Dawant, Vanderbilt Univ. (USA) . . . . . [7623-04]

A groupwise mutual information metric for cost efficient selection of a suitable reference in cardiac computational atlas construction, Corné Hoogendoorn, Tristan Whitmarsh, Nicolas Duchateau, Federico M. Sukno, Mathieu S. De Craene, Alejandro F. Frangi, Univ. Pompeu Fabra (Spain) . . . . . [7623-62]

Effect of inter-subject variation on the accuracy of atlas-based segmentation applied to human brain structures, Nhat Trung Doan, Univ. Catholique de Louvain (Belgium) and Leiden Univ. Medical Ctr. (Netherlands); Jonathan Orban de Xivry, Benoît M. Macq, Univ. Catholique de Louvain (Belgium) . . . . . [7623-63]

An analysis of methods for the selection of atlases for use in medical image segmentation, Jeffrey W. Prescott, Furqan Haq, Thomas M. Best, Rebecca Jackson, Metin N. Gurcan, The Ohio State Univ. Medical Ctr. (USA). . . . . [7623-64]

Combining morphometric evidence from multiple registration methods using Dempster-Shafer theory, Vidya Rajagopalan, Christopher L. Wyatt, Virginia Polytechnic Institute and State Univ. (USA) . . . . . [7623-65]

Classification

T1- and T2-weighted spatially constrained fuzzy C-means clustering for brain MRI segmentation, Ivana Despotovic, Bart Goossens, Ewout Vansteenkiste, Wilfried R. Philips, Univ. Gent (Belgium) . . . . . [7623-66]

3D tensor-based blind multispectral image decomposition for tumor demarcation, Ivica Kopriva, Antun Peršin, Institut Ruder Boškovic (Croatia). . [7623-67]

Knowledge-based quantification of pericardial fat in non-contrast CT data, Raja P. Yalamanchili, Uday Kukure, Univ. of Houston (USA); Damini Dey, Daniel S. Berman, Cedars-Sinai Medical Ctr. (USA); Ioannis A. Kakadiaris, Univ. of Houston (USA) . . . . . [7623-68]

Quantification of myocardial perfusion stress-rest change using one-class clustering, Mithun N. Prasad, Piotr J. Slomka, Cedars-Sinai Medical Ctr. (USA); Mathews B. Fish, Radiology Associates, P.C. (USA); James Gerlach, Daniel S. Berman, Guido Germano, Cedars-Sinai Medical Ctr. (USA). . . . . [7623-69]

Automated detection of grayscale bar and distance scale in ultrasound images, Waqas Ahmed, Mark G. Eramian, Univ. of Saskatchewan (Canada) . . . . . [7623-70]

CT slice localization via instance-based regression, Franz Graf, Marisa Thoma, Tobias Emrich, Matthias Schubert, Ludwig-Maximilians-Univ. München (Germany); Alexander Cavallaro, Universitätsklinikum Erlangen (Germany); Hans-Peter Kriegel, Ludwig-Maximilians-Univ. München (Germany) . . . . . [7623-71]

A robust model order estimation and segmentation technique for tissue classification, Enrique Corona, Brian S. Nutter, Sunanda D. Mitra, Texas Tech Univ. (USA) . . . . . [7623-72]

Classification of cognitive states using functional MRI data, Ye Yang, Ranadip Pal, Michael O'Boyle, Texas Tech Univ. (USA) . . . . . [7623-73]

Surface smoothness: cartilage biomarkers for knee OA beyond the radiologist, Sudhakar Tummala, Erik B. Dam, Nordic Bioscience a/s (Denmark) . . . . . [7623-74]

Diffusion Tensor Image Analysis

Changes of MR and DTI appearance in early human brain development, Cassian Marc, Clement Vachet, Joseph E. Blocher, The Univ. of North Carolina at Chapel Hill (USA); Guido Gerig, The Univ. of Utah (USA); John H. Gilmore, Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [7623-75]

Evaluation of DTI property maps as basis of DTI atlas building, Zhexing Liu, The Univ. of North Carolina at Chapel Hill (USA); Casey Goodlett, Guido Gerig, The Univ. of Utah (USA); Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [7623-76]

Assessing fiber tracking accuracy via diffusion tensor software models, Sebastiano Barbieri, Jan Klein, Fraunhofer MEVIS (Germany); Christopher Nimsky, Philipps-Univ. Marburg (Germany); Horst K. Hahn, Fraunhofer MEVIS (Germany) . . . . . [7623-77]

Automatic clustering of white matter fibers via symbolic sequence analysis, Bao Ge, Lei Guo, Kaiming Li, Hai Li, Northwestern Polytechnical Univ. (China); Carlos Faraco, Qun Zhao, Stephen Miller, Tianming Liu, The Univ. of Georgia (USA) . . . . . [7623-78]

Improving RESTORE for robust diffusion tensor estimation: a simulation study, Lin-Ching Chang, The Catholic Univ. of America (USA) . . . . . [7623-79]

White matter degeneration in schizophrenia: a comparative diffusion tensor analysis, Madhura A. Ingalhalikar, Nancy C. Andreasen, Jinsuh Kim, The Univ. of Iowa Hospitals and Clinics (USA); Andrew L. Alexander, The Univ. of Iowa (USA); Vincent A. Magnotta, The Univ. of Iowa Hospitals and Clinics (USA). . . . . [7623-80]

Qualitative and quantitative analysis of probabilistic and deterministic fiber tracking, Jan Klein, Adrian Grötsch, Daniel Betz, Sebastiano Barbieri, Ola Friman, Fraunhofer MEVIS (Germany); Bram Stieltjes, Deutsches Krebsforschungszentrum (Germany); Helmut Hildebrandt, Carl von Ossietzky Univ. Oldenburg (Germany); Horst K. Hahn, Fraunhofer MEVIS (Germany) . . . . . [7623-81]

Motion Analysis

3D motion analysis of keratin filaments in living cells, Gerlind Herberich, RWTH Aachen (Germany); Reinhard Windoffer, Rudolf Leube, Univ. Hospital Aachen (Germany); Til Aach, RWTH Aachen (Germany) . . . . . [7623-82]

3D motion tracking of the heart using Harmonic Phase (HARP) isosurfaces, Abraam S. Soliman, Nile Univ. (Egypt); Nael F. Osman, The Johns Hopkins Univ. (USA) . . . . . [7623-83]

Development of a particle filter framework for respiratory motion correction in Nuclear Medicine Imaging, Ashrani Aizzuddin Abd. Rahni, Emma Lewis, Univ. of Surrey (UK); Matthew Guy, Medway Maritime Hospital (UK) and Univ. of Surrey (UK); Kevin Wells, Budhaditya Goswami, Univ. of Surrey (UK). . . . . [7623-84]

A comparison of tracking methods for swimming C. elegans, Christophe Restif, Dimitris N. Metaxas, Rutgers, The State Univ. of New Jersey (USA) . . . . . [7623-85]

A marker-less observation model for motion correction in nuclear medicine, Majdi R. Alnowami, Kevin Wells, Emma Lewis, Univ. of Surrey (UK); Matthew Guy, The Royal Surrey County Hospital NHS Trust (UK) . . . . . [7623-86]

Image-based motion estimation for cardiac CT via 4D image registration, Jochen Cammin, Katsuyuki Taguchi, The Johns Hopkins Hospital (USA) . . . [7623-87]

Assessment of motion correction for positron emission tomography: application to ABP688, Christine DeLorenzo, Bing Bai, J. John Mann, Ramin V. Parsey, Columbia Univ. (USA). . [7623-88]

Third brain ventricle deformation analysis using fractional differentiation and evolution strategy in brain cine-MRI, Amir Nakib, Fazia Aiboud, Patrick Siarry, Univ. Paris 12 - Val de Marne (France); Philippe Decq, Jerome Hodel, C.H.U. Henri-Mondor (France) . . . . . [7623-89]

Endoscopic egomotion computation, Tobias Bergen, Steffen Ruthotto, Stephan Rupp, Christian Münzenmayer, Christian Winter, Fraunhofer-Institut für Integrierte Schaltungen (Germany). . . . . [7623-90]

Registration

Diffeomorphic demons using normalized mutual information, evaluation on multimodal brain MR images, Marc Modat, Univ. College London (UK); Tom K. Vercauteren, Mauna Kea Technologies (France); Gerard R. Ridgway, David J. Hawkes, Nick C. Fox, Sébastien Ourselin, Univ. College London (UK) . . . . . [7623-91]

evaluating five non-rigid image registration algorithms using NIREP framework, Ying Wei, Gary E. Christensen, Joo Hyun Song, David Rudrauf, Joel Bruss, Jon G. Kuhl, The Univ. of Iowa (USA); Thomas J. Grabowski, Univ. of Washington (USA) . . . . . [7623-92]

Reliable fusion of knee bone laser scans to establish ground truth for cartilage thickness measurement, Ming-Ching Chang, GE Global Research (USA); Nhon H. Trinh, Benjamin B. Kimia, Brown Univ. (USA) . . . . . [7623-93]

Multicontrast MRI registration of carotid arteries in atherosclerotic and normal subjects, Luca Biasiolli, Alison Noble, Matthew D. Robson, Univ. of Oxford (UK) . . . . . [7623-94]

Joint learning of parameters for MR/CT atlas registration and MR-based attenuation map estimation for PET, Ilja Bezrukov, Max-Planck-Institut für biologische Kybernetik (Germany) and Eberhard Karls Univ. Tübingen (Germany); Matthias Hofmann, Max-Planck-Institut für biologische Kybernetik (Germany) and Eberhard Karls Univ. Tübingen (Germany) and Univ. of Oxford (UK); Andreas Boss, Bernd Pichler, Eberhard Karls Univ. Tübingen (Germany); Bernhard Schölkopf, Max-Planck-Institut für biologische Kybernetik (Germany) . . . . . [7623-95]

Cylindrical affine transformation model for image registration, Christine Tanner, ETH Zürich (Switzerland); Timothy J. Carter, David J. Hawkes, Univ. College London (UK); Gäbor Székely, ETH Zürich (Switzerland) . . . . . [7623-96]

An improved 3D shape context registration method for non-rigid surface registration, Di Xiao, Commonwealth Scientific and Industrial Research Organisation (Australia); David Zahra, Australian Nuclear Science and Technology Organisation (Australia); Pierrick T. Bourgeat, Commonwealth Scientific and Industrial Research Organisation (Australia); Paula Berghofer, Australian Nuclear Science and Technology Organisation (Australia); Oscar Acosta Tamayo, Commonwealth Scientific and Industrial Research Organisation (Australia); Catriona Wimberley, Marie-Claude Gregoire, Australian Nuclear Science and Technology Organisation (Australia); Olivier Salvado, Commonwealth Scientific and Industrial Research Organisation (Australia) . . . . . [7623-97]

Optical flow based deformable volume registration using a novel second-order regularization prior, Sasa Grbic, Siemens Corporate Research (USA); Martin Urschler, Horst Bischof, Technische Univ. Graz (Austria) . . . . . [7623-98]

Estimation of registration parameters: image similarity and regularization, Thomas R. Langerak, Uulke A. van der Heide, Alexis Kotte, Josien P. Pluim, Univ. Medical Ctr. Utrecht (Netherlands) [7623-99]

Multistep size demons with divergence term for liver MRI motion correction, Jihun Oh, Georgia Institute of Technology (USA); Diego Martin, Emory Univ. (USA); Oskar Skrinjar, Georgia Institute of Technology (USA) . . . . . [7623-100]

Towards analysis of growth trajectory through multimodal longitudinal MR imaging, Neda Sadeghi, Marcel Prastawa, The Univ. of Utah (USA); John H. Gilmore, Weili Lin, The Univ. of North Carolina School of Medicine (USA); Guido Gerig, The Univ. of Utah (USA). . . . . [7623-101]

A fast rigid-registration method of inferior limb x-ray image and 3D CT images for TKA surgery, Fumihito Ito, Kenzo Ito, Oky Dicky A. Prima, Akio Doi, Iwate Prefectural Univ. (Japan) . . . . . [7623-102]

Detection of stable mammographic features under compression using simulated mammograms, Yassir Jafar, John H. Hipwell, Christine Tanner, David J. Hawkes, Univ. College London (UK) . . . . . [7623-103]

Improving fluid registration through white matter segmentation in a twin study design, Yi-Yu Chou, Natasha Lepore, Caroline Brun, Marina Barysheva, Univ. of California, Los Angeles (USA); Katie L. McMahon, Greig I. de Zubicaray, The Univ. of Queensland (Australia); Margaret J. Wright, Queensland Institute of Medical Research (Australia); Arthur W. Toga, Paul M. Thompson, Univ. of California, Los Angeles (USA) . . . . . [7623-104]

Direction-dependent regularization for improved estimation of liver and lung motion in 4D image data, Alexander Schmidt-Richberg, Jan Ehrhardt, René Werner, Heinz Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany) . [7623-105]

An intensity-based approach to x-ray mammography: MRI registration, Thomy Mertzanidou, John H. Hipwell, David J. Hawkes, Univ. College London (UK); Christine Tanner, ETH Zürich (Switzerland) . . . . . [7623-106]

Fast and accurate 3D ultrasound volume stitching using phase symmetry and Harris corner detection for orthopedic applications, Rupin H. Dalvi, Rafeef Abugharbieh, Ilker Hacihaliloglu, The Univ. of British Columbia (Canada) . . . [7623-107]

Multimodality fiducial marker for validation of registration of histology with medical images, Rushin Shojaii, Anne L. Martel, Univ. of Toronto (Canada) [7623-108]

Fast correspondences search in anatomical trees, Thiago R. dos Santos, Ingmar Gergel, Hans-Peter Meinzer, Lena Maier-Hein, Deutsches Krebsforschungszentrum (Germany) . . . . . [7623-109]

Evaluation of an efficient GPU implementation of digitally reconstructed radiographs in 3D/2D image registration, Chong Zhang, Maria-Cruz Villa-Uriol, Alejandro F. Frangi, Univ. Pompeu Fabra (Spain) . . . . . [7623-110]

Markov random field optimization for intensity-based 2D-3D registration, Darko Zikic, Ben Glocker, Oliver Kutter, Martin Groher, Technische Univ. München (Germany); Nikos Komodakis, Univ. of Crete (Greece); Ali Khamene, Siemens Corporate Research (USA); Nikos Paragios, Ecole Centrale Paris (France); Nassir Navab, Technische Univ. München (Germany) . . . . . [7623-111]

Image similarity metrics in image registration, Andrew Melbourne, Gerard R. Ridgway, David J. Hawkes, Univ. College London (UK) . . . . . [7623-112]

Registration-based interpolation applied to cardiac MRI, Hildur Ólafsdóttir, Technical Univ. of Denmark (Denmark); Henrik Pedersen, Technical Univ. of Denmark (Denmark) and Glostrup Hospital (Denmark); Michael S. Hansen, Mark Lyksborg, Mads Fogtmann Hansen, Sune Darkner, Rasmus Larsen, Technical Univ. of Denmark (Denmark) . . . . . [7623-113]

Automated atlas-based segmentation of the heart and pericardium from noncontrast CT, Damini Dey, Amit Ramesh, Piotr J. Slomka, Ryo Nakazato, Victor Y. Cheng, Guido Germano, Daniel S. Berman, Cedars-Sinai Medical Ctr. (USA). [7623-114]

Mosaicing of microscope images in the presence of large areas with insufficient information content, Yulia Arzhaeva, Chang-Ming Sun, Commonwealth Scientific and Industrial Research Organisation (Australia). . . . . [7623-115]

Volume-constrained image registration for pre- and post-operative CT liver data, Björn Beuthien, Univ. zu Lübeck (Germany); Nils Papenberg, Stefan Heldmann, Fraunhofer MEVIS (Germany); Bernd Fischer, Univ. zu Lübeck (Germany) . . . . . [7623-116]

Medical image registration using the modified conditional entropy measure combining the spatial and intensity information, Myung-Eun Lee, Soo-hyung Kim, Wan-Hyun Cho, Sun-Worl Kim, Jong-Hyun Park, Chonnam National Univ. (Korea, Republic of); Soon-Young Park, Mokpo National Univ. (Korea, Republic of); Jun-Sik Lim, Chonnam National Univ. (Korea, Republic of) . . . . . [7623-117]

Image Restoration and Enhancement

Improving arterial spin labeling data by temporal filtering, Jan Petr, Institut de Recherche en Informatique et Systèmes Aléatoires (France); Jean-Christophe Ferre, Jean-Yves Gauvrit, Ctr. Hospitalier Univ. de Rennes (France); Christian Barillot, Institut de Recherche en Informatique et Systèmes Aléatoires (France). . . . . [7623-118]

Compact rotation invariant descriptors for non-local means, Nicholas Dowson, Olivier Salvado, Commonwealth Scientific and Industrial Research Organisation (Australia). . . . . [7623-119]

Novel registration-based image enhancement for x-ray fluoroscopy, Vivek S. Walimbe, Romain X. Areste, Kadri N. Jabri, GE Healthcare (USA) . . . . . [7623-120]

Application of a modified regularization procedure for estimating oxygen tension in large retinal blood vessels, Isa Yildirim, Istanbul Teknik Üniv. (Turkey); Rashid Ansari, Mahnaz Shahidi, Univ. of Illinois at Chicago (USA); Imam Samil Yetik, Illinois Institute of Technology (USA) . . . [7623-121]

Segmentation

Automated extraction method for the center line of spinal canal and its application to the spinal curvature quantification in torso x-ray CT images, Tatsuro Hayashi, Xiangrong Zhou, Huayue Chen, Takeshi Hara, Kei Miyamoto, Tatsunori Kobayashi, Ryujiro Yokoyama, Masayuki Kanematsu, Hiroaki Hoshi, Hiroshi Fujita, Gifu Univ. School of Medicine (Japan). . . . . [7623-122]

Closing of interrupted vascular segmentations: an automatic approach based on shortest paths and level sets, Nils Daniel Forkert, Alexander Schmidt-Richberg, Dennis Saering, Till Illies, Jens Fiehler, Heinz Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany) . [7623-123]

Multiscale topo-morphologic opening of arteries and veins: a validation study on phantoms and CT imaging of pulmonary vessel casting of pigs, Zhiyun Gao, Colin Holtze, Milan Sonka, Eric A. Hoffman, Punam K. Saha, The Univ. of Iowa (USA) . . . . . [7623-124]

Image segmentation using the student's t-test and the divergence of direction on spherical regions, George D. Stetten, Samantha Horvath, Univ. of Pittsburgh (USA); John Galeotti, Carnegie Mellon Univ. (USA); Gaurav Shukla, Bo Wang, Brian E. Chapman, Univ. of Pittsburgh (USA) . . . . . [7623-125]

Aorta segmentation in non-contrast cardiac CT Images using an entropy-based cost function, Olga C. Avila-Montes, Uday Kukure, Ioannis A. Kakadiaris, Univ. of Houston (USA). . . . . [7623-126]

A skull segmentation method for brain MR images for combined PET/MRI applications, Xiaofeng Yang, Emory Univ. School of Medicine (USA); Hesheng Wang, Case Western Reserve Univ. (USA); Baowei Fei, Emory Univ. School of Medicine (USA) . . . . . [7623-127]

A skull stripping method using deformable surface and tissue classification, Xiaodong Tao, Ming-Ching Chang, GE Global Research (USA) . . . . . [7623-128]

Intracranial aneurysm segmentation in 3D CT angiography: method and quantitative validation with and without prior noise filtering, Azadeh Firouzian, Rashindra Manniesing, Zwenneke H. Flach, Roelof Risselada, Fop van Kooten, Miriam Sturkenboom, Aad van der Lugt, Wiro J. Niessen, Erasmus MC (Netherlands) . . . . . [7623-129]

Segmentation of the thalamus in multispectral MR images using a combination of atlas-based and gradient graph cut methods, Ryan D. Datteri, Vanderbilt Univ. (USA); Christian Barillot, Institut de Recherche en Informatique et Systèmes Aléatoires (France); Benoit M. Dawant, Vanderbilt Univ. (USA); Jérémy Lecoeur, Institut de Recherche en Informatique et Systèmes Aléatoires (France) . . . . . [7623-130]

Automated lung tumor segmentation for whole body PET volume based on novel downhill region growing, Cherry G. Ballangan, Xiuying Wang, Stefan Eberl, Michael Fulham, Dagan Feng, The Univ. of Sydney (Australia) . . . . . [7623-131]

'Active contour without edges', on parametric manifolds, Yi Gao, Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . . [7623-132]

Blood vessel segmentation using line-direction vector based on Hessian analysis, Yukitaka Nimura, Nagoya Univ. (Japan); Takayuki Kitasaka, Aichi Institute of Technology (Japan); Kensaku Mori, Nagoya Univ. (Japan) . . . . . [7623-133]

Brain segmentation performance using T1-weighted images versus T1 maps, Xiaoxing Li, Christopher L. Wyatt, Virginia Polytechnic Institute and State Univ. (USA) . . . . . [7623-134]

Detection of small human cerebral cortical lesions with MRI under different levels of Gaussian smoothing: applications in epilepsy, Diego Cantor-Rivera, The Univ. of Western Ontario (Canada) and Robarts Research Institute (Canada); Maged Goubran, The Univ. of Western Ontario (Canada); Alan Kraguljac, Univ. of Guelph (Canada); Seyed Mirsattari M.D., Robert Bartha, Terry M. Peters, The Univ. of Western Ontario (Canada) . . . . . [7623-135]

Automated method for tracing leading and trailing processes of migrating neurons in confocal image sequences, Ryan A. Kerekes, Shaun S. Gleason, Oak Ridge National Lab. (USA); Niraj Trivedi, David Solecki, St. Jude Children's Research Hospital (USA) . . . . . [7623-136]

Quantitative CT for volumetric analysis of medical images: initial results for liver tumors, Alexander S. Behnaz, Georgetown Univ. Medical Ctr. (USA) and George Mason Univ. (USA); James W. Snider, Eneh Chibuzor, Giuseppe Esposito, Emmanuel Wilson, Ziv R. Yaniv, Emil I. Cohen, Kevin R. Cleary, Georgetown Univ. Medical Ctr. (USA) . . . . . [7623-137]

Multiobject segmentation using coupled shape space models, Tobias Schwarz, Deutsches Krebsforschungszentrum (Germany); Dirk Lossnitzer, Univ. Klinikum Heidelberg (Germany); Tobias Heimann, Institut National de Recherche en Informatique et en Automatique (France); Carsten Mohrhardt, Univ. Klinikum Heidelberg (Germany); Ivo Wolf, Univ. Mannheim (Germany); Hans-Peter Meinzer, Deutsches Krebsforschungszentrum (Germany) . . . . . [7623-138]

Automatic recognition and validation of the common carotid artery wall segmentation in 100 longitudinal ultrasound images: an integrated approach using feature selection, fitting and classification, Filippo Molinari, Politecnico di Torino (Italy); Guang Zeng, Clemson Univ. (USA); Jasjit S. Suri, Eigen, Inc. (USA). . . . . [7623-139]

Automated fat measurement and segmentation with intensity inhomogeneity correction, Daniel L. Sussman, Jianhua Yao, Ronald M. Summers, National Institutes of Health (USA) . . . . . [7623-141]

A novel fast liver segmentation method with graph cuts, Fan Yang, Weimin Zhai, Yannan Zhao, Hong Wang, Peifa Jia, Tsinghua Univ. (China). . . . . [7623-142]

Thrombus segmentation by texture dynamics from microscopic image sequences, Nicolas Brieu, Technische Univ. München (Germany); Jovana Serbanovic-Canic, Ana Cvejic, Derek Stemple, Willem Ouwehand, Wellcome Trust Sanger Institute (UK); Nassir Navab, Martin Groher, Technische Univ. München (Germany) . . . . . [7623-143]

Relaxed image foresting transforms for interactive volume image segmentation, Filip Malmberg, Ingela Nyström, Uppsala Univ. (Sweden) . . . . . [7623-144]

Digital cleansing for virtual colonoscopy with probability map, Wei Hong, Feng Qiu, Siemens Corporate Research (USA) . . . . . [7623-145]

Optimal combination of multiple cortical surface parcellations, Xintao Hu, Lei Guo, Gang Li, Northwestern Polytechnical Univ. (China); Tianming Liu, The Univ. of Georgia (USA) . . . . . [7623-146]

A multiscale approach to mass segmentation using level set method, Hongwei Yu, Lihua Li, Weidong Xu, Wei Liu, Hangzhou Dianzi Univ. (China) . . [7623-147]

Statistical fusion of surface labels provided by multiple raters, John A. Bogovic, The Johns Hopkins Univ. (USA); Bennett A. Landman, The Johns Hopkins Univ. (USA) and Vanderbilt Univ. (USA); Pierre-Louis Bazin, Jerry L. Prince, The Johns Hopkins Univ. (USA) . . . . . [7623-148]

Ball-scale based multiobject recognition in a hierarchical framework, Ulas Bagci, The Univ. of Nottingham (UK); Jayaram K. Udupa, Xinjian Chen, The Univ. of Pennsylvania Health System (USA) . . . . . [7623-149]

Automatic segmentation of the aorta and the adjoining vessels, Tobias Stutzmann, Klinikum Mannheim GmbH (Germany); Jürgen Hesser, Ruprecht-Karls-Univ. Heidelberg (Germany); Wolfram Voelker, Matthias Dobhan, Julius-Maximilians-Univ. Würzburg (Germany) . . . . . [7623-150]

A completely automated processing pipeline for lung and lung lobe segmentation and its application to the LIDC-IDRI data base, Thomas Blaffert, Rafael Wiemker, Hans Barschdorf, Sven Kabus, Tobias Klinder, Cristian Lorenz, Philips Research (Germany); Ekta Dharaiya, Philips Medical Systems (USA) . . [7623-151]

Gyral parcellation of cortical surfaces via coupled flow field tracking, Gang Li, Lei Guo, Jingxin Nie, Northwestern Polytechnical Univ. (China); Tianming Liu, The Univ. of Georgia (USA) . . . . . [7623-152]

Segmentation of deformable organs from medical images using particle swarm optimization and nonlinear shape priors, Ahmed Afifi, Toshiya Nakaguchi, Norimichi Tsumura, Chiba Univ. (Japan) . . . [7623-153]

Fuzzy affinity induced curve evolution, Ying Zhuge, National Cancer Institute/NIH (USA); Jayaram K. Udupa, The Univ. of Pennsylvania Health System (USA); Robert W. Miller, National Cancer Institute/NIH (USA) . . . . . [7623-154]

Multi-structure segmentation of multi-modal brain images using artificial neural networks, Eun Young Kim, Hans J. Johnson, The Univ. of Iowa Hospitals and Clinics (USA) . . . . . [7623-155]

Segmentation of cervical cell images using mean-shift filtering and morphological operators, Christoph Bergmeir, Miguel García Silvente, Univ. de Granada (Spain); J. Esquivas López-Cuervo, Hospital Univ. San Cecilio (Spain); José Manuel Benítez, Univ. de Granada (Spain) . . . . . [7623-156]

Multilevel wireless capsule endoscopy video segmentation, Sae Kwang Hwang, Univ. of Illinois at Springfield (USA); M. Emre Celebi, Louisiana State Univ. in Shreveport (USA) . . . . . [7623-157]

A probability tracking approach to segmentation of ultrasound prostate images using weak shape priors, Robert S. Xu, Oleg Michailovich, Univ. of Waterloo (Canada) . . . . . [7623-158]

A new osteophyte segmentation method with applications to an anterior cruciate ligament transection rabbit femur model via micro-CT imaging, Guoyuan Liang, Jacob M. Elkins, The Univ. of Iowa (USA); Alexandre Coimbra, Le Thi Duong, Donald S. Williams, Merck Research Labs. (USA); Milan Sonka, Punam K. Saha, The Univ. of Iowa (USA). . . . . [7623-159]

Segmentation of blurry object by learning from examples, Xiaohui Yuan, Univ. of North Texas (USA). . . . . [7623-160]

Computer-aided detection of bladder tumors based on the thickness mapping of bladder wall in MR images, Hongbin Zhu, Stony Brook Univ. (USA); Chaijie Duan, Peking Univ. (China); Ruirui Jiang, Yi Fan, Xiaokang Yu, Wei Zeng, Xianfeng Gu, Zhengrong Liang, Stony Brook Univ. (USA) . . . . . [7623-161]

Validation and detection of vessel landmarks by using anatomical knowledge, Thomas Beck, Siemens Medical Solutions GmbH (Germany) and Univ. Karlsruhe (Germany); Dominik Bernhardt, Christina Biermann, Siemens Medical Solutions GmbH (Germany); Rüdiger Dillmann, Univ. Karlsruhe (Germany) . . . . . [7623-162]

Automatic OD detection and segmentation based on image brightness and image contrast, Shijian Lu, Jiang Liu, Joo Hwee Lim, Zhang Zhuo, Ngan Meng Tan, Damon W. K. Wong, Huiqi Li, A*STAR Institute for Infocomm Research (Singapore); Tien Yin Wong, Singapore Eye Research Institute (Singapore) . . . . . [7623-163]

Segmentation of blood clot from CT pulmonary angiographic images using a modified seeded region growing algorithm method, Bumwoo Park, Alessandro Furlan, Amol Patil, Kyongtae T. Bae, Univ. of Pittsburgh Medical Ctr. (USA) . . . . . [7623-164]

Development of an acquisition protocol and a segmentation algortihm for wounds of cutaneous Leishmaniasis in digital images, Kristians E. Diaz Rojas, Pontificia Univ. Católica del Perú (Peru); César Miranda, Univ. Peruana Cayetano Heredia (Peru); Benjamín Castañeda, Pontificia Univ. Católica del Perú (Peru); Roberto J. Lavarello, Univ. of Illinois at Urbana-Champaign (USA); Alejandro Llanos, Univ. Peruana Cayetano Heredia (Peru) [7623-165]

Interactive segmentation method with graph cut and SVM, Xing Zhang, Jie Tian, Dehui Xiang, Yongfang Wu, Institute of Automation (China) . . . . . [7623-166]

Segmentation of light and dark hair in dermoscopic images: a hybrid approach using a universal kernel, Nhi H. Nguyen, Simon Fraser Univ. (Canada); Tim K. Lee, The BC Cancer Research Ctr. (Canada); M. Stella Atkins, Simon Fraser Univ. (Canada) . . . . . [7623-167]

Volumetric segmentation of trabecular bone into rods and plates: a new method based on local shape classification, Emmanuel C. Brun, Jerome Vicente, IUSTI (France); Christine Chappard, Ctr. Hospitalier Régional d'Orléans (France) . . . . . [7623-168]

Image enhancement and edge-based mass segmentation in mammogram, Yu Zhang, Noriko Tomuro, Jacob D. Furst, Daniela Stan Raicu, DePaul Univ. (USA) . . . . . [7623-169]

Shape

Database guided detection of anatomical landmark points in 3D images of the heart, Thomas Karavides, Technische Univ. Delft (Netherlands); Esther Leung, Erasmus MC (Netherlands); Pavel Paclik, PR Sys Design (Netherlands); Emile A. Hendriks, Technische Univ. Delft (Netherlands); Johan G. Bosch, Erasmus MC (Netherlands) . . . . . [7623-170]

Partial volume correction using cortical surfaces, Kamille R. Blaasvær, Camilla D. Haubro, Simon F. Eskildsen, Aalborg Univ. (Denmark); Per Borghammer, Aarhus Univ. Hosptial (Denmark); Daniel Otzen, Aarhus Univ. (Denmark); Lasse R. Ostergaard, Aalborg Univ. (Denmark) . . . . . [7623-171]

Adaptive model based pulmonary artery segmentation in 3D chest CT, Marco Feuerstein, Nagoya Univ. (Japan); Takayuki Kitasaka, Aichi Institute of Technology (Japan); Kensaku Mori, Nagoya Univ. (Japan). . . . . [7623-172]

A combined voxel and surface based method for topology correction of brain surfaces, Florence Gris, Australian e-Health Research Ctr. (Australia); Jean-Marie Favreau, Univ. Blaise Pascal (France); Oscar Acosta Tamayo, Australian e-Health Research Ctr. (Australia); Vincent Barra, Univ. Blaise Pascal (France); Olivier Salvado, Australian e-Health Research Ctr. (Australia). . . . . [7623-173]

3D bone mineral density distribution and shape reconstruction of the proximal femur from a single DXA image, Tristan Whitmarsh, Ludovic Humbert, Mathieu S. De Craene, Univ. Pompeu Fabra (Spain); Luis M. del Río Barquero, CETIR Grup Mèdic (Spain); Karl D. Fritscher, Rainer Schubert, Univ. für Gesundheitswissenschaften, Medizinische Informatik und Technik (Austria); Felix Eckstein, Paracelsus Medizinische Privatuniv. (Austria); Thomas M. Link, Univ. of California, San Francisco (USA); Alejandro F. Frangi, Univ. Pompeu Fabra (Spain) . . . . . [7623-174]

Model-based segmentation of pathological lymph nodes in CT data, Lars Dornheim, Otto-von-Guericke-Univ. Magdeburg (Germany) and Dorheim Medical Images (Germany); Jana Dornheim, Otto-von-Guericke-Univ. Magdeburg (Germany); Ivo Rössling, Otto-von-Guericke-Univ. Magdeburg (Germany) and Dornheim Medical Images (Germany); Tobias Mönch, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [7623-175]

Evaluation of manual and computerized methods for the determination of axial vertebral rotation, Toma? Vrtovec, Franjo Pernuž, Boštjan Likar, Univ. of Ljubljana (Slovenia) . . . . . [7623-176]

Sparse active shape models: influence of the interpolation kernel on segmentation accuracy and speed, Federico M. Sukno, Constantine Butakoff, Bart H. Bijnens, Alejandro F. Frangi, Univ. Pompeu Fabra (Spain) . . . . . [7623-177]

Smart manual landmarking of organs, Marius Erdt, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Matthias Kirschner, Stefan Wesarg, Technische Univ. Darmstadt (Germany) . . . . . [7623-178]

Segmentation of the epicardial wall of the left atrium using statistical shape learning and local curve statistics, Yi Gao, Behnood Gholami, Georgia Institute of Technology (USA); Robert S. MacLeod, Joshua Blauer, The Univ. of Utah (USA); Wassim M. Haddad, Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . . [7623-179]

Automated determination of vertebral centroids and intervertebral discs in CT and MR lumbar spine images, Darko Stern, Tomaž Vrtovec, Boštjan Likar, Franjo Pernuš, Univ. of Ljubljana (Slovenia) . . . . . [7623-180]

Multiscale shape representation and learning using wavelet, Yi Gao, Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . . [7623-181]

Construction of groupwise consistent shape parameterizations by propagation, Matthias Kirschner, Stefan Wesarg, Technische Univ. Darmstadt (Germany) . . . . . [7623-182]

A statistical shape and motion model for the prediction of respiratory lung motion, Jan Ehrhardt, René Werner, Alexander Schmidt-Richberg, Heinz Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany) . . . . . [7623-183]

Texture

Assessing texture measures with respect to their sensitivity to scale-dependent higher order correlations in medical images using surrogates, Christoph W. Raeth, Max-Planck-Institut für extraterrestrische Physik (Germany); Dirk Müller, Technische Univ. München (Germany); Irina N. Sidorenko, Roberto A. Monetti, Max-Planck-Institut für extraterrestrische Physik (Germany); Jan S. Bauer, Technische Univ. München (Germany) . . . . . [7623-184]

Conference 7625 Posters

Visualization, Image-guided Procedures and Modeling

Visualization

3D visualization of medical imaging using static volumetric display, Cspace, Basel Salahieh, Univ. of Oklahoma (USA); Hakki H. Refai, 3DIcon Corp. (USA); James J. Sluss, Jr., Univ. of Oklahoma (USA). . . . . [7625-57]

Cross modality registration of video and magnetic tracker data for 3D appearance and structure modeling, Dusty Sargent, STI Medical Systems (USA); Chao-I Chen, Yuan-Fang Wang, Univ. of California, Santa Barbara (USA) . . . . . [7625-58]

Reconstruction and visualization of model-based volume representations, Ziyi Zheng, Klaus D. Mueller, Stony Brook Univ. (USA) . . . . . [7625-59]

Automatic feature detection for 3D surface reconstruction in HDTV endoscopic images, Anja Groch, Matthias Baumhauer, Hans-Peter Meinzer, Lena Maier-Hein, Deutsches Krebsforschungszentrum (Germany) . . . . . [7625-60]

Parameter space visualizer: an interactive parameter selection interface for iterative CT reconstruction algorithms, Wei Xu, Klaus D. Mueller, Stony Brook Univ. (USA) . . . . . [7625-61]

Real-time simulation of dynamic fluoroscopy of ERCP, Hoeryong Jung, Doo Yong Lee, Korea Advanced Institute of Science and Technology (Korea, Republic of) . . . . . [7625-62]

PIRATE: pediatric imaging response assessment and targeting environment, Russell Glenn, St. Jude Children's Research Hospital (USA) and Wofford College (USA); Yong Zhang, Matthew J. Krasin, Chia-Ho Hua, St. Jude Children's Research Hospital (USA) . . . . . [7625-126]

Segmentation

3D automatic anatomy recognition based on iterative graph-cut-ASM, Xinjian Chen, Jayaram K. Udupa, The Univ. of Pennsylvania Health System (USA); Ulas Bagci, The Univ. of Nottingham (UK); Abass Alavi, Drew A. Torigian, The Univ. of Pennsylvania Health System (USA) [7625-63]

Catheter tracking in asynchronous biplane fluoroscopy images by 3D b-snakes, Marcel Schenderlein, Susanne Stierlin, Univ. Ulm (Germany); Robert M. Manzke, Philips Research (Germany); Volker Rasche, Universitätsklinikum Ulm (Germany); Klaus Dietmayer, Univ. Ulm (Germany) . . . . . [7625-64]

Registration

A gold-standard dataset for 2D/3D image registration evaluation, Suprianto Ardjo Pawiro, Medizinische Univ. Wien (Austria); Primoz Markelj, Univ. of Ljubljana (Slovenia); Christelle Gendrin, Michael Figl, Markus Stock, Christoph Bloch, Christoph Weber, Ewald Unger, Iris-Melanie Noebauer-Huhmann, Franz Kainberger M.D., Helga Bergmeister, Dietmar Georg, Helmar Bergmann, Wolfgang Birkfellner, Medizinische Univ. Wien (Austria) . [7625-65]

A comment to the rank correlation merit function for 2D/3D registration, Michael Figl, Christoph Bloch, Wolfgang Birkfellner, Medizinische Univ. Wien (Austria) . [7625-66]

Influence of intensity standardization on medical image registration, Ulas Bagci, The Univ. of Nottingham (UK); Jayaram K. Udupa, The Univ. of Pennsylvania Health System (USA) . . . . . [7625-67]

Non-rigid registration for quantification of intestinal peristalsis on dynamic MRI data, Daniel Stein, Deutsches Krebsforschungszentrum (Germany); Tobias Heye, Hans-Ulrich Kauczor, UniversitätsKlinikum Heidelberg (Germany); Hans-Peter Meinzer, Deutsches Krebsforschungszentrum (Germany) . . . . . [7625-68]

Image-guided Systems

Pre-tuned resonant marker for iMRI using aerosol deposition on polymer catheters, Karl Will IV, Stefan Schimpf, Frank Fischbach M.D., Jens Ricke M.D., Bertram Schmidt, Georg M. Rose, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [7625-69]

Robotically assisted small animal MRI-guided mouse biopsy, Emmanuel Wilson, Georgetown Univ. (USA); Chris Choido, ASI Instruments, Inc. (USA); Kenneth H. Wong, Georgetown Univ. (USA); Stanley T. Fricke, Children's National Medical Ctr. (USA); Mira Jung, Georgetown Univ. Hospital (USA); Kevin R. Cleary, Georgetown Univ. (USA) . . . . . [7625-70]

A rapid method for compensating registration error between tracker and endoscope in flexible neuroendoscopic surgery navigation system, Zhengang Jiang, Kensaku Mori, Yukitaka Nimura, Takayuki Kitasaka, Nagoya Univ. (Japan); Yuichiro Hayashi, Eiji Ito, Masazumi Fujii, Tetsuya Nagatani, Yasukazu Kajita, Toshiko Wakabayashi, Nagoya Univ. School of Medicine (Japan) . . . . . [7625-71]

A system for advanced real-time visualization and monitoring of MR-guided thermal ablations, Eva Rothgang, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and Siemens Corporate Research (USA); Wesley D. Gilson, Christine H. Lorenz, Siemens Corporate Research (USA) and The Johns Hopkins Outpatient Ctr. (USA); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [7625-72]

Evaluation of nonholonomic needle steering using a robotic needle driver, Emmanuel Wilson, Georgetown Univ. Medical Ctr. (USA); Jeinan Ding, Columbia Univ. (USA); Craig R. Carignan, Georgetown Univ. Medical Ctr. (USA); Karthik Krishnan, Rick S. Avila, Wesley D. Turner, Kitware, Inc. (USA); Dan S. Stoianovici, The Johns Hopkins Univ. (USA); David F. Yankelevitz M.D., Weill Cornell Medical College (USA); Filip Banovac, Kevin R. Cleary, Georgetown Univ. Medical Ctr. (USA) . . . . . [7625-73]

Relative versus absolute error characterization of electromagnetic tracking accuracy, Mohammad Matinfar, The Johns Hopkins Univ. (USA); Ganesh Narayanasamy, Luis F. Gutierrez, Raymond C. Chan, Ameet K. Jain, Philips Research (USA) . . . . . [7625-74]

Reducing depth uncertainty in large surgical workspaces, with applications to veterinary medicine, Michel A. Audette, Kitware, Inc. (USA); Ahmad Kolahi, Claron Technology Inc. (Canada); Andinet Enquobahrie, Kitware, Inc. (USA); Claudio Gatti, Claron Technology Inc. (Canada); Kevin R. Cleary, Georgetown Univ. Medical Ctr. (USA). . . . . [7625-75]

Exploring the clinical validity of predicted TRE in navigation, Martina Bickel, Özgür Güler, Florian Kral M.D., Frank Schwarm, Wolfgang Freysinger, Medizinische Univ. Innsbruck (USA). . . . . [7625-77]

Full automatic fiducial marker detection on coil arrays for accurate instrumentation placement during MRI guided breast interventions, Konstantinos Filippatos, MeVis Medical Solutions AG (Germany); Tobias Boehler, Benjamin Geisler, Fraunhofer MEVIS (Germany); Harald H. Zachmann, Thorsten Twellmann, MeVis Medical Solutions AG (Germany) . . . . . [7625-78]

Risk maps for navigation in liver surgery, Christian Hansen, Stephan Zidowitz, Andrea Schenk, Fraunhofer MEVIS (Germany); Karl J. Oldhafer, Allgemeines Krankenhaus Celle (Germany); Hauke Lang M.D., Univ. Augenklinik Mainz (Germany); Heinz-Otto Peitgen, Fraunhofer MEVIS (Germany) . . . . . [7625-79]

Real time planning, guidance and validation of surgical acts using 3D segmentations, augmented reality projections and surgical tools video tracking, Angel Osorio, Lab. d'Informatique pour la Mécanique et les Sciences de l'Ingénieur (France) and Paris XI Univ. (France); Julien Nauroy, Lab. d'Informatique pour la Mécanique et les Sciences de l'Ingénieur (France); Juan-Antonio Galan, Hospital General Univ. de Alicante (Spain); Patricia Donars, Rectorat de Paris (France) . . . . . [7625-80]

Radiation Therapy

Treatment planning and delivery of shell dose distribution for precision irradiation, Mohammad Matinfar, Santosh Iyer, The Johns Hopkins Univ. (USA); Eric C. Ford, John Wong, The Johns Hopkins Univ. School of Medicine (USA); Peter Kazanzides, The Johns Hopkins Univ. (USA) . . . . . [7625-81]

Correction of prostate misalignment in radiation therapy using US-CT registration, Johann B. Hummel, Rainer Hoffmann, Michael Figl, Helmar Bergmann, Wolfgang Birkfellner, Medizinische Univ. Wien (Austria) . . . . . [7625-82]

Computer-assisted targeted therapy (CATT) for prostate radiotherapy planning by fusion of CT and MRI, Jonathan C. Chappelow, Satish E. Viswanath, Rutgers, The State Univ. of New Jersey (USA); Stefan Both, John Novak, Stephen M. Hahn M.D., The Univ. of Pennsylvania Health System (USA); Michael Feldman M.D., Mark A. Rosen M.D., John E. Tomaszewski M.D., Neha Vapiwala, Hospital of the Univ. of Pennsylvania (USA); Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA) . . . . . [7625-83]

Shape-correlated deformation statistics for respiratory motion prediction in 4D lung, Xiaoxiao Liu, Ipek Oguz, Stephen M. Pizer, The Univ. of North Carolina at Chapel Hill (USA); Gig S. Mageras, Memorial Sloan-Kettering Cancer Ctr. (USA) . . . . . [7625-84]

Modeling

Automatic generation of boundary conditions using Demons non-rigid image registration for use in 3D modality-independent elastography, Thomas S. Pheiffer, Jao J. Ou, Michael I. Miga, Vanderbilt Univ. (USA) . . . . . [7625-85]

Automation of a boundary element method approach for multimodality imaging of breast tissue, Hamid R. Ghadyani, Subhadra Srinivasan, Keith D. Paulsen, Dartmouth College (USA) [7625-86]

Modeling tumor/polyp/lesion structure in 3D for computer-aided diagnosis in colonoscopy, Chao-I Chen, Univ. of California, Santa Barbara (USA); Dusty Sargent, STI Medical Systems (USA); Yuan-Fang Wang, Univ. of California, Santa Barbara (USA) . . . . . [7625-88]

Generation of smooth and accurate surface models for surgical planning and simulation, Tobias Mönch, Mathias Neugebauer, Bernhard Preim, Otto-von-Guericke Univ. Magdeburg (Germany) . . . . . [7625-89]

Multi-contact model for FEM-based surgical simulation, Hyun Young Choi, Woojin Ahn, Doo Yong Lee, Korea Advanced Institute of Science and Technology (Korea, Republic of) . . [7625-90]

3D TEE registration with pre-operative MR for interventional cardiac applications, Jonghye Woo, Cedars-Sinai Medical Ctr. (USA); Vijay Parthasarathy, Sandeep Dalal, Ameet K. Jain, Philips Research (USA) . . . . . [7625-91]

Endoscopy/Bronchoscopy

Realistic colon simulation in CT colonography using mesh skinning, Jianhua Yao, Ananda S. Chowdhury, Ronald M. Summers M.D., National Institutes of Health (USA) . . . . . [7625-92]

Ground truth and CT image model simulation for pathophysiological human airway system, Margarete Ortner, Catalin Fetita, TELECOM & Management SudParis (France); Pierre-Yves Brillet, Avicenne Hospital (France); Françoise J. Prêteux, TELECOM & Management SudParis (France) . . . . . [7625-93]

Endoscope-magnetic tracker calibration via trust region optimization, Dusty Sargent, STI Medical Systems (USA) . . . . . [7625-94]

Ultrasound

A GPU based high-definition ultrasound digital scan conversion algorithm, Mingchang Zhao, CHISON Medical Imaging Co., Ltd. (China) and Fudan Univ. (China) and Institute of Automation (China); Shanjue Mo, CHISON Medical Imaging Co., Ltd. (China) . . . . . [7625-95]

Precisely shaped acoustic ablation of tumors utilizing steerable needle and 3D ultrasound image guidance, Emad M. Boctor, Philipp J. Stolka, Clyde C. Clarke, The Johns Hopkins Univ. (USA); Caleb Rucker, Jordon M. Croom, Vanderbilt Univ. (USA); E. Clif Burdette, Acoustic Medsystems, Inc. (USA); Robert J. Webster III, Vanderbilt Univ. (USA) . . . . . [7625-96]

A probabilistic framework for ultrasound image decomposition, Igor Solovey, Oleg Michailovich, Univ. of Waterloo (Canada) . . . . . [7625-97]

Dynamic tracking of tendon elongation in ultrasound imaging, Mahta Karimpoor, NHS Center Hospital (UK); Hazel Screen, Queen Mary, Univ. of London (UK); Dylan Morrissey, Barts and The London School of Medicine and Dentistry (UK) . . . . . [7625-98]

Urological

Mechanically assisted 3D prostate ultrasound imaging and biopsy needle-guidance system, Jeffrey S. Bax, Jackie Williams, Robarts Research Institute (Canada); Derek W. Cool, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada); Lori Gardi, Jacques Montreuil, Robarts Research Institute (Canada); Vaishali V. Karnik, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada); Shi Sherebrin, Robarts Research Institute (Canada); Cesare Romagnoli, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); Aaron Fenster, Robarts Research Institute (Canada) . . . . . [7625-99]

Multiparametric MRI-pathologic correlation of prostate cancer using tracked biopsies, Sheng Xu, Philips Research North America (USA); Baris Turkbey, National Institutes of Health (USA); Jochen Kruecker, Philips Research North America (USA); Julia Locklin, Peter A. Pinto, Peter L. Choyke, Bradford J. Wood, National Institutes of Health (USA) . . . . . [7625-100]

A multi-threaded mosaicking algorithm for fast image composition of fluorescence bladder images, Alexander Behrens, Michael Bommes, Thomas Stehle, Sebastian Groß, Steffen Leonhardt, Til Aach, RWTH Aachen (Germany) . . . . . [7625-101]

Automatic segmentation of seeds and fluoroscope tracking (FTRAC) fiducial in prostate brachytherapy x-ray images, Nathanael Kuo, Junghoon Lee, Anton Deguet, Danny Y. Song, The Johns Hopkins Univ. (USA); E. Clif Burdette, Acoustic Medsystems, Inc. (USA); Jerry L. Prince, The Johns Hopkins Univ. (USA) . . . . . [7625-102]

Trans-rectal interventional MRI (TRIM): initial experience, Bernadette M. Greenwood, Invivo Corp. (USA); John F. Feller M.D., Desert Medical Imaging (USA); Alex Winkel, Invivo Germany GmbH (Germany); Robert A. Princenthal, Rolling Oaks Radiology (USA) . . . . . [7625-103]

MRI-guided prostate motion tracking by means of multislice-to-volume registration, Hadi Tadayyon, Siddharth Vikal, Sean Gill, Andras Lasso, Gabor Fichtinger, Queen's Univ. (Canada) . . . . . [7625-104]

Cardiovascular

Planning of vessel grafts for reconstructive surgery in congenital heart diseases, Urte Rietdorf, Deutsches Krebsforschungszentrum (Germany); Eugenie Riesenkampff, Deutsches Herzzentrum Berlin (Germany); Tobias Schwarz, Deutsches Krebsforschungszentrum (Germany); Titus Kühne M.D., Deutsches Herzzentrum Berlin (Germany); Hans-Peter Meinzer, Ivo Wolf, Deutsches Krebsforschungszentrum (Germany) . . . . . [7625-105]

A robotic assistant system for cardiac interventions under MRI guidance, Ming Li, Dumitru Mazilu, Bradford J. Wood, Keith Horvath M.D., Ankur Kapoor, National Institutes of Health (USA) . . . . . [7625-106]

Integration of trans-esophageal echocardiography with magnetic tracking technology for cardiac interventions, John T. Moore, Robarts Research Institute (Canada); Andrew D. Wiles, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada); Chris Wedlake, Danielle F. Pace, Robarts Research Institute (Canada); Daniel Bainbridge, The Univ. of Western Ontario (Canada); Bob Kiaii, The Univ. of Western Ontario (Canada) and Canadian Surgical Technologies and Advanced Robotics (Canada); Rajni V. Patel, London Health Sciences Ctr. (Canada) and Univ. of Western Ontario (Canada) and Canadian Surgical Technologies and Advanced Robotics (Canada); Terry M. Peters, Robarts Research Institute (Canada) . . . . . [7625-107]

2D/3D registration using only single-view fluoroscopy to guide cardiac ablation procedures: a feasibility study, Pascal Fallavollita, Queen's Univ. (Canada) . . . . . [7625-108]

Segmentation of carotid arteries by graph-cuts using centerline models, Huseyin Tek, Mehmet A. Gulsun, Siemens Corporate Research (USA) . . . . . [7625-109]

Head and Neck

An evaluative tool for preoperative planning of brain tumor resection, Aaron M. Coffey, Michael I. Miga, Reid C. Thompson M.D., Vanderbilt Univ. (USA) . . . . . [7625-110]

Computer-aided planning for endovascular treatment of intracranial aneurysms, Ashraf Mohamed, Siemens Corporate Research (USA); Eleni Sgouritsa, Univ. of Houston (USA); Hesham Morsi M.D., Hashem Shaltoni, Michel E. Mawad M.D., St. Luke's Episcopal Hospital (USA); Ioannis A. Kakadiaris, Univ. of Houston (USA) . . . . . [7625-111]

A novel contrast for DTI visualization for thalamus delineation, Xian Fan, The Johns Hopkins Univ. (USA); Meredith Thompson, North Carolina State Univ. (USA); Pierre-Louis Bazin, Jerry L. Prince, The Johns Hopkins Univ. (USA) . . . . . [7625-112]

evaluating a visualization of uncertainty in probabilistic tractography, Anette von Kapri, Tobias Rick, RWTH Aachen (Germany); Svenja Caspers, Simon B. Eickhoff, Karl Zilles, Forschungszentrum Jülich GmbH (Germany); Torsten Kuhlen, RWTH Aachen (Germany) . . . . . [7625-113]

Graphical user interfaces for simulation of brain deformation in image-guided neurosurgery, Xiaoyao Fan, Songbai Ji, Pablo A. Valdes, Alex Hartov, Dartmouth College (USA); David W. Roberts, Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Dartmouth College (USA) . . . . . [7625-114]

An integrated model-based neurosurgical guidance system, Songbai Ji, Xiaoyao Fan, Kathryn Fontaine, Pablo A. Valdes, Alex Hartov, David W. Roberts, Keith D. Paulsen, Dartmouth College (USA) . . . . . [7625-115]

Augmented reality guidance system for peripheral nerve blocks, Chris Wedlake, John T. Moore, Terry M. Peters, Robarts Research Institute (Canada) . . . . [7625-116]

Ultrasound guided spine needle insertion, Elvis C. S. Chen, Parvin Mousavi, Sean Gill, Gabor Fichtinger, Purang Abolmaesumi, Queen's Univ. (Canada). . . . . [7625-117]

Orthopedics

Statistical atlas based extrapolation of CT data, Gouthami Chintalapani, Ryan Murphy, Robert S. Armiger, Yoshito Otake, The Johns Hopkins Univ. (USA); Nobuhiko Sugano, Osaka Univ. Graduate School of Medicine (Japan); Russell H. Taylor, Mehran Armand, The Johns Hopkins Univ. (USA) . . . . . [7625-118]

Mastoid fiducial markers for enhancement of navigation accuracy in lateral skull base surgery based on oral splint registration, Georg Eggers M.D., Thomas Welzel M.D., Gavin Kane, Ruprecht-Karls-Univ. Heidelberg (Germany) . . . . . [7625-119]

A new method of morphological comparison for bony reconstructive surgery: maxillary reconstruction using scapular tip bone, Harley Chan, Princess Margaret Hospital (Canada); Ralph W. Gilbert, Univ. of Toronto (Canada); Nitin A. Pagedar, The Univ. of Iowa (USA); Michael J. Daly, Jonathan C. Irish M.D., Ontario Cancer Institute (Canada); Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . [7625-120]

Measurement of complex joint trajectories using slice-to-volume 2D/3D registration and cine MR, Christoph Bloch, Christelle Gendrin, Michael Figl, Christoph Weber, Ewald Unger, Silke M. Aldrian, Wolfgang Birkfellner, Medizinische Univ. Wien (Austria) . . . . . [7625-121]

Diagnostic radiograph-based 3D femoral bone reconstruction and pose estimation, Pavan Gamage, Sheng Quan Xie, Patrice Delmas, The Univ. of Auckland (New Zealand). . . . . [7625-122]

Splint deformation measurement: a contribution to quality control in computer assisted surgery, Christoph Weber, Michael Figl, Kurt Schicho, Medizinische Univ. Wien (Austria) [7625-123]

A three-dimensional finite element analysis of the osseointegration progression in the human mandible, Yasser M. Kadah, Noha D. Hassan, Enas Esmail, Cairo Univ. (Egypt) . . . . . [7625-124]

Visualization of 3D kinematics using reconstructed bony surfaces of the elbow obtained using x-ray computed tomography, James A. Johnson, Emily A. Lalone, Colin P. McDonald, Louis Ferreira, Graham J. W. King, The Univ. of Western Ontario (Canada) . . . . . [7625-125]

Conference 7626 Posters

Biomedical Applications in Molecular, Structural, and Functional Imaging

Session Chair: **John F. LaDisa, Jr.,** Marquette Univ.

A microfabricated phantom for diffusion tensor imaging, Behzad Ebrahimi, Univ. of Michigan (USA); Siamak P. Nejad Davarani, Henry Ford Hospital (USA) and Univ. of Michigan (USA); Quan Jiang, Henry Ford Hospital (USA) and Oakland Univ. (USA); Timothy E. Chupp, Univ. of Michigan (USA) . . . . . [7626-61]

Extension of dVCA model and its application in estimating fMRI components, Gaoyan Zhang, Jiacai Zhang, Li Yao, Xiaojie Zhao, Beijing Normal Univ. (China) . . . . . [7626-62]

Inferring visual system connectivity using dynamic causal modeling of functional magnetic resonance imaging data, Yasser M. Kadah, Ashraf Mahroos, Cairo Univ. (Egypt) . . . . . [7626-63]

fMRI and EEG brain activation patterns in an analytic reasoning task, Mary C. Baker, Kalyan Vasanta, Bian Li, Michael O'Boyle, Sunanda D. Mitra, Brian S. Nutter, Texas Tech Univ. (USA) . . . . . [7626-64]

Simultaneous measures of kinematics and fMRI: relation between movement parameters and activation maps in healthy subjects, Marta Gandolla, Claudia Casellato, Simona Ferrante, Giancarlo Ferrigno, Giuseppe Baselli, Politecnico di Milano (Italy); Franco Molteni, Alberto Martegani, Tiziano Frattini, Valduce Hospital (Italy); Alessandra Pedrocchi, Politecnico di Milano (Italy) . . . . . [7626-65]

Regional homogeneity changes in prelingually deafened patients: a resting-state fMRI study, Wenjing Li, Huiguang He, Institute of Automation (China); Junfang Xian, Capital Medical Univ. (China); Bin Lv, Meng Li, Institute of Automation (China); Yong Li, Zhaohui Liu, Capital Medical Univ. (China) . . . . . [7626-66]

Topologic analysis and comparison of brain activation in normal people versus epilepsy patients: an fMRI study, Khalid J. Oweis, The George Washington Univ. (USA); Madison M. Berl, William D. Gaillard, Elizabeth Duke, Kaitlin Blackstone, Children's National Medical Ctr. (USA); Murray H. Loew, Jason M. Zara, The George Washington Univ. (USA) . . . . . [7626-67]

Dealing with difficult deformations: construction of a knowledge-based atlas, Signe S. Thorup, Technical Univ. of Denmark (Denmark) and University of Copenhagen (Denmark); Tron A. Darvann, Nuno V. Hermann D.D.S., Per Larsen, Univ. of Copenhagen (Denmark); Hildur Ólafsdóttir, Rasmus R. Paulsen, Technical Univ. of Denmark (Denmark); Alex A. Kane M.D., Daniel Govier, Washington Univ. School of Medicine (USA); Lun-Jou Lo M.D., Chang Gung Univ. (Taiwan); Sven Kreiborg D.D.S., Univ. of Copenhagen (Denmark); Rasmus Larsen, Technical Univ. of Denmark (Denmark) . . . . . [7626-68]

Dynamic CT head phantom for perfusion and angiography studies, Katelyn Russell, Adriana Blazeski, Kathryn Dannecker, Qian Yi Lee, Courtenay Holscher, Christine Donahue, Univ. of Michigan (USA); William van Kampen, Wojtek Zbijewski, Xoran Technologies, Inc. (USA) . . . . . [7626-69]

International standards for pandemic screening using infrared thermography, David D. Pascoe, Auburn Univ. (USA); Francis J. Ring, Univ. of Glamorgan (UK); James Mercer, Univ. of Tromsø (Norway); John R. Snell, Jr., The Snell Group (USA); David Osborn, Philips Healthcare (USA); John Hedley-Whyte, Harvard Univ. (USA) . . . . . [7626-70]

Erode/dilate analysis of micro-CT images of myocardial microcirculation, Timothy L. Kline, Yue Dong, Erik L. Ritman, Mayo Clinic College of Medicine (USA) . . . . . [7626-71]

Evaluation of the effect of atorvastatin on carotid atherosclerosis using 3D ultrasound-based texture analysis, Joseph Awad, Adam Krasinski, Grace Parraga, Aaron Fenster, Robarts Research Institute (Canada) . . . . . [7626-72]

A temporally constrained ICA (TCICA) technique for artery-vein separation of cerebral microvasculature, Hatef Mehrabian, Bojana Stefanovic, Liis Lindvere, Anne L. Martel, Sunnybrook Health Sciences Ctr. (Canada) . . . . . [7626-73]

Tracking planar lung motion in 4D CT with optical flow: validations and comparison of global, local and local-global methods, Mohammadreza Negahdar, Amir A. Amini, Univ. of Louisville (USA) . . . . . [7626-74]

Influence of imaging quality on magnetic resonance-based pressure gradient measurements, Michael Delles, Univ. Karlsruhe (Germany); Fabian Rengier, Deutsches Krebsforschungszentrum (Germany); Sebastian Ley, UniversitätsKlinikum Heidelberg (Germany); Hendrik von Tengg-Kobligk, Deutsches Krebsforschungszentrum (Germany); Hans-Ulrich Kauczor, UniversitätsKlinikum Heidelberg (Germany); Roland Unterhinninghofen, Rüdiger Dillmann, Univ. Karlsruhe (Germany) . . . . . [7626-75]

Hardware and software system for automatic microemulsion evaluation by analysis of optical properties, Ulf Maeder, Thomas Schmidts, Jan-Michael Burg, Fachhochschule Giessen-Friedberg (Germany); Johannes T. Heverhagen, Phillips Univ. (Germany); Frank Runkel, Martin Fiebich, Fachhochschule Giessen-Friedberg (Germany) . . . . . [7626-76]

Fibre reinforced prostheses investigated with opto-electronic non invasive method: optical coherence tomography, Meda L. Negrutiu, Cosmin G. H. Sinescu, Univ. de Medicina si Farmacie Victor Babes, Timisoara (Romania) . . . . . [7626-77]

The effect of viscosity on the phase of the nanoparticle magnetization induced by a harmonic applied field, John B. Weaver, Dartmouth Hitchcock Medical Ctr. (USA); Matthew Harding, Univ. of New Hampshire (USA); Adam M. Rauwerdink, Eric W. Hansen, Dartmouth College (USA) [7626-79]

Preliminary optical coherence tomography investigation of early non-carious cervical lesions, Corina Marcauteanu D.D.S., Eniko T. Demjan D.D.S., Cosmin G. H. Sinescu, Meda L. Negrutiu, Florin Topala, Cezar Clonda, Univ. de Medicina si Farmacie Victor Babes, Timisoara (Romania); Michael R. Hughes, Adrian Bradu, George M. Dobre, Adrian G. Podoleanu, Univ. of Kent (UK). . . . [7626-80]

Advantage of topological texture measures derived from Minkowski functionals (MF) and scaling index method (SIM) in comparison with biomechanical finite elements method (FEM) for the prediction of osteoporosis, Irina N. Sidorenko, Max-Planck-Institut für extraterrestrische Physik (Germany); Jan S. Bauer, Technische Univ. München (Germany); Roberto A. Monetti, Max-Planck-Institut für extraterrestrische Physik (Germany); Dirk Müller, Ernst J. Rummeny, Technische Univ. München (Germany); Felix Eckstein, Paracelsus Medizinische Privatuniv. (Austria); Christoph W. Raeth, Max-Planck-Institut für extraterrestrische Physik (Germany) . . . . . [7626-81]

Optical coherence tomography implied in implant bone interface investigation: numerical simulation and tensional stamps as complementary non invasive methods, Cosmin G. H. Sinescu, Meda L. Negrutiu, Univ. de Medicina si Farmacie Victor Babes, Timisoara (Romania); Liviu Marsavina, Radu Negru, Mihai Hluscu, Politehnica Univ. Timisoara (Romania); Adrian Bradu, Michael R. Hughes, Univ. of Kent (UK); Sergiu Antonie M.D., Marius Leretter, Mihai Rominu, Univ. de Medicina si Farmacie Victor Babes, Timisoara (Romania); Adrian G. Podoleanu, Univ. of Kent (UK) . . . . . [7626-82]

Microscopic resolution imaging and proteomics correlation at histogeographically identical location: point by point correlation between ex vivo tissue imaging with high field MRI and multiplex tissue immunoblotting for proteomics profiling, Kant M. Matsuda M.D., Joon-Yong Chung, National Cancer Institute/NIH (USA); Stephen J. Dodd, Masaki Fukunaga, National Institute of Neurological Disorders and Stroke/NIH (USA); Stephen M. Hewitt, National Cancer Institute/NIH (USA) . . . . . [7626-83]

Conference 7629 Posters

Ultrasonic Imaging and Signal Processing

Liver ablation guidance with real-time elastography, Hassan Rivaz, Ioana N. Fleming, Michael A. Choti M.D., Gregory D. Hager, Emad M. Boctor, The Johns Hopkins Univ. (USA) . . . . . [7629-38]

Improved 3D reconstruction algorithm for ultrasound B-scan image with freehand tracker, Shuangren Zhao, Jasjit S. Suri, Eigen Inc. (USA). . . . . [7629-39]

Coronary 3D reconstruction using IVUS images only: a numeric phantom framework, Monica M. S. Matsumoto, Instituto do Coração do Hospital das Clínicas (Brazil); Fernando M. Cardoso, Instituto Tecnológico de Aeronáutica (Brazil); Pedro A. Lemos, Instituto do Coração do Hospital das Clínicas (Brazil); Sergio S. Furuie, Escola Politécnica da Univ. de São Paulo (Brazil) . . . . . [7629-40]

Image enhancement for sonograms acquired by high frame rate mode, Wen-Li Lee, National Dong Hwa Univ. (Taiwan) and Tzu Chi College of Technology (Taiwan); Mei-Juan Chen, National Dong Hwa Univ. (Taiwan) . . . . . [7629-41]

Simulation and training of ultrasound supported anaesthesia: a low-cost approach, Thorsten Schaaf, Matthias Lamontain, Justus Hilpert, Thomas Tolxdorff, Charité Universitätsmedizin Berlin (Germany) . . . . . [7629-42]

A feasibility study of epicardial coronary angiography from microbubble-contrasted tridimensional echocardiography: segmentation approaches, Danilo M. Lage, Jeane M. Tsutsui M.D., Instituto do Coração do Hospital das Clínicas (Brazil); Sergio S. Furuie, Escola Politécnica da Univ. de São Paulo (Brazil) . . . . . [7629-43]

Detecting breast microcalcifications using super-resolution ultrasound imaging: a numerical phantom study, Lianjie Huang, Los Alamos National Lab. (USA); Francesco Simonetti, Imperial College London (UK) . . . . . [7629-44]

Fetal biometry of abdominal circumference (AC) for Malaysian pregnant women, Ramzun Maizan Ramli, Univ. Sains Malaysia (Malaysia) . . [7629-45]

Application of external tracking in ultrasound elasticity imaging, Pezhman Foroughi, Gregory D. Hager, Emad M. Boctor, The Johns Hopkins Univ. (USA) . . . . . [7629-46]

Monitoring breast masses with ultrasound tomography in patients undergoing neoadjuvant chemotherapy, Nebojsa Duric, Peter J. Littrup, Jessica Lupinacci, Karmanos Cancer Institute (USA) . . . . . [7629-47]

Novel reconstruction and feature exploitation techniques for sensorless freehand 3D ultrasound, Hassan Rivaz, Hyun-Jae Kang, Philipp J. Stolka, Emad M. Boctor, The Johns Hopkins Univ. (USA) . . . . . [7629-48]

Prostate brachytherapy seed localization using combined photoacoustic and ultrasound imaging, Emad M. Boctor, Sneha Verma, Clyde C. Clarke, Travis DeJournett, James B. Spicer, Jin Ung Kang, The Johns Hopkins Univ. (USA) . . [7629-49]

Ultrasound images using a PE-CMOS sensor with multi-transducers: a preliminary investigation on blood vessel plaques and bone fractures, Shih-Chung B. Lo, Chu-Chuan B. Liu, Matthew T. Freedman M.D., Georgetown Univ. Medical Ctr. (USA); John Kula, Marvin E. Lasser, Imperium, Inc. (USA) . . . . . [7629-50]

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 1
Room: Town & Country . . Mon. 8:00 to 9:40 am

Keynote and Radiation Therapy Imaging

Session Chairs: **Ehsan Samei,** Duke Univ.; **Norbert J. Pelc,** Stanford Univ.

8:00 am: **Integrated imaging for radiation therapy delivery** *(Keynote Presentation),* David A. Jaffray, Princess Margaret Hospital/Univ. Health Network (Canada) . . . . . [7622-01]

9:00 am: **Low-contrast visualization in megavoltage cone-beam CT at one beam pulse per projection using thick, segmented scintillators**, Youcef El-Mohri, Larry E. Antonuk, Qihua Zhao, Martin Koniczek, Univ. of Michigan (USA) [7622-02]

9:20 am: **Feasibility of proton tomosynthesis system in proton therapy**, Min Kook Cho, National Cancer Ctr. (Korea, Republic of) and Pusan National Univ. (Korea, Republic of); Jungwook Shin, National Cancer Ctr. (Korea, Republic of); Ho Kyung Kim, Pusan National Univ. (Korea, Republic of); Myonggeun Yoon, Dongho Shin, Se Byeong Lee, Sung Yong Park, National Cancer Ctr. (Korea, Republic of) . . . . . [7622-03]

Coffee Break . . . . . 9:40 to 10:10 am

7622 continues on page 25

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 5
Room: San Diego . . . . . Mon. 8:00 to 9:40 am

Keynote and Vascular Image Analysis

Session Chairs: **David R. Haynor,** Univ. of Washington; **Joseph M. Reinhardt,** The Univ. of Iowa

8:00 am: **Affinity-based constraint optimization for nearly-automatic vessel segmentation,** Ofir Cooper, Moti Freiman, Leo Joskowicz, Dani Lischinski, The Hebrew Univ. of Jerusalem (Israel) . . . . . [7623-23]

8:20 am: **A new 3D tubular intensity model for quantification of thin vessels in 3D tomographic images,** Stefan Wörz, Hendrik von Tengg-Kobligk, Karl Rohr, Ruprecht-Karls-Univ. Heidelberg (Germany). [7623-24]

8:40 am: **Imaging the brain's connectome** *(Keynote Presentation),* Jeff W. Lichtman M.D., Harvard Univ. (USA) . . . . . [7623-25]

Coffee Break . . . . . 9:40 to 10:10 am

7623 continues on page 25

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 5
Room: California . . . . . Mon. 8:00 to 9:40 am

Orthopedics

Session Chairs: **Ziv R. Yaniv,** Georgetown Univ.; **Terry M. Peters,** Robarts Research Institute (Canada)

8:00 am: **Multi-slice to volume registration of ultrasound data to a statistical atlas of human pelvis**, Sahar Ghanavati, Parvin Mousavi, Queen's Univ. (Canada); Gabor Fichtinger, Queen's Univ. (Canada) and Johns Hopkins Univ. (USA); Pezhman Foroughi, The Johns Hopkins Univ. (USA); Purang Abolmaesumi, Univ. of British Columbia (Canada) and Queen's Univ. (Canada) . . . . . [7625-23]

8:20 am: **An image-guided femoroplasty system: development and initial cadaver study**, Yoshito Otake, Mehran Armand, Ofri Sadowsky, Robert S. Armiger, Michael D. Kutzer, The Johns Hopkins Univ. (USA); Simon C. Mears M.D., Johns Hopkins Bayview Medical Ctr. (USA); Peter Kazanzides, Russell H. Taylor, The Johns Hopkins Univ. (USA) . . . . . [7625-24]

8:40 am: **Active self-calibration of thoracoscopic images for assisted minimally invasive spinal surgery**, Fantin Girard, Fouzi Benboujja, Ecole Polytechnique de Montréal (Canada); Stefan Parent, CHU Sainte-Justine (Canada); Farida Cheriet, Ecole Polytechnique de Montréal (Canada) . . . . . [7625-25]

9:00 am: **Group-wise feature-based registration of CT and ultrasound images of spine**, Abtin Rasoulian, Technische Univ. München (Germany); Parvin Mousavi, Queen's Univ. (Canada); Mehdi Hedjazi Moghari, Harvard Univ. (USA); Purang Abolmaesumi, Queen's Univ. (Canada); Pezhman Foroughi, The Johns Hopkins Univ. (USA) . . . . . [7625-26]

9:20 am: **Plan to procedure: combining 3D templating with rapid prototyping to enhance pedicle screw placement**, Kurt E. Augustine, Anthony A. Stans M.D., Jonathan M. Morris M.D., Paul M. Huddleston M.D., Jane M. Matsumoto M.D., David R. Holmes III, Richard A. Robb M.D., Mayo Clinic (USA) . . . . . [7625-27]

Coffee Break . . . . . 9:40 to 10:10 am

7625 continues on page 25

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 5
Room: Golden West . . . Mon. 8:00 to 9:40 am

Breast Imaging

Session Chairs: **Armando Manduca,** Mayo Clinic College of Medicine; **Axel Wismueller,** Univ. of Rochester Medical Ctr.

8:00 am: **A numerical study of the inverse problem of breast infrared thermography modeling**, Li Jiang, The George Washington Univ. (USA); Wang Zhan, Univ. of California, San Francisco (USA); Murray H. Loew, The George Washington Univ. (USA) . . [7626-23]

8:20 am: **Microwave imaging of the breast with incorporated structural information**, Amir H. Golnabi, Paul M. Meaney, Shireen D. Geimer, Keith D. Paulsen, Dartmouth College (USA) . . . . . [7626-24]

8:40 am: **Reconstruction and visualization of 3D multimodality image-guided near infrared spectroscopy estimates for breast cancer applications**, Subhadra Srinivasan, Brian W. Pogue, Colin M. Carpenter, Senate J. Taka, Hamid R. Ghadyani, Keith D. Paulsen, Dartmouth College (USA) . . . . . [7626-25]

9:00 am: **A novel and fast method for cluster analysis of DCE-MR image series for segmentation of breast tumors**, Mojgan Mohajer, Helmholtz Zentrum München GmbH (Germany); Gunnar Brix, Karl-Hans Englmeier, GSF-Forschungszentrum (Germany) . . . [7626-26]

9:20 am: **Modeling bioluminescent photon transport in tissue based on radiosity-diffusion model**, Li Sun, Pu Wang, Beijing Univ. of Technology (China); Jie Tian, Bo Zhang, Institute of Automation (China) . . . . . [7626-27]

Coffee Break . . . . . 9:40 to 10:10 am

7626 continues on page 25

Conference 7629 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 5
Room: Royal Palm I-III . . Mon. 8:00 to 9:40 am

Transducers

Session Chair: **Kai E. Thomenius,** General Electric Co.

8:00 am: **Fabrication and characterization of an indium tin oxide acoustoelectric hydrophone**, Pier M. Ingram, Zhaohui Wang, The Univ. of Arizona (USA); Charles L. Greenlee, College of Optical Sciences, The Univ. of Arizona (USA); Ragnar Olafsson, The Univ. of Arizona (USA); Robert A. Norwood, College of Optical Sciences, The Univ. of Arizona (USA); Russell S. Witte, The Univ. of Arizona (USA) . . . . . [7629-23]

8:20 am: **Novel interconnection and fabrication method for high-frequency ultrasound arrays**, Eric A. Simpson, Holly S. Lay, Geoffrey R. Lockwood, Queen's Univ. (Canada) . . . . . [7629-24]

8:40 am: **Simulation-based optimization of the acoustoelectric hydrophone for mapping an ultrasound beam**, Zhaohui Wang, Ragnar Olafsson, Pier M. Ingram, Russell S. Witte, The Univ. of Arizona (USA); Charles L. Greenlee, Robert A. Norwood, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [7629-25]

9:00 am: **Fabrication of a conformal, ring-annular ultrasound array**, Aaron E. Dann, David B. Bennett, Univ. of California, Los Angeles (USA); Rahul S. Singh, Univ. of California, Santa Barbara (USA); Warren S. Grundfest M.D., Martin O. Culjat, Univ. of California, Los Angeles (USA) . . . . [7629-26]

9:20 am: **Method of testing multistatic image reconstruction algorithms using finite-element analysis software**, Michael Lee, Univ. of California, Los Angeles (USA); Scott Stubbs, Univ. of California, Santa Barbara (USA); Martin O. Culjat, Univ. of California, Los Angeles (USA); Elliott R. Brown, Hua Lee, Univ. of California, Santa Barbara (USA); Warren S. Grundfest M.D., Univ. of California, Los Angeles (USA); Rahul S. Singh, Univ. of California, Santa Barbara (USA) . . . . . [7629-27]

Coffee Break . . . . . 9:40 to 10:10 am

7629 continues on page 25

Monday · 15 February

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 2
Room: Town & Country . . . . Mon. 10:10 am to 12:10 pm

Breast Imaging

Session Chairs: **Robert M. Nishikawa,** The Univ. of Chicago; **Christoph Hoeschen,** Helmholtz Zentrum München GmbH (Germany)

10:10 am: **Development of a computational three-dimensional breast lesion model**, Luis de Sisternes, Adam M. Zysk, Jovan G. Brankov, Miles N. Wernick, Illinois Institute of Technology (USA) . . . . . [7622-04]

10:30 am: **Development of a 3D high-resolution physical anthropomorphic breast phantom**, Ann-Katherine G. Carton, Predrag R. Bakic, The Univ. of Pennsylvania Health System (USA); Christer Ullberg, XCounter AB (Sweden); Andrew D. A. Maidment, The Univ. of Pennsylvania Health System (USA) . . . . . [7622-05]

10:50 am: **Dual-modality imaging of a compressible breast phantom with realistic optical and x-ray properties**, Ben D. Price, Adam P. Gibson, Gary J. Royle, Univ. College London (UK) . . . . . [7622-06]

11:10 am: **Triple-energy contrast enhanced digital mammography**, Sylvie Puong, GE Healthcare France (France); Pablo Milioni de Carvalho, Telecom ParisTech (France); Serge Muller, GE Healthcare France (France) . . . . . [7622-07]

11:30 am: **Development of in vivo characterization of breast tissues through absolute attenuation coefficients using dedicated cone-beam CT**, Priti Madhav, Christina Li, Martin Tornai, Duke Univ. (USA) . . . . . [7622-08]

11:50 am: **A stepwedge-based method for measuring breast density in the UK screening population: observer variability and comparison with human reading**, Jennifer L. Diffey, Alan Hufton, Christie Hospital (UK); Michael A. Berks, Camilla Chung, Joanna Morrison, Rosanne Verow, The Univ. of Manchester (UK); Mary Wilson, Caroline R. M. Boggis, Julie Morris, Univ. Hospital of South Manchester (UK); Susan M. Astley, The Univ. of Manchester (UK) . . . . . [7622-09]

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

7622 continues on page 26

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 6
Room: San Diego Mon. 10:10 am to 12:10 pm

Segmentation I

Session Chair: **Tianhu Lei,** The Children's Hospital of Philadelphia

10:10 am: **Artifact aware tracking of left ventricular contours in 3D ultrasound**, Esther Leung, Mikhail G. Danilouchkine, Marijn van Stralen, Nico de Jong, Antonius F. W. van der Steen, Johan G. Bosch, Univ. Medisch Ctr. Rotterdam (Netherlands) . . . . . [7623-26]

10:30 am: **Classification in medical images using adaptive metric KNN**, Chen Chen, Francois Lauze, Konstantin Chernoff, Gopal Karemore, Mads Nielsen, Univ. of Copenhagen (Denmark). . . . . [7623-27]

10:50 am: **Partial volume correction for volume estimation of liver metastases and lymph nodes in CT scans using spatial subdivision**, Frank Heckel, Volker Dicken, Fraunhofer MEVIS (Germany); Tilman Bostel, Johannes Gutenberg Univ. Mainz (Germany); Michael Fabel, Christian-Albrechts-Univ. zu Kiel (Germany); Andreas Kiessling, Philipps-Univ. Marburg (Germany); Heinz-Otto Peitgen, Fraunhofer MEVIS (Germany) . . . . . [7623-28]

11:10 am: **Microaneurysms detection with the radon cliff operator in retinal fundus images**, Luca Giancardo, Oak Ridge National Lab. (USA) and Univ. de Bourgogne (France) . . . . . [7623-29]

11:30 am: **Liver segmentation through combined EM clustering and GVF level sets over registered multiphase CT data sets**, Guozhi Tao, Ashish Singh, Luc M. Bidaut, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) . . . . . [7623-30]

11:50 am: **Electric field theory based approach to search-direction line definition in image segmentation: application to optimal femur-tibia cartilage segmentation in knee-joint 3D MR**, Yin Yin, Milan Sonka, The Univ. of Iowa (USA) . . . . . [7623-31]

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

7623 continues on page 26

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 6
Room: California . . Mon. 10:10 am to 12:10 pm

Ultrasound and Guided Therapy

Joint Session with Conference 7629

Session Chairs: **Jan D'hooge,** Katholieke Univ. Leuven (Belgium); **Kenneth H. Wong,** Virginia Polytechnic Institute and State Univ.

10:10 am: **The potential of focused ultrasound for brain treatments** *(Keynote Presentation Only)*, Kullervo H. Hynynen, Sunnybrook Health Sciences Ctr. (Canada). . . . . [7629-28]

10:50 am: **Validation platform for ultrasound-based monitoring of thermal ablation**, Alexandra Pompeu-Robinson, James Gray, Joshua Marble, Paweena U-Thainual, Mohammad Aboofazeli, Gabor Fichtinger, Queen's Univ. (Canada) . [7625-28]

11:10 am: **Calibration of temperature measurements with CT for ablation of liver tissue**, Ganga D. Pandeya, Siemens Medical Solutions GmbH (Germany) and Univ. Medical Ctr. Groningen (Netherlands); Marcel J. W. Greuter, Univ. Medical Ctr. Groningen (Netherlands); Bernhard T. Schmidt, Thomas G. Flohr, Siemens Medical Solutions GmbH (Germany); Matthijs Oudkerk, Univ. Medical Ctr. Groningen (Netherlands) . . . . . [7625-29]

11:30 am: **Development of an MRI-compatible focused-ultrasound system for the investigation of novel therapeutic applications in preclinical animal models**, Adam C. Waspe, Sunnybrook Health Sciences Ctr. (Canada) and Univ. of Toronto (Canada); Anthony Chau, Aleksandra Kukic, Sunnybrook Health Sciences Ctr. (Canada); Rajiv Chopra, Sunnybrook Health Sciences Ctr. (Canada) and Univ. of Toronto (Canada); Kullervo H. Hynynen, Sunnybrook Health Sciences Ctr. (Canada) . . . . . [7629-29]

11:50 am: **The ACUSITT ultrasonic ablator: the first steerable needle with an integrated interventional tool**, E. Clif Burdette, Acoustic MedSystems, Inc. (USA); D. Caleb Rucker, Vanderbilt Univ. (USA); Punit Prakash, Univ. of California, San Francisco (USA); Chris J. Diederich, Univ. of California Medical Ctr. (USA); Jordon M. Croom, Vanderbilt Univ. (USA); Clyde Clarke, The Johns Hopkins Hospital (USA); Philipp J. Stolka, The Johns Hopkins Univ. (USA); Titania Juang, Univ. of California, San Francisco (USA); Emad M. Boctor, The Johns Hopkins Univ. (USA); Robert J. Webster III, Vanderbilt Univ. (USA). . . . . [7629-30]

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

7625 continues on page 26

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 6
Room: Golden West .Mon. 10:10 am to 12:10 pm

Optical Imaging

Session Chair: **Ronald M. Summers,** National Institutes of Health

10:10 am: **Microvascular blood flow mapping from wide-field optical fluctuations measurements**, Michael Atlan, Ecole Supérieure de Physique et de Chimie Industrielles (France); Michel Gross, Ecole Normale Supérieure (France); Isabelle Ferezou, Tania Vitalis, Armelle Rancillac, Jean Rossier, Ecole Supérieure de Physique et de Chimie Industrielles (France) . . . . . [7626-28]

10:30 am: **Automated 3D segmentation of intraretinal layers from optic nerve head optical coherence tomography images**, Bhavna J. Antony, The Univ. of Iowa (USA); Michael D. Abramoff, The Univ. of Iowa Hospitals and Clinics (USA) and Veterans' Affairs Medical Ctr., Iowa City (USA); Kyungmoo Lee, Zhihong Hu, Mona K. Garvin, The Univ. of Iowa (USA); Meindert Niemeijer, Univ. Medical Ctr. Utrecht (Netherlands); Milan Sonka, The Univ. of Iowa (USA) . . . . . [7626-29]

10:50 am: **3D segmentation of retinal blood vessels in spectral-domain OCT volumes of the optic nerve head**, Kyungmoo Lee, The Univ. of Iowa (USA); Meindert Niemeijer, Univ. Medical Ctr. Utrecht (Netherlands); Mona K. Garvin, Milan Sonka, The Univ. of Iowa (USA); Michael D. Abramoff, The Univ. of Iowa Hospitals and Clinics (USA). . . . . [7626-30]

11:10 am: **Cryo-imaging of stem cells in cardiovascular therapeutics**, David L. Wilson, Grant Steyer, Case Western Reserve Univ. (USA); Debashish Roy, Case Western Reserve Univ. (USA) and BioInVision, Inc. (USA); Madhusudhana Gargesha, Mohammed Qutaish, Lehar Kanodia, Case Western Reserve Univ. (USA); Marc Penn, The Cleveland Clinic Foundation (USA) . . . . . [7626-31]

11:30 am: **Cryo-imaging in a toxicological study on mouse fetuses**, Debashish Roy, Madhusudhana Gargesha, Michiko Watanabe, Case Western Reserve Univ. (USA); Eddie Sloter, WIL Research Labs., LLC (USA); David L. Wilson, Case Western Reserve Univ. (USA). . . [7626-32]

11:50 am: **Adhesive improvement in optical coherence tomography combined with confocal microscopy for class V cavities investigations**, Mihai Rominu, Cosmin G. H. Sinescu, Univ. de Medicina si Farmacie Victor Babes, Timisoara (Romania) . . . . . [7626-33]

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

7626 continues on page 26

Conference 7629 continued
Ultrasonic Imaging and Signal Processing
Room: California

SESSION 6
Room: California . . Mon. 10:10 am to 12:10 pm

Keynote and Ultrasound and Guided Therapy

Joint Session with Conference 7625

Session Chairs: **Jan D'hooge,** Katholieke Univ. Leuven (Belgium); **Kenneth H. Wong,** Virginia Polytechnic Institute and State Univ.

10:10 am: **The potential of focused ultrasound for brain treatments** *(Keynote Presentation Only)*, Kullervo H. Hynynen, Sunnybrook Health Sciences Ctr. (Canada). . . . . [7629-28]

10:50 am: **Validation platform for ultrasound-based monitoring of thermal ablation**, Alexandra Pompeu-Robinson, James Gray, Joshua Marble, Paweena U-Thainual, Mohammad Aboofazeli, Gabor Fichtinger, Queen's Univ. (Canada) . [7625-28]

11:10 am: **Calibration of temperature measurements with CT for ablation of liver tissue**, Ganga D. Pandeya, Siemens Medical Solutions GmbH (Germany) and Univ. Medical Ctr. Groningen (Netherlands); Marcel J. W. Greuter, Univ. Medical Ctr. Groningen (Netherlands); Bernhard T. Schmidt, Thomas G. Flohr, Siemens Medical Solutions GmbH (Germany); Matthijs Oudkerk, Univ. Medical Ctr. Groningen (Netherlands) . . . . . [7625-29]

11:30 am: **Development of an MRI-compatible focused-ultrasound system for the investigation of novel therapeutic applications in preclinical animal models**, Adam C. Waspe, Sunnybrook Health Sciences Ctr. (Canada) and Univ. of Toronto (Canada); Anthony Chau, Aleksandra Kukic, Sunnybrook Health Sciences Ctr. (Canada); Rajiv Chopra, Sunnybrook Health Sciences Ctr. (Canada) and Univ. of Toronto (Canada); Kullervo H. Hynynen, Sunnybrook Health Sciences Ctr. (Canada) . . . . [7629-29]

11:50 am: **The ACUSITT ultrasonic ablator: the first steerable needle with an integrated interventional tool**, E. Clif Burdette, Acoustic MedSystems, Inc. (USA); D. Caleb Rucker, Vanderbilt Univ. (USA); Punit Prakash, Univ. of California, San Francisco (USA); Chris J. Diederich, Univ. of California Medical Ctr. (USA); Jordon M. Croom, Vanderbilt Univ. (USA); Clyde Clarke, The Johns Hopkins Hospital (USA); Philipp J. Stolka, The Johns Hopkins Univ. (USA); Titania Juang, Univ. of California, San Francisco (USA); Emad M. Boctor, The Johns Hopkins Univ. (USA); Robert J. Webster III, Vanderbilt Univ. (USA). . . . . [7629-30]

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

7629 continues on page 26

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 3
Room: Town & Country. .Mon. 1:20 to 3:40 pm

Breast Tomosynthesis

Session Chairs: **Stephen J. Glick,** Univ. of Massachusetts Medical School; **Jeffrey H. Siewerdsen,** The Johns Hopkins Univ.

1:20 pm: **A new generation FFDM/ tomosynthesis fusion system with selenium detector**, Baorui Ren, Chris Ruth, Tao Wu, Yiheng Zhang, Andrew Smith, Loren Niklason, Cornell Williams, Elena Ingal, Brad Polischuk, Zhenxue Jing, Hologic, Inc. (USA) . . . . . [7622-10]

1:40 pm: **Wide-angle breast tomosynthesis: initial comparative evaluation**, John Thompson, Baiyu Chen, Samuel Richard, Ehsan Samei, Duke Univ. (USA); James E. Bowsher, Duke Univ. Medical Ctr. (USA). . . . . [7622-11]

2:00 pm: **Effects of projection-view distributions on image quality of calcifications in digital breast tomosynthesis (DBT) reconstruction**, Yao Lu, Univ. of Michigan Health System (USA); Heang-Ping Chan, Mitch Goodsitt, Jun Wei, Lubomir M. Hadjiiski, Univ. of Michigan (USA); Andrea Schmitz, Jeffrey W. Eberhard, Bernhard E. H. Claus, GE Global Research (USA) . . . . . [7622-12]

2:20 pm: **Evaluation and optimization of the maximum likelihood and iterative FBP approaches for image reconstruction in digital breast tomosynthesis**, Anna K. Jerebko, Thomas Mertelmeier, Siemens AG (Germany) . . . . . [7622-13]

2:40 pm: **Validation and optimization of digital breast tomosynthesis reconstruction using an anthropomorphic software breast phantom**, Predrag R. Bakic, The Univ. of Pennsylvania Health System (USA); Susan Ng, Peter Ringer, Real-Time Tomography, LLC (USA); Ann-Katherine Carton, Emily F. Conant, Andrew D. A. Maidment, The Univ. of Pennsylvania Health System (USA). . . . . [7622-14]

7622 continues on page 27

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 7
Room: San Diego . . . . .Mon. 1:20 to 3:40 pm

2D Image Segmentation

Session Chair: **Sunanda D. Mitra,** Texas Tech Univ.

1:20 pm: **WCE video segmentation using textons**, Giovanni Gallo, Eliana Granata, Univ. degli Studi di Catania (Italy) . [7623-32]

1:40 pm: **A weighted mean shift, normalized cuts initialized color gradient based geodesic active contour model: applications to histopathology image segmentation**, Jun Xu, Rutgers, The State Univ. of New Jersey (USA); Andrew Janowcyzk, Indian Institute of Technology, Mumbai (India) and Rutgers, The State Univ. of New Jersey (USA); Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA); Sharat Chandran, Indian Institute of Technology, Mumbai (India) . . . . [7623-140]

2:00 pm: **Identification of post-menopausal patients with hip fracture by application of the radon transform to clinical radiographs of the proximal femur using three regions of interest**, Holger F. Boehm, Markus Körner, Bernhard Baumert, Ulrich Linsenmaier, Maximilian Reiser, Ludwig-Maximilians-Univ. München (Germany) . . . . . [7623-34]

2:20 pm: **Retinal atlas statistics from color fundus images**, Sangyeol Lee, Michael D. Abramoff, Joseph M. Reinhardt, The Univ. of Iowa (USA) . . . . . [7623-35]

2:40 pm: **Automatic landmark detection and scan range delimitation for topogram images using hierarchical network**, Wei Zhang, Frederic Mantlic, Shaohua K. Zhou, Siemens Corporate Research (USA). [7623-36]

3:00 pm: **Graph-based pigment network detection in skin images**, Maryam Sadeghi, Majid Razmara, Simon Fraser Univ. (Canada); Tim K. Lee, The BC Cancer Research Ctr. (Canada); Martin Ester, M. Stella Atkins, Simon Fraser Univ. (Canada) . . . . . [7623-37]

7623 continues on page 27

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 7
Room: California . . . . . .Mon. 1:20 to 3:40 pm

Keynote and Motion Correction

Session Chairs: **Michael I. Miga,** Vanderbilt Univ.; **Kenneth H. Wong,** Virginia Tech-National Capital Region

1:20 pm: **Respiratory effects in PET/CT imaging: impact on diagnosis, quantitative estimation, and therapy** *(Keynote Presentation),* Paul E. Kinahan, Univ. of Washington (USA) . . . . . [7625-30]

2:20 pm: **Particle filtering for respiratory motion compensation during navigated bronchoscopy**, Ingmar Gergel, Thiago R. dos Santos, Ralf Tetzlaff M.D., Lena Maier-Hein, Hans-Peter Meinzer, Ingmar Wegner, Deutsches Krebsforschungszentrum (Germany) . . . . . [7625-31]

2:40 pm: **Structured light 3D tracking system for measuring motions in PET brain imaging**, Oline V. Olesen, Technical Univ. of Denmark (Denmark) and Siemens A/S (Denmark) and Rigshospitalet (Denmark); Liselotte Højgaard M.D., Rigshospitalet (Denmark) and Technical Univ. of Denmark (Denmark); Morten R. Jørgensen, Rasmus R. Paulsen, Technical Univ. of Denmark (Denmark); Bjarne Roed, Siemens A/S (Denmark); Rasmus Larsen, Technical Univ. of Denmark (Denmark) . . . . . [7625-32]

3:00 pm: **Model-based Lasso catheter tracking in monoplane fluoroscopy for 3D breathing motion compensation during EP procedures**, Rui Liao, Siemens Corporate Research (USA) . . . . . [7625-33]

3:20 pm: **Four dimensional MRI of respiratory organ motion using an intersection profile method**, Yoshitada Masuda, Hideaki Haneishi, Chiba Univ. (Japan). . . . . [7625-34]

Coffee Break . . . . . 3:40 to 4:00 pm

7625 continues on page 28

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 7
Room: Golden West . . . .Mon. 1:20 to 3:40 pm

Lung Imaging

Session Chairs: **Merryn H. Tawhai,** The Univ. of Auckland (New Zealand); **Eric A. Hoffman,** The Univ. of Iowa

1:20 pm: **Quantitative evaluation of bronchial enhancement: preliminary observations**, Benjamin L. Odry, Atilla P. Kiraly, Carol L. Novak, Siemens Corporate Research (USA); David P. Naidich, Myrna C. B. Godoy, New York Univ. Langone Medical Ctr. (USA); Bernhard T. Schmidt, Siemens Medical Solutions GmbH (Germany). . . . . [7626-34]

1:40 pm: **Microstructural analysis of secondary pulmonary lobule imaged by synchrotron radiation micro CT using offset scan mode**, Yoshiki Kawata, Koji Kageyama, Noboru Niki, Univ. of Tokushima (Japan); Keiji Umetani, Japan Synchrotron Radiation Research Institute (Japan); Keiji Yada, Tohken Co., Ltd. (Japan); Hironobu Ohamatsu, Takaaki Tsuchida, National Cancer Ctr. Hospital East (Japan); Kenji Eguchi, Teikyo Univ. (Japan); Masahiro Kaneko, Noriyuki Moriyama, National Cancer Ctr. Hospital East (Japan); Harumi Itoh, Univ. of Fukui (Japan) . . . . . [7626-35]

2:00 pm: **Human airway tree structure query atlas**, Gary E. Christensen, Nathan Burnette, Weichen Gao, Matineh Shaker, Joseph M. Reinhardt, Janice E. Cook-Granroth, Geoffrey McLennan M.D., Eric A. Hoffman, The Univ. of Iowa (USA). [7626-36]

2:20 pm: **Two-dimensional airway analysis using probabilistic neural networks**, Jun Tan, Bin Zheng, Sang Cheol Park, Jiantao Pu, Frank C. Sciurba, Joseph K. Leader, Univ. of Pittsburgh (USA) . . . . . [7626-78]

2:40 pm: **Development of spatial ventilation heterogeneity and temporal ventilation probability image analysis tools and application to asthma hyperpolarized 3He magnetic resonance imaging**, Hassaan Ahmed, Stephen Choy, Andrew Wheatley, Robarts Research Institute (Canada); Grace Parraga, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada). . . . . [7626-38]

7626 continues on page 27

Conference 7629 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 7
Room: Royal Palm I-III . .Mon. 1:20 to 3:40 pm

Vascular and Liver

Session Chair: **Michael F. Insana,** Univ. of Illinois at Urbana-Champaign

1:20 pm: **Quantification of turbulence intensity in patients with symptomatic carotid artery disease: a pilot study**, Meghan L. Thorne, The Univ. of Western Ontario (Canada); Richard N. Rankin M.D., London Health Sciences Ctr. (Canada); Tamie L. Poepping, David W. Holdsworth, The Univ. of Western Ontario (Canada) . . . . . [7629-31]

1:40 pm: **Global optimization for motion estimation with applications to ultrasound videos of carotid artery plaques**, Sergio Murillo, Marios Pattichis, The Univ. of New Mexico (USA); Peter Soliz, VisionQuest Biomedical, LLC (USA); Christos Loizou, Intercollege Limassol Campus (Cyprus); Constantinos S. Pattichis, Univ. of Cyprus (Cyprus) . . . . . [7629-32]

2:00 pm: **IVUS-based histology of atherosclerotic plaques: improving longitudinal resolution**, Arash Taki, Olivier Pauly, Technische Univ. München (Germany); S. Kamaledin Setarehdan, Univ. of Tehran (Iran, Islamic Republic of); Gozde B. Unal, Sabanci Univ. (Turkey); Nassir Navab, Technische Univ. München (Germany) . . . . . [7629-33]

2:20 pm: **Ultrasound-directed robotic system for thermal ablation of liver tumors: a preliminary report**, Jian Zheng, Jie Tian, Yakang Dai, Xing Zhang, Di Dong, Min Xu, Institute of Automation (China) . . . . . [7629-34]

2:40 pm: **Liver fibrosis grading using multiresolution histogram information in real time ultrasound elastography**, Adelaïde Albouy-Kissi, Instituts Universitaires de Technologie (France); Laurent Sarry, Univ. d'Auvergne Clermont-Ferrand I (France); Sylvie Massoulier, Corinne Bonny, Karine Randl, Armand Abergel, CHU Clermont Hotel Dieu (France) . . . . . [7629-35]

7629 continues on page 27

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 3 continued
Room: Town & Country. .Mon. 1:20 to 3:40 pm

3:00 pm: **Towards an international consensus strategy for periodic quality control of digital breast tomosynthesis systems**, Jurgen Jacobs, Nicholas Marshall, Univ. Ziekenhuizen Leuven (Belgium); Ramona Bouwman, Ruben Van Engen, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Kenneth Young, The Royal Surrey County Hospital NHS Trust (UK); Hilde Bosmans, Univ. Ziekenhuizen Leuven (Belgium); Martin Thijssen, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Ehsan Samei, Duke Univ. (USA). . . . . [7622-15]

3:20 pm: **Multi-beam x-ray source breast tomosynthesis reconstruction with different algorithms**, Weihua Zhou, Southern Illinois Univ. (USA); Xin Qian, Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill (USA); Ying Chen, Southern Illinois Univ. (USA) . . . . . [7622-16]

Coffee Break . . . . . 3:40 to 4:00 pm

7622 continues on page 28

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 7 continued
Room: San Diego . . . . . .Mon. 1:20 to 3:40 pm

3:20 pm: **Cervigram image segmentation based on reconstructive sparse representations**, Shaoting Zhang, Junzhou Huang, Rutgers, The State Univ. of New Jersey (USA); Wei Wang, Xiaolei Huang, Lehigh Univ. (USA); Dimitris N. Metaxas, Rutgers, The State Univ. of New Jersey (USA) . . . . . [7623-38]

Coffee Break . . . . . 3:40 to 4:00 pm

7623 continues on page 28

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 7 continued
Room: Golden West . . . .Mon. 1:20 to 3:40 pm

3:00 pm: **The effect of ACE inhibition on the pulmonary vasculature in a combined model of chronic hypoxia and pulmonary arterial banding in Sprague Dawley rats**, Shanelle Clarke M.D., Shelley Baumgardt, Robert C. Molthen, Medical College of Wisconsin (USA) . . . . . [7626-39]

3:20 pm: **Arterial morphology responds differently to Captopril then N-acetylcysteine in a monocrotaline rat model of pulmonary hypertension**, Robert C. Molthen, Qingping Wu, Shelley Baumgardt, Laura Kohlhepp, Rahul Shingrani, Medical College of Wisconsin (USA); Gary Krenz, Marquette Univ. (USA) . . . . . [7626-40]

Coffee Break . . . . . 3:40 to 4:00 pm

7626 continues on page 28

Conference 7629 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 7 continued
Room: Royal Palm I-III . . Mon. 1:20 to 3:40 pm

3:00 pm: **Replace-approximation method for ambiguous solutions in factor analysis of ultrasonic hepatic perfusion**, Zhang Ji, Mingyue Ding, Yuchi Ming, Hou W. Guang, Ye H. Shan, Qiu Wu, Huazhong Univ. of Science and Technology (China). . [7629-36]

3:20 pm: **SMURF imaging of thermally ablated liver lesions**, Stephen A. McAleavey, Univ. of Rochester (USA) . . . . . [7629-37]

Coffee Break . . . . . 3:40 to 4:00 pm

Poster Award Announcements
Room: Royal Palm I-III . . . . . Mon. 3:40 to 3:45 pm

The Ultrasonic Imaging and Signal Processing conference poster award recipients will be recognized and certificates distributed.

Best Student Paper Award and Plenary Presentation

Monday 15 February · 4:00 to 5:15 pm · Town and Country Room

Session Chairs: **Kevin R. Cleary,** Georgetown Univ. Medical Ctr.;
Maryellen L. Giger, The Univ. of Chicago

Michael B. Merickel Student Paper Award

Plenary Presentation: **Perspectives on Biomedical Imaging and Its Role in Advancing Public Health**
Dr. Roderic Pettigrew, National Institute of Biomedical Imaging and Bioengineering/NIH

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 4
Room: Town & Country. Tues. 8:00 to 9:40 am

Performance Evaluation
Session Chairs: **John M. Sabol,** GE Healthcare; **Aldo Badano,** U.S. Food and Drug Administration

8:00 am: **An analytical model of NPS and DQE comparing photon counting and energy integrating detectors**, Raymond J. Acciavatti, Andrew D. A. Maidment, The Univ. of Pennsylvania Health System (USA) . . . . . [7622-17]

8:20 am: **Digital mammography - DQE versus optimized image quality in clinical environment: an on site study**, Nadia Oberhofer, Margareth Springeth, Alessandro Fracchetti, Ehrenfried Moroder, Health Service South Tyrol (Italy) . . . . . [7622-18]

8:40 am: **Generalized two-dimensional (2D) linear system analysis metrics (GMTF, GDQE) for digital radiography systems including the effect of focal spot, magnification, scatter, and detector characteristics**, Amit Jain, Andrew T. Kuhls-Gilcrist, Sandesh K. Gupta, Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke Research Ctr. (USA) . . . . . [7622-19]

9:00 am: **Evaluation of effective detective quantum efficiency with digital radiography to optimize exposure condition for chest imaging**, Hyo-Min Cho, Hee-Joung Kim, Hye-Suk Park, Dae-Hong Kim, Chang-Lae Lee, Yu-Na Choi, Seung-Wan Lee, Yonsei Univ. (Korea, Republic of) . . . . . [7622-20]

9:20 am: **Effects of image processing on the detective quantum efficiency**, Hye-Suk Park, Hee-Joung Kim, Hyo-Min Cho, Chang-Lae Lee, Seung-Wan Lee, Yu-Na Choi, Yonsei Univ. (Korea, Republic of) . . . . . [7622-21]

Coffee Break . . . . . 9:40 to 10:10 am

7622 continues on page 29

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 8
Room: San Diego . . . . . Tues. 8:00 to 9:40 am

Shape
Session Chair: **Jayaram K.Udupa,** The Univ.of Pennsylvania Health System

8:00 am: **Learning discriminative distance functions for valve retrieval and improved decision support in valvular heart disease**, Ingmar Voigt, Siemens AG (Germany) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Dime Vitanovski, Siemens AG (Germany); Razvan I. Ionasec, Siemens Corporate Research (USA); Alexey Tsymal, Siemens AG (Germany); Bogdan Georgescu, Shaohua K. Zhou, Siemens Corporate Research (USA); Martin Huber, Siemens AG (Germany); etc . . . . . [7623-39]

8:20 am: **Shape based MRI prostate image segmentation using local information driven directional distance Bayesian method**, Yi Gao, Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . . [7623-40]

8:40 am: **3D shape from silhouette points in registered 2D images using conjugate gradient method**, Andrzej C. Szymczak, William A. Hoff, Colorado School of Mines (USA); Mohamed Mahfouz, The Univ. of Tennessee (USA) . . . . . [7623-41]

9:00 am: **A single scan squeletonization algorithm: an application on medical imaging of trabecular bone**, Aurore Arlicot, Yves Amouriq, Pierre Evenou, Nicolas Normand, Jean-Pierre Guédon, Polytech'Nantes (France) . . . . . [7623-42]

9:20 am: **Coupled level set segmentation using a point-based statistical shape model relying on correspondence probabilities,** Heike Hufnagel, Jan Ehrhardt, Univ. Medical Ctr. Hamburg-Eppendorf (Germany); Xavier Pennec, INRIA Sophia Antipolis - Méditerranée (France); Alexander Schmidt-Richberg, Heinz Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany) . . . . . [7623-43]

Poster Award Announcements
Room: San Diego . . . Tues. 9:40 to 9:45 am

The Image Processing conference poster award recipients will be recognized and certificates distributed.

Coffee Break . . . . . 9:40 to 10:10 am

7623 continues on page 29

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 1
Room: Golden West . . . Tues. 8:00 to 9:40 am

Keynote and Classifier Training
Session Chairs: **Nico Karssemeijer,** Radboud Univ. Nijmegen Medical Ctr. (Netherlands); **Ronald M. Summers,** National Institutes of Health

8:00 am: **Computer-aided diagnosis in medical imaging: achievements and challenges** *(Keynote Presentation),* Kunio Doi, The Univ. of Chicago (USA) . . . . . [7624-01]

9:00 am: **Resampling method for balancing training data in video analysis**, Balathasan Giritharan, Xiaohui Yuan, Univ. of North Texas (USA). . . . . [7624-02]

9:20 am: **Training variability in the evaluation of automated classifiers**, Weijie Chen, Brandon D. Gallas, U.S. Food and Drug Administration (USA) . . . . . [7624-03]

Coffee Break . . . . . 9:40 to 10:10 am

7624 continues on page 29

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 8
Room: California . . . . . Tues. 8:00 to 9:40 am

Segmentation and Registration
Session Chairs: **Jay B. West,** Accuray, Inc.; **Pierre Jannin,** Univ. de Rennes 1 (France)

8:00 am: **Toward image-based global registration for bronchoscopy guidance**, William E. Higgins, Rahul Khare, The Pennsylvania State Univ. (USA). . . [7625-35]

8:20 am: **Rapid block matching based nonlinear registration on GPU for image-guided radiation therapy**, An Wang, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); Brandon Disher, The Univ. of Western Ontario (Canada); Greg Carnes, Robarts Research Institute (Canada); Terry M. Peters, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada) . . . . . [7625-36]

8:40 am: **Towards real-time 2D/3D registration for organ motion monitoring in image-guided radiation therapy**, Christelle Gendrin, Christoph Bloch, Jakob Spoerk, Suprianto Ardjo Pawiro, Christoph Weber, Michael Figl, Dietmar Georg, Helmar Bergmann, Wolfgang Birkfellner, Medizinische Univ. Wien (Austria) . [7625-37]

9:00 am: **User-driven 3D mesh region targeting**, Peter Karasev, James Malcolm, Georgia Institute of Technology (USA); Marc Niethammer, The Univ. of North Carolina at Chapel Hill (USA); Ron Kikinis, Brigham and Women's Hospital (USA); Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . . [7625-38]

9:20 am: **Segmenting TRUS video sequences using local shape statistics,** Pingkun Yan, Sheng Xu, Philips Research (USA); Baris Turkbey, National Institutes of Health (USA); Jochen Kruecker, Philips Research (USA) . . . . . [7625-39]

Poster Award Announcements
Room: California . . . Tues. 9:40 to 9:45 am

The Visualization, Image-guided Procedures and Modeling conference poster award recipients will be recognized and certificates distributed.

Coffee Break . . . . . 9:40 to 10:10 am

7625 continues on page 29

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Royal Palm I-III

SESSION 8
Room: Royal Palm I-III . Tues. 8:00 to 9:40 am

Modeling Photons and Structures
Session Chair: **Andreas H. Hielscher,** Columbia Univ.

8:00 am: **3D geometry-based quantification of colocalizations in three-channel 3D microscopy images of soft tissue tumors**, Stefan Wörz, Ruprecht-Karls-Univ. Heidelberg (Germany); Petra Sander, Deutsches Krebsforschungszentrum (Germany); Martin Pfannmöller, Ralf J. Rieker, Ruprecht-Karls-Univ. Heidelberg (Germany); Stefan Joos, Deutsches Krebsforschungszentrum (Germany); Gunhild Mechtersheimer, Ruprecht-Karls-Univ. Heidelberg (Germany); Petra Boukamp, Peter Lichter, Deutsches Krebsforschungszentrum (Germany); Karl Rohr, Ruprecht-Karls-Univ. Heidelberg (Germany) . . . . . [7626-41]

8:20 am: **Hierarchical patch generation for multilevel statistical shape analysis by principal factor analysis decomposition**, Mauricio Reyes, Univ. Bern (Switzerland); Miguel Angel Gonzalez Ballester, Alma IT Systems (Spain); Nina Kozic, Univ. Bern (Switzerland); Jesse K. Sandberg, Ronald M. Summers, Marius George Linguraru, National Institutes of Health (USA) . . . . . [7626-42]

8:40 am: **A multithread based new sparse matrix method in bioluminescence tomography**, Bo Zhang, Northeastern Univ. (China); Jie Tian, Dan Liu, Institute of Automation (China); Li Sun, Beijing Univ. of Technology (China); Xin Yang, Dong Han, Institute of Automation (China) . . . . [7626-43]

9:00 am: **Limited-memory-BFGS-based iterative algorithm for multispectral bioluminescence tomography with Huber regularization**, Jinchao Feng, Kebin Jia, Beijing Univ. of Technology (China); Jie Tian, Chenghu Qin, Shouping Zhu, Institute of Automation (China) . . . . . [7626-44]

9:20 am: **Performance evaluation of the non-linear and linear estimation methods for determining kinetic parameters in dynamic FDG-PET study,** Xiaoqian Dai, Jie Tian, Zhe Chen, Institute of Automation (China). . . . . [7626-45]

Poster Award Announcements
Room: Royal Palm I-III . Tues. 9:40 to 9:45 am

The Biomedical Applications in Molecular, Structural, and Functional Imaging conference poster award recipients will be recognized and certificates distributed.

Coffee Break . . . . . 9:40 to 10:10 am

7626 continues on page 29

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 5
Room: Town & Country. . . . .Tues. 10:10 am to 12:10 pm

X-ray Phase-Contrast Imaging
Session Chairs: **Hee-Joung Kim,** Yonsei Univ. (Korea, Republic of); **Norbert J. Pelc,** Stanford Univ.

10:10 am: **Phase-contrast and dark-field imaging: advanced contrast modalities in x-ray radiology**, Martin Bech, Franz Pfeiffer, Technische Univ. München (Germany) . . . . . [7622-22]

10:30 am: **Quantitative imaging of electron density and effective atomic number using phase contrast CT**, Zhihua Qi, Joseph N. Zambelli, Nicholas B. Bevins, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA). . . . . [7622-23]

10:50 am: **X-ray dark-field computed tomography using a grating interferometer setup**, Nicholas B. Bevins, Joseph N. Zambelli, Zhihua Qi, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . . [7622-24]

11:10 am: **Spectroscopic x-ray phase-contrast computed tomography with a Talbot-interferometer**, Peter Bartl, Gisela Anton, Juergen Durst, Wilhelm Haas, Thilo Michel, Andre Ritter, Thomas Weber, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [7622-25]

11:30 am: **Numerical evaluation of a polycapillary optical element for in-line phase-contrast imaging**, Qiaofeng Xu, Adam M. Zysk, Mark A. Anastasio, Illinois Institute of Technology (USA) . . . . [7622-26]

11:50 am: **Contributions to ideal observer SNRs in x-ray phase-contrast imaging**, Mark A. Anastasio, Illinois Institute of Technology (USA); Cheng-Ying Chou, National Taiwan Univ. (Taiwan); Adam M. Zysk, Jovan G. Brankov, Illinois Institute of Technology (USA) . . . . . [7622-27]

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

7622 continues on page 30

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 9
Room: San Diego Tues. 10:10 am to 12:10 pm

Registration II
Session Chair: **Baowei Fei,** Emory Univ. School of Medicine

10:10 am: **Validation of a nonrigid registration framework that accommodates tissue resection**, Petter Risholm, Harvard Medical School (USA) and Univ. of Oslo (Norway); Eigil Samset, Univ. of Oslo (Norway); William Wells III, Harvard Medical School (USA) . . . . . [7623-44]

10:30 am: **A modified ICP algorithm for normal-guided surface registration**, Daniel Münch, Benoît Combès, Sylvain Prima, Institut de Recherche en Informatique et Systèmes Aléatoires (France) . . . . [7623-07]

10:50 am: **Structural template formation with discovery of subclasses**, Xiaojing Long, Christopher L. Wyatt, Virginia Polytechnic Institute and State Univ. (USA) . . . . . [7623-46]

11:10 am: **A novel point based nonrigid registration method and its application for brain shift**, Yixun Liu, The College of William & Mary (USA); Andriy Fedorov, Ron Kikinis, Brigham and Women's Hospital (USA); Nikos Chrisochoides, The College of William & Mary (USA). . . . . [7623-47]

11:30 am: **Improved robust point matching with label consistency**, Roshni Bhagalia, James V. Miller, GE Global Research (USA); Arunabha S. Roy, GE Global Research (India) . . . . . [7623-48]

11:50 am: **A new combined surface and volume registration**, Natasha Lepore, Anand A. Joshi, Univ. of California, Los Angeles (USA); Richard M. Leahy, The Univ. of Southern California (USA); Caroline Brun, Yi-Yu Chou, Univ. of California, Los Angeles (USA); Xavier Pennec, Institut National de Recherche en Informatique et en Automatique (France); Agatha D. Lee, Marina Barysheva, Univ. of California, Los Angeles (USA); Greig I. De Zubicaray, The Univ. of Queensland (Australia); Margaret J. Wright, Queensland Institute of Medical Research (Australia); Katie L. McMahon, The Univ. of Queensland (Australia); Arthur W. Toga, Paul M. Thompson, Univ. of California, Los Angeles (USA) . . . . [7623-49]

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

7623 continues on page 30

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 2
Room: Golden West. Tues. 10:10 am to 12:10 pm

Breast Imaging
Session Chair: **Stephen R. Aylward,** Kitware, Inc.

10:10 am: **Database-guided breast tumor detection and segmentation in 2D ultrasound images**, Jingdan Zhang, Shaohua K. Zhou, Siemens Corporate Research (USA); Shelby S. Brunke, Carol Lowery, Siemens Medical Solutions USA, Inc. (USA); Dorin Comaniciu, Siemens Corporate Research (USA) . . . . . [7624-04]

10:30 am: **Perception-driven IT-CADe analysis for the detection of masses in screening mammography: initial investigation**, Georgia D. Tourassi, Maciej A. Mazurowski, Duke Univ. (USA); Elizabeth A. Krupinski, The Univ. of Arizona (USA) [7624-05]

10:50 am: **Joint segmentation and spiculation detection for ill-defined and spiculated masses in mammograms**, Yimo Tao, Virginia Polytechnic Institute and State Univ. (USA); Shih-Chung B. Lo, Matthew T. Freedman M.D., Georgetown Univ. Medical Ctr. (USA); Jianhua Xuan, Virginia Polytechnic Institute and State Univ. (USA) . . . . . [7624-06]

11:10 am: **Detection of architectural distortion in prior mammograms using fractal analysis and angular spread of power**, Shantanu Banik, Rangaraj M. Rangayyan, Joseph E. L. Desautels M.D., Univ. of Calgary (Canada) . . . . . [7624-07]

11:30 am: **A comparative study of volumetric breast density estimation in digital mammography and magnetic resonance imaging: results from a high-risk population**, Despina Kontos, The Univ. of Pennsylvania Health System (USA); Ye Xing, The Univ. of Pennsylvania (USA); Predrag R. Bakic, Emily F. Conant, Andrew D. A. Maidment, The Univ. of Pennsylvania Health System (USA). . . . . [7624-08]

11:50 am: **Association of a mammographic parenchymal pattern (MPP) descriptor with breast cancer risk: a case-control study**, Jun Wei, Heang-Ping Chan, Chuan Zhou, Mark A. Helvie, Lubomir M. Hadjiiski, Berkman Sahiner, Univ. of Michigan (USA) . . . . . [7624-09]

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

7624 continues on page 30

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 9
Room: California . Tues. 10:10 am to 12:10 pm

Prostate
Session Chairs: **Alexandre X. Falcao,** Univ. Estadual de Campinas (Brazil); **Baowei Fei,** Emory Univ. School of Medicine

10:10 am: **Development and validation of a real-time reduced field of view imaging driven by automated needle detection for MRI-guided interventions**, Roland A. Görlitz, Junichi Tokuda, Scott W. Hoge, Renxin Chu, Lawrence P. Panych, Clare Tempany, Nobuhiko Hata, Brigham and Women's Hospital (USA). . . . . [7625-40]

10:30 am: **Assessment of registration accuracy in three-dimensional transrectal ultrasound images of prostates**, Vaishali V. Karnik, Aaron Fenster, Jeffrey S. Bax, Derek W. Cool, Lori Gardi, Igor Gyacskov, Cesare Romagnoli, Aaron D. Ward, Robarts Research Institute (Canada) . . . . . [7625-41]

10:50 am: **Accuracy validation for MRI guided robotic prostate biopsy**, Helen Xu, Andras Lasso, Siddharth Vikal, Queen's Univ. (Canada); Peter Guion, National Institutes of Health (USA); Axel Krieger, Sentinelle Medical Inc. (Canada); Aradhana Kaushal, National Cancer Institute (USA); Louis L. Whitcomb, The Johns Hopkins Univ. (USA); Gabor Fichtinger, Queen's Univ. (Canada). . . . . [7625-42]

11:10 am: **Registration of ultrasound to CT angiography of kidneys: a porcine phantom study**, Jing Xiang, The Univ. of British Columbia (Canada); Sean Gill, Queen's Univ. (Canada); Christopher Nguan, Purang Abolmaesumi, Robert N. Rohling, The Univ. of British Columbia (Canada). . . . . [7625-43]

11:30 am: **Localization of brachytherapy seeds in ultrasound by registration to fluoroscopy**, Pascal Fallavollita, Purang Abolmaesumi, Queen's Univ. (Canada); E. Clif Burdette, Acoustic MedSystems, Inc. (USA); Danny Y. Song, Sidney Kimmel Comprehensive Cancer Ctr. (USA); Gabor Fichtinger, Queen's Univ. (Canada) . [7625-44]

11:50 am: **Design of a predictive targeting error simulator for MRI-guided prostate biopsy**, Shachar Avni, Siddharth Vikal, Gabor Fichtinger, Queen's Univ. (Canada) . [7625-45]

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

7625 continues on page 30

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Royal Palm I-III

SESSION 9
Room: Royal Palm I-III . . . . . Tues. 10:10 am to 12:10 pm

Keynote and Image-based Modeling
Session Chair: **Robert C. Molthen,** Medical College of Wisconsin

10:10 am: **Image analysis and computational physiology of the heart** *(Keynote Presentation),* Peter J. Hunter, The Univ. of Auckland (New Zealand) . . . . . [7626-46]

11:10 am: **Left-ventricle segmentation in real-time 3D echocardiography using a hybrid active shape model and optimal graph search approach**, Honghai Zhang, The Univ. of Iowa (USA); Ademola K. Abiose M.D., The Univ. of Iowa Hospitals and Clinics (USA); Milan Sonka, The Univ. of Iowa (USA); James B. Martins M.D., The Univ. of Iowa Hospitals and Clinics (USA); Andreas Wahle, The Univ. of Iowa (USA) . . . . . [7626-47]

11:30 am: **Image- and model-based analysis of constitutive properties of cellular structures**, Evgeny Gladilin, Roland Eils, Deutsches Krebsforschungszentrum (Germany) . . . . . [7626-48]

11:50 am: **Compartmental model of 18F-choline**, Tilman Janzen, Helmholtz Zentrum München GmbH (Germany); Federico Tavola, Univ. degli Studi di Milano (Italy); Augusto Giussani, Helmholtz Zentrum München GmbH (Germany); Marie Claire Cantone, Univ. degli Studi di Milano (Italy); Helena Uusijärvi, Sören Mattsson, Malmö Univ. Hospital (Sweden); Christoph Hoeschen, Helmholtz Zentrum München GmbH (Germany). . . . . [7626-49]

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

7626 continues on page 30

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 6
Room: Town & Country. Tues. 1:20 to 3:00 pm

Novel Imaging Topics
Session Chairs: **Christoph Hoeschen,** Helmholtz Zentrum München GmbH (Germany); **Bruce R. Whiting,** Washington Univ. in St. Louis

1:20 pm: **The myth of mean dose as a surrogate for radiation risk?**, Ehsan Samei, Xiang Li, Robert Reiman, Duke Univ. (USA) . . . . . [7622-28]

1:40 pm: **Multi-pinhole dynamic SPECT imaging: simulation and system optimization**, Dan Ma, Anne V. Clough, Taly Gilat Schmidt, Marquette Univ. (USA) . . . . . [7622-29]

2:00 pm: **SPECT data acquisition and image reconstruction in a stationary small animal SPECT/MRI system**, Jingyan Xu, Si Chen, Jianhua Yu, The Johns Hopkins Univ. (USA); Dirk Meier, Douglas J. Wagenaar, Bradley E. Patt, Gamma Medica-Ideas, Inc. (USA); Benjamin M. W. Tsui, The Johns Hopkins Univ. (USA) . . . . . [7622-30]

2:20 pm: **Evaluation of a 3D point spread function (PSF) model derived from Monte Carlo simulation for a small animal PET scanner**, Rutao Yao, Ranjith M. Ramachandra, Ashish Panse, Deepika Balla, Univ. at Buffalo (USA); Richard E. Carson, Jianhua Yan, Yale Univ. (USA) . . . [7622-31]

2:40 pm: **A hypothesis testing approach for microwave breast imaging in conjunction with CT**, Jie Xu, Patrick Kelly, Paul Siqueira, Univ. of Massachusetts Amherst (USA); Mini Das, Univ. of Massachusetts Medical School (USA) . . . . . [7622-32]

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

7622 continues on page 31

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 10
Room: San Diego . . . . . Tues. 1:20 to 3:00 pm

Diffusion Tensor Image Analysis
Session Chair: **James C. Gee,** Univ. of Pennsylvania

1:20 pm: **Fast Hamilton-Jacobi equation solver and neural fiber bundle extraction**, Yi Gao, John M. Melonakos, Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . . [7623-50]

1:40 pm: **Directional assessment of fiber integrity in Q-ball imaging**, Klaus H. Fritzsche, Frederik B. Laun, Bram Stieltjes, Hans-Peter Meinzer, Deutsches Krebsforschungszentrum (Germany) . . . . . [7623-51]

2:00 pm: **Resolution of crossing fibers with constrained compressed sensing using traditional diffusion tensor MRI**, Bennett A. Landman, Hanlin Wan, John A. Bogovic, Pierre-Louis Bazin, Jerry L. Prince, The Johns Hopkins Univ. (USA) . . [7623-52]

2:20 pm: **Reconstruction of a geometrically correct diffusion tensor image of a moving human fetal brain**, Kio Kim, Piotr A. Habas, Univ. of California, San Francisco (USA); Francois Rousseau, Univ. Louis Pasteur (France); Orit A. Glenn, James A. Barkovich, Colin Studholme, Univ. of California, San Francisco (USA) . . [7623-53]

2:40 pm: **Discriminant analysis of resting-state functional connectivity patterns on the Grassmann manifold**, Yong Fan, Yong Liu, Tianzi Jiang, Institute of Automation (China); Zhening Liu, Yihui Hao, Haihong Liu, Xiangya Hospital of Central South Univ. (China) . . . . . [7623-54]

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

7623 continues on page 31

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 3
Room: Golden West . . . Tues. 1:20 to 3:00 pm

Colon and Prostate
Session Chair: **Axel Wismueller,** Univ. of Rochester Medical Ctr.

1:20 pm: **Projection-based features for reducing false positives in computer-aided detection of colonic polyps in CT colonography**, Hongbin Zhu, Matthew Barish, Stony Brook Univ. (USA); Perry J. Pickhardt M.D., Univ. of Wisconsin-Madison (USA); Yi Fan, Erica Posniak M.D., Robert Richards, Zhengrong Liang, Stony Brook Univ. (USA) . . . . . [7624-10]

1:40 pm: **Dual-energy electronic cleansing for non-cathartic CT colonography: a phantom study**, Wenli Cai, Bob Liu, Hiroyuki Yoshida, Massachusetts General Hospital (USA) . . . . . [7624-11]

2:00 pm: **Prediction of polyp histology on CT colonography using content-based image retrieval**, Javed M. Aman, Jianhua Yao, Ronald M. Summers M.D., National Institutes of Health (USA) . . . . . [7624-12]

2:20 pm: **Matching colonic polyps using correlation optimized warping**, Shijun Wang, Jianhua Yao, National Institutes of Health (USA); Nicholas A. Petrick, U.S. Food and Drug Administration (USA); Ronald M. Summers, National Institutes of Health (USA) . . . . . [7624-13]

2:40 pm: **Automated segmentation of reference tissue for prostate cancer localization in dynamic contrast enhanced MRI**, Pieter Vos, Thomas Hambrock M.D., Nico Karssemeijer, Jelle O. Barentsz, Henkjan J. Huisman, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [7624-14]

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

7624 continues on page 31

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 10
Room: California . . . . . Tues. 1:20 to 3:00 pm

Lung/Endoscopy
Session Chairs: **William E. Higgins,** The Pennsylvania State Univ.; **Jayaram K. Udupa,** The Univ. of Pennsylvania Health System

1:20 pm: **Towards hybrid bronchoscope tracking under respiratory motion: evaluation on a dynamic motion phantom**, Xiongbiao Luo, Marco Feuerstein, Nagoya Univ. (Japan); Takamasa Sugiura, ; Takayuki Kitasaka, Aichi Institute of Technology (Japan) and Nagoya Univ. (Japan); Kensaku Mori, Kazuyoshi Imaizumi, Yoshinori Hasegawa, Nagoya Univ. (Japan). . . . . [7625-46]

1:40 pm: **CT image reconstruction of a totally deflated lung using extrapolated deformable registration**, Ali Sadeghi Naini, The Univ. of Western Ontario (Canada) and Robarts Research Institute (Canada) and Canadian Surgical Technologies & Advanced Robotics (Canada); Rajni V. Patel, The Univ. of Western Ontario (Canada) and Canadian Surgical Technologies & Advanced Robotics (CSTAR), London, ON (Canada); Abbas Samani, The Univ. of Western Ontario (Canada) and Imaging Research Laboratories, Robarts Research Institute (RRI), London, ON (Canada) . . . . . [7625-47]

2:00 pm: **Representing flexible endoscope shapes with hermite splines**, Elvis C. S. Chen, Lawrence C. Hookey, Randy E. Ellis, Queen's Univ. (Canada). . . . . [7625-48]

2:20 pm: **Airway shape assessment with visual feed-back in asthma and obstructive diseases**, Catalin Fetita, Margarete Ortner, TELECOM & Management SudParis (France); Pierre-Yves Brillet, Yahya Ould Hmeidi, Avicenne Hospital (France); Françoise J. Prêteux, TELECOM & Management SudParis (France) . . . . . [7625-49]

2:40 pm: **Anatomical modeling of the bronchial tree**, Gerrit Hentschel, RWTH Aachen (Germany); Tobias Klinder, Leibniz Univ. Hannover (Germany); Thomas Blaffert, Philips Research (Germany); Thomas Buelow, Philips Medizin Systeme GmbH (Germany); Rafael Wiemker, Cristian Lorenz, Philips Research (Germany) . . . . . [7625-50]

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

7625 continues on page 31

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Royal Palm I-III

SESSION 10
Room: Royal Palm I-III . Tues. 1:20 to 3:00 pm

Nanoparticle and Microenvironment Imaging
Session Chair: **John B. Weaver,** Dartmouth Hitchcock Medical Ctr.

1:20 pm: **Limitations of measurement-based system functions in magnetic particle imaging**, Tobias Knopp, Timo F. Sattel, Sven Biederer, Thorsten M. Buzug, Univ. zu Lübeck (Germany) . . . . . [7626-50]

1:40 pm: **Arterial double-contrast dual-energy MDCT: in-vivo rabbit atherosclerosis with iodinated nanoparticles and gadolinium agents**, Raz Carmi, Galit Kafri, Amiaz Altman, Liran M. Goshen, Philips Medical Systems Technologies Ltd. (Israel); David Planer M.D., Jacob Sosna M.D., Hadassah Hebrew Univ. Medical Ctr. (Israel) . . . . . [7626-51]

2:00 pm: **Quantification of fluorescent spots in time series of 3D confocal microscopy images of endoplasmic reticulum exit sites based on the HMAX transform**, Petr Matula, Deutsches Krebsforschungszentrum (Germany); Fatima Verissimo, EMBL Heidelberg (Germany); Stefan Wörz, Ruprecht-Karls-Univ. Heidelberg (Germany); Roland Eils, Deutsches Krebsforschungszentrum (Germany); Rainer Pepperkok, EMBL Heidelberg (Germany); Karl Rohr, Deutsches Krebsforschungszentrum (Germany) . . . . . [7626-52]

2:20 pm: **Photoreceptor cell counting in adaptive optics retinal images using content-adaptive filtering**, Fatimah Mohammad, Rashid Ansari, Justin Wanek, Mahnaz Shahidi, Univ. of Illinois at Chicago (USA) . . . . . [7626-53]

2:40 pm: **Micro-rheology: evaluating the rigidity of the microenvironment surrounding antibody binding sites**, John B. Weaver, Dartmouth Hitchcock Medical Ctr. (USA); Adam M. Rauwerdink, Thayer School of Engineering (USA); Irina Perreard, Dartmouth Hitchcock Medical Ctr. (USA); Rebecca Kilfoyle, St. Olaf College (USA) . . . . . [7626-54]

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

7626 continues on page 31

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 7
Room: Town & Country. Tues. 3:30 to 5:30 pm

Breast Imaging, Measurement Techniques
Session Chairs: **John Yorkston,** Carestream Health, Inc.; **Ehsan Samei,** Duke Univ.

3:30 pm: **The generalized NEQ and detectability index for tomosynthesis and cone-beam CT: from cascaded systems analysis to human observers**, Grace J. Gang, Univ. of Toronto (Canada); Daniel Tward, Junghoon Lee, Joseph W. Stayman, Jerry L. Prince, Jeffrey Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . [7622-33]

3:50 pm: **Extending the detectability index to quantitative imaging performance: applications in tomosynthesis and CT**, Samuel Richard, Baiyu Chen, Ehsan Samei, Duke Univ. (USA). . . . . [7622-34]

4:10 pm: **Observer model optimization of a multislit spectral breast imaging system**, Björn Cederström, Erik Fredenberg, Royal Institute of Technology (Sweden); Magnus Aslund, Sectra Mamea AB (Sweden); Mats Lundqvist, Sectra Imtec AB (Sweden); Mats E. Danielsson, Royal Institute of Technology (Sweden) . [7622-35]

4:30 pm: **Task-based performance analysis of SART for digital breast tomosynthesis using signal CNR and channelized hotelling observers**, Dominique Van de Sompel, J. Michael Brady, Univ. of Oxford (UK). . . . . [7622-36]

4:50 pm: **Task specific evaluation of clinical full field digital mammography system using the Fourier definition of the Hotelling observer SNR**, Haimo Liu, Univ. of Maryland, College Park (USA) and U.S. Food and Drug Administration (USA); Aldo Badano, U.S. Food and Drug Administration (USA); Luis A. Benevides, National Naval Medical Ctr. (USA); Kish Chakrabarti, Richard V. Kaczmarek, Iacovos S. Kyprianou, U.S. Food and Drug Administration (USA) . . . . . [7622-37]

7622 continues on page 32

Conference 7623 continued
Image Processing
Room: San Diego

SESSION 11
Room: San Diego . . . . . Tues. 3:30 to 5:30 pm

Segmentation II
Session Chair: **Aaron Fenster,** Robarts Research Institute (Canada)

3:30 pm: **Automatic bone segmentation and alignment from MR knee images**, Liang Shan, Christopher Zach, Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA); Cecil Charles, Duke Univ. (USA); Marc Niethammer, The Univ. of North Carolina at Chapel Hill (USA). . . . . [7623-55]

3:50 pm: **Subvoxel segmentation and representation of brain cortex using fuzzy clustering and gradient vector diffusion**, Ming-Ching Chang, Xiaodong Tao, GE Global Research (USA) . . . . . [7623-56]

4:10 pm: **An expectation-maximization approach to joint curve evolution for medical image segmentation**, Mahshid Farzinfar, Eam Khwang Teoh, Nanyang Technological Univ. (Singapore); Zhong Xue, Methodist Hospital Research Institute (USA) . . . . . [7623-57]

4:30 pm: **Simultaneous truth and performance level estimation with incomplete, over-complete, and ancillary data**, Bennett A. Landman, Vanderbilt Univ. (USA) and The Johns Hopkins Univ. (USA); John A. Bogovic, Jerry L. Prince, The Johns Hopkins Univ. (USA) . . . . . [7623-58]

4:50 pm: **Fast globally optimal single surface segmentation using regional properties**, Xin Dou, Xiaodong Wu, The Univ. of Iowa (USA) . . . . . [7623-59]

5:10 pm: **Lung fissure detection in CT images using global minimal paths**, Bipul Das, GE Global Research (India); Vikram Appia, Georgia Institute of Technology (USA); Uday Patil, Manipal Hospital (India). . . . . [7623-60]

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 4
Room: Golden West . . . Tues. 3:30 to 5:10 pm

Retinal Imaging
Session Chair: **Bram van Ginneken,** Univ. Medical Ctr. Utrecht (Netherlands)

3:30 pm: **Automatic classification of pathological myopia in retinal fundus images using PAMELA**, Jiang Liu, Damon W. K. Wong, Ngan Meng Tan, Zhang Zhuo, Shijian Lu, Joo Hwee Lim, Huiqi Li, A*STAR Institute for Infocomm Research (Singapore); Seang Mei Saw, National Univ. of Singapore (Singapore); Louis H. Tong, Singapore National Eye Ctr. (Singapore); Tien Yin Wong, National Univ. of Singapore (Singapore) and Singapore Eye Research Institute (Singapore) . . . . . [7624-15]

3:50 pm: **Effects of image compression and degradation on an automatic diabetic retinopathy screening algorithm**, Carla Agurto, VisionQuest Biomedical, LLC (USA); E. Simon Barriga, Victor Murray, VisionQuest Biomedical, LLC (USA) and The Univ. of New Mexico (USA); Marios Pattichis, The Univ. of New Mexico (USA); Herbert T. Davis III, VisionQuest Biomedical, LLC (USA); Peter Soliz, VisionQuest Biomedical, LLC (USA) and Univ. of Iowa (USA) . . . . . [7624-16]

4:10 pm: **Automatic determination of the artery vein ratio in retinal images.**, Meindert Niemeijer, Bram van Ginneken, Univ. Medical Ctr. Utrecht (Netherlands); Michael D. Abramoff, The Univ. of Iowa Hospitals and Clinics (USA). . . . . [7624-17]

4:30 pm: **Automated detection and classification of major retinal vessels for determination of diameter ratio of arteries and veins**, Chisako Muramatsu, Tatsuhiko Iwase, Gifu Univ. (Japan); Yuji Hatanaka, Univ. of Shiga Prefecture (Japan); Takeshi Hara, Hiroshi Fujita, Gifu Univ. (Japan). . . . . [7624-18]

4:50 pm: **Use of a twin dataset to identify AMD-related visual patterns controlled by genetic factors,** Gwenole Quellec, Michael D. Abramoff, Stephen R. Russell, The Univ. of Iowa Hospitals and Clinics (USA) . . . . . [7624-19]

7624 continues on page 32

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 11
Room: California . . . . . Tues. 3:30 to 5:30 pm

Image-guided Procedures II
Session Chairs: **Ivo Wolf,** Univ. Mannheim (Germany); **Steven L. Hartmann,** Medtronic Navigation

3:30 pm: **The MITK image-guided therapy toolkit and its application for augmented reality in laparoscopic prostate surgery**, Matthias Baumhauer, Jochen Neuhaus, Klaus H. Fritzsche, Hans-Peter Meinzer, Deutsches Krebsforschungszentrum (Germany) . . . . . [7625-51]

3:50 pm: **Model-updated image-guided liver surgery: preliminary results using intra-operative surface characterization**, Prashanth Dumpuri, Vanderbilt Univ. (USA); Logan W. Clements, Pathfinder Therapeutics, Inc. (USA); Benoit M. Dawant, Michael I. Miga, Vanderbilt Univ. (USA) . . . . . [7625-52]

4:10 pm: **A 3D-elastography-guided system for laparoscopic partial nephrectomies**, Philipp J. Stolka, The Johns Hopkins Univ. (USA); Matthias Keil, Georgios Sakas, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Elliot R. McVeigh, Russell H. Taylor, Emad M. Boctor, The Johns Hopkins Univ. (USA) . . . . . [7625-53]

4:30 pm: **Fast automatic path proposal computation for hepatic needle placement**, Christian Schumann, Jennifer Bieberstein, Fraunhofer MEVIS (Germany); Christoph Trumm, Ludwig-Maximilians-Univ. München (Germany); Diethard Schmidt, Universitätsklinikum Tübingen (Germany); Philipp Bruners M.D., Universitätsklinikum Aachen AÖR (Germany); Matthias U. Niethammer, Siemens Medical Solutions GmbH (Germany); Ralf T. Hoffmann M.D., Ludwig-Maximilians-Univ. München (Germany); Andreas H. Mahnken, Universitätsklinikum Aachen AÖR (Germany); Philippe L. Pereira, SLK-Kliniken Heilbronn GmbH (Germany); Heinz-Otto Peitgen, Fraunhofer MEVIS (Germany) . . . . . [7625-54]

7625 continues on page 32

Conference 7626 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Royal Palm I-III

SESSION 11
Room: Golden West . . . . Tues. 3:30 to 5:30 pm

Bone Imaging
Session Chair: **Erik L. Ritman,** Mayo Clinic College of Medicine

3:30 pm: **Quantifying mechanical properties in a murine fracture healing system using inverse modeling: preliminary work**, Michael I. Miga, Jared A. Weis, Vanderbilt Univ. (USA); Froilan Granero-Molto, Anna Spagnoli, The Univ. of North Carolina at Chapel Hill (USA)[7626-55]

3:50 pm: **Scaling relations between bone volume and bone structure as found using 3D µCT images of the trabecular bone taken from different skeletal sites**, Christoph W. Raeth, Max-Planck-Institut für extraterrestrische Physik (Germany); Dirk Müller, Technische Univ. München (Germany); Irina N. Sidorenko, Roberto A. Monetti, Max-Planck-Institut für extraterrestrische Physik (Germany); Felix Eckstein, Paracelsus Medizinische Privatuniv. (Austria); Maiko Matsuura, Eva-Maria Lochmüller, Ludwig-Maximilians-Univ. München (Germany); Philippe K. Zysset, Technische Univ. Wien (Austria); Jan S. Bauer, Technische Univ. München (Germany) . . . . . [7626-56]

4:10 pm: **Evaluation of trabecular bone patterns on dental radiographic images: influence of cortical bone**, Yves Amouriq, Pierre Evenou, Aurore Arlicot, Nicolas Normand, Pierre Layrolle, Pierre Weiss, Jean-Pierre Guédon, Univ. de Nantes (France) . . . . . [7626-57]

4:30 pm: **A non-rigid registration approach for mouse whole body skeleton registration**, Di Xiao, Commonwealth Scientific and Industrial Research Organisation (Australia); David Zahra, Australian Nuclear Science and Technology Organisation (Australia); Pierrick T. Bourgeat, Commonwealth Scientific and Industrial Research Organisation (Australia); Paula Berghofer, Australian Nuclear Science and Technology Organisation (Australia); Oscar Acosta Tamayo, Commonwealth Scientific and Industrial Research Organisation (Australia); Catriona Wimberley, Marie-Claude Gregoire, Australian Nuclear Science and Technology Organisation (Australia); Olivier Salvado, Commonwealth Scientific and Industrial Research Organisation (Australia) . . . [7626-58]

7626 continues on page 32

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 7 continued
Room: Town & Country. Tues. 3:30 to 5:30 pm

5:10 pm: **FFDM image quality assessment using computerized image texture analysis,** Rachelle Berger, Ann-Katherine Carton, Andrew D. A. Maidment, Despina Kontos, The Univ. of Pennsylvania Health System (USA) . . . . . [7622-38]

WORKSHOP
Improving the Value and Practicality of Quantitative Imaging Biomarkers
Town & Country Room
Tues. 5:45 to 7:45 pm
Daniel C. Sullivan, Duke Univ.

7622 continues on page 39

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

DEMO WORKSHOP
Computer-Aided Diagnosis
Grand Exhibit Hall · Tues. 5:30 to 7:45 pm
Heang-Ping Chan, Univ. of Michigan;
Stephen R. Aylward, Kitware, Inc
Heang-Ping Chan, Univ. of Michigan

7624 continues on page 39

Conference 7625 continued
Visualization, Image-guided Procedures and Modeling
Room: California

SESSION 11 continued
Room: California . . . . . Tues. 3:30 to 5:30 pm

4:50 pm: **The application of collision detection to assess implant insertion in elbow replacement surgery**, Joshua H. Bernick, O. Remus Tutunea-Fatan, The Univ. of Western Ontario (Canada); Emily A. Lalone, Graham J. W. King, James A. Johnson, St. Joseph's Health Care London (Canada) and The Univ. of Western Ontario (Canada) . . . . . [7625-55]

5:10 pm: **A novel technique for analysis of accuracy of magnetic tracking systems used in image guided surgery**, David M. Kwartowitz, Marayam E. Rettmann, David R. Holmes III, Richard A. Robb M.D., Mayo Clinic (USA) . . . . . [7625-56]

Conference 7626 continued
Biomedical Applications in Molecular, Structural, & Functional Imaging
Room: Royal Palm I-III

SESSION 11 continued
Room: Royal Palm I-III . Tues. 3:30 to 5:30 pm

4:50 pm: **Prediction of biomechanical trabecular bone properties with geometric features using MR imaging**, Markus B. Huber, Univ. of Rochester Medical Ctr. (USA); Sarah Lancianese, Univ. of Rochester (USA); Imoh Ikpot, Mahesh B. Nagarajan, Univ. of Rochester Medical Ctr. (USA); Amy L. Lerner, Univ. of Rochester (USA); Axel Wismueller, Univ. of Rochester Medical Ctr. (USA). . . . . [7626-59]

5:10 pm: **Morphological characterization of dental prostheses interfaces using optical coherence tomography**, Cosmin G. H. Sinescu, Meda L. Negrutiu, Univ. de Medicina si Farmacie Victor Babes, Timisoara (Romania); Liviu Marsavina, Radu Negru, Cristiana Caplescu, Politehnica Univ. Timisoara (Romania); Adrian Bradu, Michael R. Hughes, Univ. of Kent (UK); Marius Leretter, Mihai Rominu, Univ. de Medicina si Farmacie Victor Babes, Timisoara (Romania); Adrian G. Podoleanu, Univ. of Kent (UK) . . . . . [7626-60]

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

DEMO WORKSHOP
Observer-Based Methodologies for Experiments in Medical Image Perception
Grand Exhibit Hall
Tues. 5:30 to 7:45 pm
David J. Manning, Univ. of Cumbria (UK);
Anthony J. Maeder, Univ. of Western Sydney (Australia)

7627 continues on page 39

Participate in the Poster Sessions

Gain valuable feedback and one-on-one networking with colleagues.

Posters for this conference will be on display Tuesday and Wednesday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be announced in the conference meeting room on Thursday morning.

Conference 7622 Posters
Physics of Medical Imaging

Algorithms

Non-convex prior image constrained compressed sensing (NC-PICCS), Juan Carlos Ramirez Giraldo, Joshua D. Trzasko, Shuai Leng, Cynthia H. McCollough, Armando Manduca, Mayo Clinic (USA) . . . . . [7622-83]

Potential benefit of the CT adaptive statistical iterative reconstruction method for pediatric cardiac diagnosis, Frédéric A. Miéville, Ctr. Hospitalier Univ. Vaudois (Switzerland); Paul Ayestaran, Christophe Argaud, GE Healthcare France (France); Elena Rizzo, Ctr. Hospitalier Univ. Vaudois (Switzerland); Phalla Ou, Francis Brunelle, Hôpital Necker-Enfants Malades (France); François Gudinchet, François Bochud, Francis R. Verdun, Ctr. Hospitalier Univ. Vaudois (Switzerland) . . . . . [7622-84]

3D numerical test objects for the evaluation of a software used for an automatic analysis of a linear accelerator mechanical distortion, Tarraf J. Torfeh, Stéphane S. Beaumont, QualiFormeD SARL (France); Jean-Pierre Guédon, Polytech'Nantes (France); Yassine Y. Ben Hdech, QualiFormeD SARL (France) . . . . . [7622-85]

Properties of a parameterization of Radon projections by the reconstruction on circular disc, Oleg Tischenko, Alexander A. Schegerer, Helmholtz Zentrum München GmbH (Germany); Yuan Xu, Univ. of Oregon (USA); Christoph Hoeschen, Helmholtz Zentrum München GmbH (Germany) . . . . . [7622-86]

Investigation on PI-line selecting method base on GPU accelerated back-projection filtered VOI reconstruction, Zheng Han, Yanyan Yu, Kang Yan, Jiren Liu, Northeastern Univ. (China) . . . . . [7622-87]

A new approach to limited angle tomography using the compressed sensing framework, Ludwig Ritschl, Frank Bergner, Marc Kachelriess, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [7622-88]

Embossed radiography utilizing a subtraction program, Eiichi Sato, Abderyim Purkhet, Iwate Medical Univ. (Japan); Akihiro Osawa, Hiroshi Matsukiyo, Toshiyuki Enomoto, Manabu Watanabe, The Toho Univ. (Japan); Kiyomi Takahashi, Shigehiro Sato, Akira Ogawa, Iwate Medical Univ. (Japan); Jun Onagawa, Tohoku Gakuin Univ. (Japan). . . . . [7622-89]

Enhanced image quality from segmentation based SPECT reconstruction, Shekhar Dwivedi, Vishal Grover, Philips Electronics India Ltd. (India); Raghavendra Shreedhara, Philips Healthcare, Foster City (USA) . . . . [7622-90]

Efficacy of iterative reconstruction in CT imaging, Sameer Tipnis, Walter Huda, U. Joseph Schoepf, Medical Univ. of South Carolina (USA); Thomas G. Flohr, Siemens Medical Solutions GmbH (Germany) . . . . . [7622-91]

TV-regularized iterative image reconstruction on a mobile C-ARM CT, Yongsheng Pan, Ross Whitaker, The Univ. of Utah (USA); Arvi Cheryauka, David Ferguson, GE Healthcare (USA) . . [7622-92]

Anatomy guided automated SPECT renal seed point estimation, Shekhar Dwivedi, Sailendra Kumar, Philips Electronics India Ltd. (India) . . . . . [7622-93]

Evaluation of dual-front active contour segmentation and metal shadow filling methods on metal artifact reduction in multi-slice helical CT, Hua Li, Lifeng Yu, Luis S. Guimaraes, Joe G. Fletcher, Cynthia H. McCollough, Mayo Clinic (USA) [7622-94]

Adaptive modulation of bilateral filtering based on a practical noise model for noise reduction in multislice CT, Lifeng Yu, Armando Manduca, Megan Jacobsen, Joshua D. Trzasko, Joe G. Fletcher, David R. DeLone, Cynthia H. McCollough, Mayo Clinic (USA) . . . . . [7622-95]

Sparse object reconstruction from a small number of projections in cone-beam micro-CT by constrained, total-variation minimization, Xiao Han, Junguo Bian, The Univ. of Chicago (USA); Diane R. Eaker, Mayo Clinic College of Medicine (USA); Emil Y. Sidky, The Univ. of Chicago (USA); Erik L. Ritman, Mayo Clinic College of Medicine (USA); Xiaochuan Pan, The Univ. of Chicago (USA). . . . . [7622-96]

CT

Effect of dose reduction on lesion delectability in abdominal CT, Sameer Tipnis, Walter Huda, Medical Univ. of South Carolina (USA); Kent M. Ogden, SUNY Upstate Medical Univ. (USA). . . . . [7622-97]

Imaging properties for gold nanoparticles: CT number dependence study, Shu-Ju Tu, Hui-Ling Hsieh, Tsi-Chian Chao, Chang Gung Univ. (Taiwan); Fong-Yu Cheng, Chen-Sheng Yeh, National Cheng Kung Univ. (Taiwan). . . . . [7622-98]

Computed tomography patient's examination in Kenya, Anthony K. Shadrack, Ministry of Health (Kenya); Robert Kinyua, Jomo Kenyatta Univ. of Agriculture and Technology (Kenya) . . . . . [7622-99]

An exact modeling of signal statistics in energy-integrating x-ray computed tomography, Yi Fan, Stony Brook Univ. (USA); Hongbing Lu, Fourth Military Medical Univ. (China); Hongbin Zhu, Stony Brook Univ. (USA); Xiangyang Tang, Emery Univ. School of Medicine (USA); Zhengrong Liang, Stony Brook Univ. (USA) . . . . . [7622-100]

Evaluation of the adaptive statistical iterative reconstruction technique for cardiac computed tomography imaging, Jiahua Fan, Jiang Hsieh, Paavana Sainath, Peter S. Crandall, GE Healthcare (USA) . . . . . [7622-101]

Towards iterative reconstruction in clinical CT: significant dose reduction and increased sharpness to noise owing to a new class of regularization priors, Herbert K. Bruder, Rainer Raupach, Martin Sedlmair, Frank Wuersching, Karl Schwarz, Karl Stierstorfer, Thomas G. Flohr, Siemens Medical Solutions GmbH (Germany) . . . . . [7622-102]

Quantitative CT: technique dependency of volume assessment for pulmonary nodules, Baiyu Chen, Samuel Richard, Ehsan Samei, Duke Univ. (USA) . [7622-103]

Spatial comparison of synchrotron radiation microcomputed tomography and polychromatic microcomputed tomography bone images, Jenny Folkesson, Janet Goldenstein, Sharmila Majumdar, Galateia Kazakia, Univ. of California, San Francisco (USA) . [7622-104]

Imaging of basic function unit of small/medium animal via diagnostic x-ray CT scanner with an adaptor-and-holder assembly: feasibility study, Xiangyang Tang, Emory Univ. (USA). . . . . [7622-105]

Third-generation x-ray computed tomography system utilizing a cadmium telluride detector, Eiichi Sato, Iwate Medical Univ. (Japan); Abduraxit Ablajan, Iwate Prefectural Univ. (Japan); Toshiyuki Enomoto, Manabu Watanabe, The Toho Univ. (Japan); Keitaro Hitomi, Tohoku Institute of Technology (Japan); Kiyomi Takahashi, Shigehiro Sato, Akira Ogawa, Iwate Medical Univ. (Japan); Jun Onagawa, Tohoku Gakuin Univ. (Japan) . . . [7622-106]

Applying an innovative approach for the quality characterization of CT systems to evaluate novel CT concepts, Alexander A. Schegerer, Matthias Klaften, Thomas Förster, Christoph Hoeschen, Helmholtz Zentrum München GmbH (Germany) . . . . . [7622-107]

Fast cardiac CT simulation using a graphics processing unit-accelerated Monte Carlo code, Andreu Badal, Iacovos S. Kyprianou, Diksha Sharma, Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [7622-108]

Designing a phantom for dose and image quality evaluation of MSCT, Samir Abboud, Univ. of Maryland, College Park (USA); Andreu Badal, Stanley Stern, Iacovos S. Kyprianou, U.S. Food and Drug Administration (USA) . . . . . [7622-109]

CT Cone Beam

Use of beam shapers for cone-beam CT with off-centered flat detector, Bernd Menser, Jens Wiegert, Steffen Wiesner, Matthias Bertram, Philips Research (Germany) . . . . . [7622-110]

Image registration and superimposition for dual resolution cone beam CT: a preliminary study, Zhicheng You, Youtao Shen, Yuncheng Zhong, Lingyun Chen, Tao Han, Shuaiping Ge, Ying Yi, Tianpeng Wang, Chao-Jen Lai, Xinming Liu, Chris C. Shaw, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA). . . . . [7622-111]

Implementation of ART and SIRT methods in image reconstruction of CBCT with limited data, Wei Qiu, Cathryn N. Mitchell, Univ. of Bath (UK); Thomas E. Marchant, Christopher J. Moore, Christie Hospital (UK); Manuchehr Soleimani, Univ. of Bath (UK). . . . . [7622-112]

Pseudo super-resolution for improved calcification characterization for cone beam breast CT (CBBCT), Dong Yang, Ruola Ning, Ricardo Betancourt-Benitez, Jiangkun Liu, Xiaohua Zhang, Weixing Cai, Univ. of Rochester Medical Ctr. (USA) . . . . . [7622-113]

Development and characterization of a beam hardening filter for a cone beam CT imaging system, Ricardo Betancourt-Benitez, Ruola Ning, Dong Yang, Univ. of Rochester Medical Ctr. (USA) . . . [7622-114]

GPU-based iterative reconstruction with total variation minimization for micro-CT, Samuel M. Johnston, G. Allan Johnson, Cristian T. Badea, Duke Univ. (USA) . . . . . [7622-115]

GPU implementation of prior image constrained compressed sensing (PICCS), Brian E. Nett, Jie Tang, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . . [7622-116]

Accelerating ring artifact correction for flat-detector CT using the CUDA framework, Wei Chen, Daniel Prell, Yiannis Kyriakou, Willi A. Kalender, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [7622-117]

Demonstration of dual resolution come beam CT technique with an a-Si/a-Se flat panel detector, Youtao Shen, Yuncheng Zhong, Lingyun Chen, Tao Han, Zhicheng You, Ying Yi, Shuiping Ge, Chao-Jen Lai, Xinming Liu, Tianpeng Wang, Chris C. Shaw, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) . . . . . [7622-118]

Initial investigation into lower-cost CT for resource limited regions of the world, James T. Dobbins III, W. Paul Segars, Christina Li, Jered R. Wells, Christopher J. N. Kigongo, Duke Univ. (USA). . . [7622-120]

GPU-accelerated metal artifact reduction (MAR) in FD-CT, Marcel Beister, Daniel Prell, Yiannis Kyriakou, Willi A. Kalender, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [7622-121]

Scatter in an uncollimated x-ray CT machine based on a Geant4 Monte Carlo simulation, Nicola Wadeson, William Lionheart, The Univ. of Manchester (UK); Edward Morton, Rapiscan Systems Ltd. (UK) . . . . . [7622-122]

Off-center object of interest (OOI) imaging for filtered region of interest rotational angiography (FROI-RA), Sebastian Schafer, Peter B. Noël, Alan M. Walczak, Toshiba Stroke Research Ctr. (USA); Andrew T. Kuhls-Gilcrist, Univ. at Buffalo (USA); Kenneth R. Hoffmann, Toshiba Stroke Research Ctr. (USA) . . . . . [7622-123]

Phase-selective image reconstruction of the lungs in small animals using micro-CT, Samuel M. Johnston, Bradford A. Perez, David G. Kirsch M.D., Cristian T. Badea, Duke Univ. (USA). . . . . [7622-124]

CT Dual Energy

Contrast-enhancement, image noise and dual-energy simulations for quantum-counting clinical CT, Steffen G. Kappler, Daniel Niederloehner, Karl Stierstorfer, Thomas G. Flohr, Siemens Healthcare (Germany) . . . . . [7622-125]

The impact of dual energy CT on pseudo enhancement of kidney lesions, Jan Müller, Univ. zu Lübeck (Germany); Terri J. Vrtiska, Mayo Clinic College of Medicine (USA); Bernhard T. Schmidt, Siemens Medical Solutions GmbH (Germany); Benjamin M. Howe, Cynthia H. McCollough, Mayo Clinic (USA); Thorsten M. Buzug, Univ. zu Lübeck (Germany); Christian D. Eusemann, Siemens Medical Solutions USA, Inc. (USA). . . . . [7622-126]

Comparison of contrast and noise in subtraction-based and dual-energy kV-switching-based CT images of Xe gas for lung ventilation imaging, Jesse Tanguay, Ian A. Cunningham, Robarts Research Institute (Canada) . . . . . [7622-127]

Fast kV switching dual energy CT effective atomic number accuracy for kidney stone characterization, Mukta C. Joshi, GE Healthcare (USA); David A. Langan, GE Global Research (USA); Dushyant V. Sahani M.D., Avinash Kambadakone Ramesh M.D., Massachusetts General Hospital (USA); Srinivas Aluri, Karen Procknow, GE Healthcare (USA); Xiaoye Wu, Rahul Bhotika, GE Global Research (USA); Darin R. Okerlund, GE Healthcare (USA) . . . . . [7622-128]

Impact of photon counting detector spectral response on dual energy approaches, Adam S. Wang, Norbert J. Pelc, Stanford Univ. (USA) . . . . . [7622-129]

Evaluation of an image-based algorithm for quantitative spectral CT applications, Björn J. Heismann, Siemens Medical Solutions GmbH (Germany); Michael Balda, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [7622-130]

In vivo measurement of iron concentration using dual-source, dual-energy CT, Paul T. Weavers, Megan Jacobsen, Xin Liu, Richard Morin, Cynthia H. McCollough, Mayo Clinic (USA) . . . . . [7622-131]

Differentiation of uric acid versus non-uric acid kidney stones in the presence of iodine using dual-energy CT, Jia Wang, Mingliang Qu, Shuai Leng, Cynthia H. McCollough, Mayo Clinic (USA) . [7622-132]

Detectors

Simulation study of an energy sensitive photon counting silicon strip detector for computed tomography: identifying strengths and weaknesses and developing work-arounds, Hans Bornefalk, Cheng Xu, Royal Institute of Technology (Sweden); Christer Svensson, Linköping Univ. (Sweden); Mats E. Danielsson, Royal Institute of Technology (Sweden) [7622-133]

Electronic noise comparison of amorphous silicon current mode and voltage mode active pixel sensors for large area digital x-ray imaging, Dali Wu, Nader Safavian, Mohammad Y. Yazdandoost, Mohammad H. Izadi, Karim S. Karim, Univ. of Waterloo (Canada) . . . . . [7622-134]

Amorphous selenium lateral Frisch photodetector and photomultiplier for high performance medical x-ray and gamma-ray imaging applications, Amir H. Goldan, Karim S. Karim, Kai Wang, Feng Chen, Univ. of Waterloo (Canada) [7622-135]

Phosphor-filled micro-well arrays for digital x-ray imaging: effects of surface treatments, Seungman Yun, Chang Hwy Lim, Pusan National Univ. (Korea, Republic of); Tae Woo Kim, E-WOO Technology Co., Ltd. (Korea, Republic of); Ian A. Cunningham, Robarts Research Institute (Canada); Thorsten Achterkirchen, Rad-icon Imaging Corp. (USA); Ho Kyung Kim, Pusan National Univ. (Korea, Republic of) . . . . . [7622-136]

Development of a large-area CMOS-based detector for real-time x-ray imaging, Sung Kyn Heo, Sung Kyu Park, Sung Ha Hwang, Dong Ak Im, Jari Kosonen, Tae Woo Kim, E-WOO Technology Co., Ltd. (Korea, Republic of); Seungman Yun, Ho Kyung Kim, Pusan National Univ. (Korea, Republic of) . . . . . [7622-137]

Modeling of pulse signals in photon-counting detectors, Chang Hwy Lim, Okla Joe, Pusan National Univ. (Korea, Republic of); Ian A. Cunningham, Robarts Research Institute (Canada); Ho Kyung Kim, Pusan National Univ. (Korea, Republic of) . . . . . [7622-138]

Performance of a prototype amorphous silicon active pixel sensor array using a-Se for direct x-ray conversion, Mohammad H. Izadi, Nader Safavian, Karim S. Karim, Univ. of Waterloo (Canada); Olivier Tousignant, Mélissa F. Mokam, Habib Mani, Luc Laperriere, ANRAD Corp. (Canada) . . . . . [7622-139]

Scanning translucent glass-ceramic x-ray storage phosphors, Anthony R. Lubinsky, Stony Brook Univ. (USA); Jacqueline A. Johnson, Univ. of Tennessee Space Institute (USA); Stefan Schweizer, Fraunhofer Ctr. for Silicon Voltaics (Germany) and Ctr. for Innovation Competance SiLi-nano (Germany); Richard Weber, Materials Development, Inc. (USA); Robert M. Nishikawa, The Univ. of Chicago (USA); Peter Domenicali, Stephen D. Fantone, Optikos Corp. (USA) . . . . . [7622-140]

Amorphous silicon p-i-n photodetector with Frisch grid for high-speed medical imaging, Nicholas Allec, Amir H. Goldan, Kai Wang, Feng Chen, Karim S. Karim, Univ. of Waterloo (Canada). . . . . [7622-141]

An aging study of the signal and noise characteristics in large-area CMOS detectors, Jong Chul Han, Seungman Yun, Chang Hwy Lim, Tae Gyun Youm, Pusan National Univ. (Korea, Republic of); Sung Kyn Heo, Tae Woo Kim, E-WOO Technology Co., Ltd. (Korea, Republic of); Ian A. Cunningham, Robarts Research Institute (Canada); Ho Kyung Kim, Pusan National Univ. (Korea, Republic of) . . . . . [7622-142]

Cadmium zinc telluride detector for low photon energy applications, Kyung-Wook Shin, Kai Wang, Univ. of Waterloo (Canada) and Thunder Bay Regional Research Institute (Canada); Alla Reznic, Thunder Bay Regional Health Sciences Ctr. (Canada); Karim S. Karim, Univ. of Waterloo (Canada) . . . . . [7622-143]

New development of large-area direct conversion detector for digital radiography using amorphous selenium with a C60-doped polymer layer, Fumito Nariyuki, Shinji Imai, Hirotaka Watano, Toshiyuki Nabeta, Yuichi Hosoi, FUJIFILM Corp. (Japan). . . . . [7622-144]

Breast Imaging

Daily quality control for breast tomosynthesis, Ramona Bouwman, Roelant Visser, LRCB (Netherlands); Kenneth Young, David R. Dance, The Royal Surrey County Hospital NHS Trust (UK); Barbara Lazzari, General Hospital of Pistioa (Italy); Roeland van der Burght, Artinis Medical Systems B.V. (Netherlands); Patrice Heid, Arcades (France); Ruben van Engen, LRCB (Netherlands). . . . . [7622-145]

Determination of mass attenuation coefficients for threshold contrast evaluation in digital mammography, Johann B. Hummel, Friedrich Semturs, Susanne Menhart, Helmar Bergmann, Medizinische Univ. Wien (Austria) [7622-146]

Singular system analysis of breast tomosynthesis systems for choosing projection angles, Subok Park, Rongping Zeng, Kyle J. Myers, U.S. Food and Drug Administration (USA) . . . . . [7622-147]

Optimization of the exposure parameters with signal-to-noise ratios considered human visual characteristics in digital mammography, Maki Yamada, Yuri Kato, Naotoshi Fujita, Yoshie Kodera, Nagoya Univ. School of Medicine (Japan) [7622-148]

Quantifying breast density with a cone-beam breast CT, Xinhua Li, Bob Liu, Massachusetts General Hospital (USA) . . . . . [7622-149]

Reliability study of reconstruction methods in tomosynthesis imaging of various geometrical objects, Karthik Kanaka, Ravi K. Samala, Jianying Zhang, Wei Qian, The Univ. of Texas at El Paso (USA) . . . . . [7622-150]

A consideration of the signal-to-noise ratio in phase contrast mammography, Yuri Kato, Naotoshi Fujita, Yoshie Kodera, Nagoya Univ. School of Medicine (Japan). . . . . [7622-151]

Noise characteristics of the reduction image displayed on the liquid crystal display in digital mammography, Daigo Yokoyama, Yukiyoshi Kimura, Nagoya Univ. School of Medicine (Japan); Yasuhiro Imanishi, JA Mie Kouseiren Matsusaka General Hospital (Japan); Naotoshi Fujita, Yoshie Kodera, Nagoya Univ. School of Medicine (Japan) . . . . . [7622-152]

Simulation of low dose positron emission mammography scanner for global breast health applications, Will J. Ryder, Portsmouth Hospitals NHS Trust (UK); Irving Wienberg, Pavel S. Stepanov, Weinberg Medical Physics (USA); Alla Reznic, Thunder Bay Regional Health Sciences Ctr. (Canada); Mario Urdaneta, Weinberg Medical Physics (USA); Michael A. Masoomi, Portsmouth Hospitals NHS Trust (UK); Anatoly Rozenfeld, Univ. of Wollongong (Australia). . . . . [7622-153]

Performance characterization of a computed radiographic mammography system, Abhinav Singh, Univ. of California, Los Angeles (USA) and iCRco, Inc. (USA); Nikunj H. Desai, iCRco, Inc. (USA); Daniel J. Valentino, Univ. of California, Los Angeles (USA) . . . . . [7622-154]

Optical Imaging

Design of, and some clinical experience with, a novel optical surface measurement system in radiotherapy, Gareth J. Price, Thomas E. Marchant, James M. Parkhurst, Phil J. Sharrock, Christie Hospital (UK); David Burton, Liverpool John Moores Univ. (UK); Gillian Whitfield, The Univ. of Manchester (UK); Christopher J. Moore, Christie Hospital (UK) . . . . . [7622-155]

Measurement of contrast-to-noise ratio for differential phase contrast computed tomography, Joseph N. Zambelli, Nicholas B. Bevins, Zhihua Qi, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . . [7622-156]

Adaptive platform for fluorescence microscopy-based high content screening, Matthias Geisbauer, BioImaging Zentrum der LMU (Germany); Thorsten Röder, Yang Chen, Alois Knoll, Rainer Uhl, Technische Univ. München (Germany) . . . . . [7622-157]

Image formation of volume holographic microscopy using intensity point spread functions, Yuan Luo, Se Baek Oh, Massachusetts Institute of Technology (USA); Shan Shan Kou, Colin Sheppard, National Univ. of Singapore (Singapore); George Barbastathis, Massachusetts Institute of Technology (USA) . . . [7622-159]

Other/Novel Methods

Nonintrusive noncontacting frequency-domain photothermal tomography of human teeth, Yasser H. El-Sharkawy, Cairo Univ. (Egypt) . . . . . [7622-160]

A balanced filterless K-edge energy window multilayer detector for dual energy computed tomography, Nicholas Allec, Karim S. Karim, Univ. of Waterloo (Canada) . . . . . [7622-161]

Quantitative dark-field tomography, Peter Modregger, Samuel McDonald, Thomas Thuering, Marco Stampanoni, Paul Scherrer Institut (Switzerland) . . . . . [7622-162]

Coherent-scatter tomography using a sliding detector system, Mitsuaki Terabe, Toyohashi Municipal Hospital (Japan) and Kanazawa Univ. (Japan); Kenzou Inoue, Hiroyuki Okamoto, Kichirou Koshida, Kanazawa Univ. (Japan) . . . . . [7622-163]

Adapted erase method using ultraviolet light and the influence of ghosting image on a clinical CR image, Takahide Okamoto, Teikyo Univ. (Japan); Hiroko Ohuchi, Tohoku Univ. (Japan); Hideyuki Maezima, Toshihiro Minami, Teikyo Univ. (Japan); Eiji Mogi, Carestream Health, Inc. (Japan); Shigeru Furui, Teikyo Univ. (Japan); Hiroshi Ichiji, Carestream Health, Inc. (Japan) . [7622-164]

Imaging quality assessment of multiplexing x-ray radiography based on distributed x-ray source array technology, Jian Zhang, Rui Peng, Sigen Wang, Xiomara Calderon-Colon, Shabana Sultana, Sha Chang, Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [7622-165]

MEG source detection revisited, Tianhu Lei, Timothy P. L. Roberts, The Children's Hospital of Philadelphia (USA) . . [7622-167]

Silicon nanowire metal-semiconductor-metal photodetectors, Michael M. Adachi, Kai Wang, Feng Chen, Karim S. Karim, Univ. of Waterloo (Canada). . . . . [7622-168]

Advanced differential phase contrast tomographic imaging using a grating interferometer, Samuel McDonald, Peter Modregger, Thomas Thuering, Paul Scherrer Institut (Switzerland); Marco Stampanoni, Paul Scherrer Institut (Switzerland) and ETH Zürich (Switzerland). . . . . [7622-169]

Bone cartilage imaging with X-ray interferometry using a practical X-ray tube, Kazuhiro Kido, Chiho Makifuchi, Junko Kiyohara, Tsukasa Itou, Chika Honda, Konica Minolta Medical & Graphic, Inc. (Japan); Atsushi Momose, The Univ. of Tokyo (Japan) . . . . . [7622-170]

Performance Evaluation

Mobile measurement setup according to IEC 62220-1-2 for DQE determination on digital mammography systems, Matthias B. Greiter, Christoph Hoeschen, Helmholtz Zentrum München GmbH (Germany) . . . . . [7622-171]

Practical evaluation of image quality in computed radiographic (CR) imaging systems, Nikunj H. Desai, Abhinav Singh, Daniel J. Valentino, Univ. of California, Los Angeles (USA) . . . . . [7622-172]

A software tool to measure the geometric distortion in X-ray image systems, Gabriel Prieto, Margarita Chevalier, Eduardo Guibelalde, Univ. Complutense de Madrid (Spain) . . . . . [7622-173]

Effect of image lag on real-time target tracking in radiotherapy, Rie Tanaka, Katsuhiro Ichikawa, Kanazawa Univ. (Japan); Shinichiro Mori, Suguru Dobashi, Motoki Kumagai, National Institute of Radiological Sciences (Japan); Hiroki Kawashima, Kanazawa Univ. (Japan); Shinichi Minohara, National Institute of Radiological Sciences (Japan); Shigeru Sanada, Kanazawa Univ. (Japan). . . . . [7622-174]

Temporal-spatial characteristic evaluation in a dynamic flat-panel detector system, Hiroki Kawashima, Rie Tanaka, Kousuke Matsubara, Katsuhiro Ichikawa, Keita Sakuta, Syuhei Minami, Norio Hayashi, Shigeru Sanada, Masaaki Kawamura, Tomoyuki Yamamoto, Kanazawa Univ. (Japan) . . . . . [7622-175]

Effect of choice of region-of-interest in an abdominal 2-AFC experiment, Sameer Tipnis, Walter Huda, Medical Univ. of South Carolina (USA); Kent M. Ogden, SUNY Upstate Medical Univ. (USA). . . . [7622-176]

Characterization of focal spots of x-ray tubes in CT systems: method development and examples, Michael Grasruck, Ulrich Kuehn, Karl Stierstorfer, Thomas G. Flohr, Siemens Medical Solutions GmbH (Germany). . . . . [7622-177]

A method for the determination of the two-dimensional MTF of digital radiography systems using only the noise response, Andrew T. Kuhls-Gilcrist, Univ. at Buffalo (USA); Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke Research Ctr. (USA). . . . . [7622-178]

The impact of processing delay on the exposure index value in computed radiography, Marie-Louise Butler, Univ. College Dublin (Ireland); Patrick C. Brennan, The Univ. of Sydney (Australia); Jason Last, Louise A. Rainford, Univ. College Dublin (Ireland) . . . . . [7622-179]

Detection of simulated microcalcifications in digital mammography- effects of quantum and anatomic noises: preliminary study, Chao-Jen Lai, Zhicheng You, Xinming Liu, Lingyun Chen, Youtao Shen, Yuncheng Zhong, Tao Han, Shuaiping Ge, Ying Yi, Gary J. Whitman, Wei T. Yang, Chris C. Shaw, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) . . . . . [7622-180]

Noise characterization of computed tomography using the covariance matrix, Claudia Brunner, Helmholtz Zentrum München GmbH (Germany); Stefanie Hurowitz, U.S. Food and Drug Administration (USA); Christoph Hoeschen, Helmholtz Zentrum München GmbH (Germany); Iacovos S. Kyprianou, U.S. Food and Drug Administration (USA) . . [7622-181]

Quality control of eclipse treatment planning system using the Penelope Monte Carlo code and anatomical digital test objects, Yassine Y. Ben Hdech, Stéphane S. Beaumont, QualiFormeD SARL (France); Jean-Pierre Guédon, Univ. de Nantes (France); Tarraf J. Torfeh, QualiFormeD SARL (France) . . . . [7622-182]

Epp: a C++ Monte Carlo simulation EGSnrc user code for dose calculation and imaging, Congwu Cui, Jonas Lippuner, Harry R. Ingleby, David N. M. Di Valentino, Idris A. Elbakri, CancerCare Manitoba (Canada) . . . . . [7622-183]

Comparing experimental measurements of indirect x-ray detector responses with Monte Carlo predictions: figures of merit and model development, Nahush Rao, Melanie Freed, Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [7622-184]

Reconstruction

A local and iterative neural reconstruction algorithm for cone-beam data, Ignazio Gallo, Univ. degli Studi dell'Insubria (Italy) . . . . . [7622-185]

Hyperparameter selection for OSEM SPECT reconstruction in mesh domain with total variation regularization, Andrzej Krol, SUNY Upstate Medical Univ. (USA); Yao Lu, Univ. of Michigan Health System (USA); Levon O. Vogelsang, Syracuse Univ. (USA); Bo Yu, SUNY Upstate Medical Univ. (USA); Yuesheng Xu, Syracuse Univ. (USA); David H. Feiglin, SUNY Upstate Medical Univ. (USA) . . . . . [7622-186]

Two-sheet surface rebinning for real time cone beam x-ray CT, Marta Betcke, William Lionheart, The Univ. of Manchester (UK) . . . . . [7622-187]

Combined algorithmic and GPU acceleration for ultra-fast backprojection, Jeffrey Brokish, Paul Sack, Yoram Bresler, InstaRecon, Inc. (USA) . . . . . [7622-188]

Microwave detecting and locating breast tumors through the reconstruction of breast surface impedance, Onan Güren, Lale T. Ergene, Ali Yapar, Ibrahim Akduman, Istanbul Teknik Üniv. (Turkey) . . . [7622-189]

Optimizing kernel size in generalized auto-calibrating partially parallel acquisition in magnetic resonance imaging, Yasser M. Kadah, Haitham Mohamed, Abou-Bakr Youssef, Refaat Gabr, Cairo Univ. (Egypt). . . . . [7622-190]

Analytical solution to cone-beam SPECT reconstruction with non-uniform attenuation and distance-dependent resolution variation, Junhai Wen, Hao Zhang, Jing Yang, Peng Hu, Beijing Institute of Technology (China); Zhengrong Liang, Stony Brook Univ. (USA) . . . . . [7622-191]

Accurate determination of the shape and location of metal objects in x-ray computed tomography, Jing Wang, Lei Xing, Stanford Univ. (USA) . . . . . [7622-192]

System matrix for OSEM SPECT reconstruction with attenuation compensation in mesh domain, Levon O. Vogelsang, Syracuse Univ. (USA); Andrzej Krol, SUNY Upstate Medical Univ. (USA); Yao Lu, Univ. of Michigan Health System (USA); Yuesheng Xu, Syracuse Univ. (USA); David H. Feiglin, SUNY Upstate Medical Univ. (USA) . . . . . [7622-193]

Rapid 3D regularized EM reconstruction for Compton cameras using GPU, Soo-Jin Lee, Van-Giang Nguyen, Mi No Lee, Pai Chai Univ. (Korea, Republic of) . . [7622-194]

Low dose CT image reconstruction based on high-order total variation technique in clinical scanner, Synho Do, Massachusetts General Hospital (USA); William C. Karl, Boston Univ. (USA); Mannudeep K. Kalra, Thomas J. Brady, Homer Pien, Massachusetts General Hospital (USA) . . . . . [7622-195]

Systems

DR with a DSLR, Xiang Fan, Heather L. Durko, Brian Miller, College of Optical Sciences, The Univ. of Arizona (USA); Stephen K. Moore, The Univ. of Arizona (USA); Jared Moore, Lars R. Furenlid, Harrison H. Barrett, College of Optical Sciences, The Univ. of Arizona (USA); Sunil Pradhan, Tribhuvan Univ. (Nepal) [7622-196]

Design and construction of a micro-focus in-line phase-contrast cone-beam CT (PC-CBCT) system for soft tissue imaging, Weixing Cai, Ruola Ning, Univ. of Rochester Medical Ctr. (USA) . . . [7622-197]

Design and characterization of a carbon nanotube based micro-focus x-ray tube for small animal imaging, Shabana Sultana, Xiomara Calderon-Colon, Otto Zhou, Jianping Lu, The Univ. of North Carolina at Chapel Hill (USA). . . . [7622-198]

Design and construction of a differential phase-contrast cone-beam CT (DPC-CBCT) system for soft tissue imaging, Weixing Cai, Ruola Ning, Dong Yang, Univ. of Rochester Medical Ctr. (USA) . [7622-199]

Progress in the development of a new angiography suite including the high resolution micro-angiographic fluoroscope (MAF), a control, acquisition, processing, and image display system (CAPIDS), and a new detector changer integrated into a commercial C-arm angiography unit to enable clinical use, Weiyuan Wang, Ciprian N. Ionita, Christos Keleshis, Andrew T. Kuhls-Gilcrist, Univ. at Buffalo (USA); Amit Jain, Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke Research Ctr. (USA) . . . . . [7622-200]

Tomosynthesis

Deblurring in digital tomosynthesis by iterative self-layer subtraction, Hanbean Youn, SunYoung Jang, Jee Young Kim, Min Kook Cho, Pusan National Univ. (Korea, Republic of); Seungryong Cho, The Univ. of Chicago (USA); Ho Kyung Kim, Pusan National Univ. (Korea, Republic of) . . . . . [7622-201]

Impulse response characterization of breast tomosynthesis reconstruction with parallel imaging configurations, Apuroop Balla, Weihua Zhou, Ying Chen, Southern Illinois Univ., Carbondale (USA). . [7622-202]

Angular dependence of mammographic dosimeters in digital breast tomosynthesis, Lena R. Bradley, Ann-Katherine G. Carton, Andrew D. A. Maidment, The Univ. of Pennsylvania Health System (USA) . . . . . [7622-203]

Distributed source x-ray tube technology for tomosynthesis imaging, Frank Sprenger, XinRay Systems LLC (USA); Jonathan S. Maltz, Ajay Paidi, Siemens Medical Solutions USA, Inc. (USA); Xin Qian, The Univ. of North Carolina at Chapel Hill (USA); Derrek Spronk, XinRay Systems LLC (USA) . . . . . [7622-204]

Conference 7624 Posters
Computer-Aided Diagnosis

Abdominal

Towards automatic determination of total tumor burden from PET images, Steffen Renisch, Roland Opfer, Rafael Wiemker, Philips Research (Germany) . . . . . [7624-63]

Development of CAD prototype system for Crohn's disease, Masahiro Oda, Nagoya Univ. (Japan); Takayuki Kitasaka, Aichi Institute of Technology (Japan); Kensaku Mori, Nagoya Univ. (Japan); Kazuhiro Furukawa, Osamu Watanabe, Takafumi Ando, Hidemi Goto, Nagoya Univ. School of Medicine (Japan). . . . . [7624-64]

Feature selection by adaptive weighting and reordering for computer-aided polyp detection in CT colonography, Hongbin Zhu, Su Wang, Yi Fan, Zhengrong Liang, Stony Brook Univ. (USA) . . . . . [7624-65]

Performance study of polycystic kidneys segmentation methods, Dimitri Racimora, Hersh Chandarana, New York Univ. Langone Medical Ctr. (USA); Pierre-Hugues Vivier, New York Univ. Langone Medical Ctr. (USA) and Univ. de Rouen (France); Henry Rusinek, New York Univ. (USA). . . [7624-67]

A model based method for recognizing psoas major muscles in torso CT images, Naoki Kamiya, Xiangrong Zhou, Huayue Chen, Takeshi Hara, Ryujiro Yokoyama, Gifu Univ. (Japan); Masayuki Kanematsu, Hiroaki Hoshi, Gifu Univ. Hospital (Japan); Hiroshi Fujita, Gifu Univ. (Japan) . . . . . [7624-68]

Feature selection for computer-aided polyp detection using MRMR, Xiaoyun Yang, Faik Boray Tek, Gareth R. Beddoe, Greg Slabaugh, Medicsight PLC (UK) . . . . . [7624-69]

Accurate computation of motion parameters using a regression method for colonoscopy tracking, Jianfei Liu, Kalpathi R. Subramanian, The Univ. of North Carolina at Charlotte (USA); Terry S. Yoo, National Library of Medicine (USA) [7624-70]

Segmentation of liver portal veins by global optimization, Pieter Bruyninckx, Dirk Loeckx, Dirk Vandermeulen, Paul Suetens, Katholieke Univ. Leuven (Belgium) [7624-71]

Haustral fold registration in CT colonography and its application to registration of virtual stretched view of the colon, Eiichiro Fukano, Masahiro Oda, Kensaku Mori, Nagoya Univ. (Japan); Takayuki Kitasaka, Yasuhito Suenaga, Aichi Institute of Technology (Japan); Tetsuji Takayama M.D., Univ. of Tokushima (Japan); Hirotsugu Takabatake M.D., Minami Sanjyo Hospital (Japan); Masaki Mori M.D., Sapporo Kosei Hospital (Japan); Hiroshi Natori M.D., Keiwakai Nishioka Hospital (Japan); Shigeru Nawano M.D., International Univ. of Health and Welfare (Japan). . . . . [7624-72]

An open source implementation of colon CAD in 3D slicer, Haiyong Xu, Howard D. Gage, Pete Santago II, Wake Forest Univ. (USA) . . . . . [7624-73]

Prostate cancer region prediction using MALDI mass spectra, Ayyappa Vadlamudi, Shao-Hui Chuang, Jiang Li, Frederic McKenzie, Old Dominion Univ. (USA) . . . . . [7624-74]

Automated scheme for measuring polyp volume in CT colonography using Hessian matrix-based shape extraction and 3D volume growing, Kenji Suzuki, Mark L. Epstein, Jianwu Xu, Piotr Obara, The Univ. of Chicago (USA); Don C. Rockey M.D., The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Abraham H. Dachman M.D., The Univ. of Chicago (USA) . . . . . [7624-75]

Brain

Computerized evaluation method of white matter hyperintensities related to subcortical vascular dementia in brain MR images, Hidetaka Arimura, Kyushu Univ. (Japan); Yasuo Kawata, Hitachi Medical Corp. (Japan); Yasuo Yamashita, Taiki Magome, Masafumi Ohki, Fukai Toyofuku, Yoshiharu Higashida, Kyushu Univ. (Japan); Kazuhiro Tsuchiya, Kyorin Univ. (Japan) . . . . . [7624-76]

Prediction of brain tumor progression using a machine learning technique, Jiang Li, Yufei Shen, Old Dominion Univ. (USA); Adam G. Chandler, GE Healthcare (UK); Yuzhong Shen, Frederic McKenzie, Old Dominion Univ. (USA); Jihong Wang, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) . . . . . [7624-77]

Parkinson's disease prediction using diffusion-based atlas, Roxana O. Teodorescu, Politehnica Univ. Timisoara (Romania) and Univ. de Franche-Comté (France); Daniel Racoceanu, Ctr. National de la Recherche Scientifique (France) and Univ. de Franche-Comté (France); Nicolas Smit, Institut Superieur de l'Electronique et du Numerique (France); Vladimir I. Cretu, Politehnica Univ. Timisoara (Romania); Eng King Tan, Ling Ling Chan, Singapore General Hospital (Singapore) . . . . [7624-78]

TBIdoc: 3D content-based CT image retrieval system for traumatic brain injury, Shimiao Li, Tianxia Gong, Jie Wang, Ruizhe Liu, Chew Lim Tan, National Univ. of Singapore (Singapore); Boon Chuan Pang, C. C. Tchoyoson Lim, Cheng Kiang Lee, National Neuroscience Institute (Singapore); Qi Tian, Zhang Zhuo, A*STAR Institute for Infocomm Research (Singapore). . [7624-79]

Shape similarity analysis of regions of interest in medical images, Qiang Wang, National Institute of Allergy and Infectious Diseases (USA); Amalia Charisi, Univ. of Patras (Greece); Longin Jan Latecki, Temple Univ. (USA); James C. Gee, Univ. of Pennsylvania (USA); Vasilis Megalooikonomou, Temple Univ. (USA) . . . . . [7624-80]

Population analysis of the cingulum bundle, for schizophrenia detection using the tubular surface model, Vandana Mohan, Georgia Institute of Technology (USA); Ganesh Sundaramoorthi, Univ. of California, Los Angeles (USA); Marek Kubicki, Brigham and Women's Hospital (USA); Allen R. Tannenbaum, Georgia Institute of Technology (USA) . . . . [7624-81]

Robustness of interactive intensity thresholding based breast density assessment in MR-mammography, Sadie Reed, Gokhan Ertas, The Institute of Cancer Research (UK); Ruth M. L. Warren, Univ. of Cambridge (UK); Martin O. Leach, The Institute of Cancer Research (UK). [7624-82]

Breast

Repeatability and classifier bias in computer-aided diagnosis for breast ultrasound, Karen Drukker, Lorenzo L. Pesce, Maryellen L. Giger, The Univ. of Chicago (USA) . . . . . [7624-83]

Effect of variable gain on computerized texture analysis on digitalized mammograms, Hui Li, Maryellen L. Giger, Li Lan, Yading Yuan, Neha Bhooshan, Olufunmilayo I. Olopade, The Univ. of Chicago (USA) . . . . . [7624-84]

Breast MRI intensity non-uniformity correction using mean shift, Aliaksei Makarau, Henkjan J. Huisman, Roel Mus, Miranda Zijp, Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [7624-85]

Assessment of performance and reliability of interactive CAD schemes, Xiao-Hui Wang, Sang Cheol Park, Jun Tan, Joseph K. Leader, Bin Zheng, Univ. of Pittsburgh (USA) . . . . . [7624-86]

Automatic estimation of breast density using a combined information of histogram statistics and boundary gradients, Youngwoo Kim, Chang-Won Kim, Jong-Hyo Kim, Seoul National Univ. College of Medicine (Korea, Republic of) . . . . . [7624-87]

Similarity based false-positive reduction for breast cancer using radiographic and pathologic imaging features, Akshay Pai, Ravi K. Samala, Jianying Zhang, Wei Qian, The Univ. of Texas at El Paso (USA) . . . . . [7624-88]

Classification of mammographic masses: influence of regions used for feature extraction on the classification performance, Florian Wagner, Thomas Wittenberg, Matthias Elter, Fraunhofer-Institut für Integrierte Schaltungen (Germany) . . . . . [7624-89]

An improved method for segmentation of mammographic masses, Matthias Elter, Christian Held, Fraunhofer-Institut für Integrierte Schaltungen (Germany) [7624-90]

Computer aided diagnosis of digital mammography images using unsupervised clustering and biclustering techniques, Yasser M. Kadah, Mohamed A. Al-Olfe, Fadhl M. Al-Akwaa, Wael A. Mohamed, Cairo Univ. (Egypt) . . . [7624-91]

Multi-agent method for masses classification in mammogram, Fangqing Peng, Lihua Li, Weidong Xu, Wei Liu, Hangzhou Dianzi Univ. (China) . . . [7624-92]

Interactive mammogram retrieval system based on eye-tracking and fuzzy perceptual relevance feedback, Wei Liu, Lihua Li, Hangzhou Dianzi Univ. (China) . . . . . [7624-93]

Computer-aided breast calcification auto detection in cone beam breast CT, Xiaohua Zhang, Ruola Ning, Univ. of Rochester Medical Ctr. (USA) . . . . [7624-94]

Evaluation of a 3D lesion segmentation algorithm on breast tomosynthesis and breast CT images, Ingrid S. Reiser, Santosh Joseph, Robert M. Nishikawa, Maryellen L. Giger, The Univ. of Chicago (USA); John M. Boone, Karen K. Lindfors, Univ. of California, Davis (USA); Alexandra V. Edwards, The Univ. of Chicago (USA); Nathan J. Packard, Univ. of California, Davis (USA); Richard H. Moore, Daniel B. Kopans, Massachusetts General Hospital (USA) . . . . . [7624-95]

Detection of breast masses and false positive reduction by bilateral analysis on whole breast ultrasound images, Takeshi Hara, Daisuke Fukuoka, Chisako Muramatsu, Fukutaro Ishihara, Toshiaki Okada, Gifu Univ. (Japan); Etsuo Takada M.D., Dokkyo Medical Univ. (Japan); Takako Morita M.D., Chunichi Hospital (Japan); Tokiko Endo M.D., Nagoya National Hospital (Japan); Hiroshi Fujita, Gifu Univ. (Japan). . . . . [7624-96]

Cardiac/Vascular

Segmentation and analysis of pulmonary artery tree from CTA data, Jiehui Zhang, Chongqing Univ. (China); Jamshid Dehmeshki, Kingston Univ. (UK); Zhongshi He, Chongqing Univ. (China); Salah-Dine Qanadli, Univ. de Lausanne (Switzerland) . . . . . [7624-97]

Automatic detection of plaques with severe stenosis in coronary vessels of CT angiography, Dinesh M. Siddu, Pandu R. Devarakota, Jitendra Kumar, Siemens Information Systems Ltd. (India) . . [7624-98]

Automatic lumen segmentation from intravascular OCT images, Rafik M. K. Bourezak, Ecole Polytechnique de Montréal (Canada); Guy Lamouche, National Research Council Canada (Canada); Farida Cheriet, Ecole Polytechnique de Montréal (Canada) . . . . . [7624-99]

Automated myocardial perfusion from coronary x-ray angiography, Corstiaan J. Storm, Ziekenhuis Walcheren (Netherlands); Cornelis H. Slump, Univ. Twente (Netherlands) . . . . . [7624-100]

An adaptive 3D region growing algorithm to automatically segment and identify thoracic aorta and its centerline using computed tomography angiography scans, Filipa I. Matos Ferreira, Jamshid Dehmeshki, Kingston Univ. (UK); Allan Britten, A. Belli, St. George's Univ. of London (UK); Salah-Dine Qanadli, Anne Marie Jouannic, Univ. de Lausanne (Switzerland); Hamden Amin, M. Dehkordi, MedIAR Ltd. (UK). . . . . [7624-101]

Lung

Filter learning and evaluation of the computer aided visualization and analysis (CAVA) paradigm for pulmonary nodules using the LIDC-IDRI database, Rafael Wiemker, Philips GmbH (Germany); Ekta Dharaiya, Philips Medical Systems (USA); Amnon Steinberg, Philips Medical Systems Technologies Ltd. (Israel); Thomas Buelow, Axel Saalbach, Philips Medizin Systeme GmbH (Germany); Torbjörn Vik, Philips Research (Germany) . . . . . [7624-102]

Modeling uncertainty in classification design of computer aided detection, Rahil Hosseini, Jamshid Dehmeshki, Sarah A. Barman, Mahdi Mazinani, Kingston Univ. (UK); Salah-Dine Qanadli, Univ. de Lausanne (Switzerland) . . . . . [7624-103]

Usefulness of texture features for segmentation of lungs with severe diffuse interstitial lung disease, Jiahui Wang, Duke Univ. (USA); Feng Li, The Univ. of Chicago (USA); Qiang Li, Duke Univ. (USA)[7624-104]

Realistic simulated lung nodule dataset for testing CAD detection and sizing, Robert D. Ambrosini, Walter G. O'Dell, Univ. of Rochester (USA) . . . . . [7624-105]

Predicting LIDC diagnostic characteristics by combining spatial and diagnostic opinions, William H. Horsthemke, Daniela Stan Raicu, Jacob D. Furst, DePaul Univ. (USA) . . . . . [7624-106]

Improving CAD performance in pulmonary embolism detection: preliminary investigation, Sang Cheol Park, Brian E. Chapman, Christopher R. Deible, Sean Lee, Bin Zheng, Univ. of Pittsburgh (USA) . . . . . [7624-107]

Selective reduction of CAD false-positive findings, Niccolo Camarlinghi, Francesco Bagagli, Istituto Nazionale di Fisica Nucleare (Italy); Ilaria Gori, Bracco Imaging (Italy); Alessandra Retico, Istituto Nazionale di Fisica Nucleare (Italy) . . . . . [7624-108]

A model for the relationship between semantic and content based similarity using LIDC, Grace M. Dasovich, DePaul Univ. (USA) and Northwestern Univ. (USA) and The Johns Hopkins Univ. (USA); Robert Kim, The Johns Hopkins Univ. (USA); Daniela Stan Raicu, Jacob D. Furst, DePaul Univ. (USA) . . . . . [7624-109]

Variation compensation and analysis on diaphragm curvature analysis for emphysema quantification on whole lung CT scans, Brad M. Keller, Anthony P. Reeves, Cornell Univ. (USA); R. Graham Barr M.D., Columbia Univ. (USA); David F. Yankelevitz, Claudia I. Henschke, Weill Cornell Medical College (USA) . . [7624-110]

Microscopy

Adjacent slice prostate cancer prediction to inform MALDI imaging biomarker analysis, Shao-Hui Chuang, Xiaoyan Sun, Jiang Li, Frederic McKenzie, Old Dominion Univ. (USA) . . . . . [7624-111]

Robust detection of the counting area in blood smears for computer aided hematology, Stephan Rupp, Timo Schlarb, Thorsten Zerfass, Fraunhofer-Institut für Integrierte Schaltungen (Germany) . . . . . [7624-113]

Automatic recognition of abnormal cells in cytological tests using multispectral imaging, Arkadiusz Gertych, Gretchen Galliano M.D., Shikha Bose M.D., Daniel L. Farkas, Cedars-Sinai Medical Ctr. (USA) . . . . . [7624-114]

Segmentation of follicular regions on H&E slides using a matching filter and active contour model, Kamel Belkacem-Boussaid, Jeffrey W. Prescott, Gerard Lozanski M.D., Metin N. Gurcan, The Ohio State Univ. Medical Ctr. (USA). . . . . [7624-115]

Retina

Optic disk detection using energy maximization on match filter surface, Atif Mughees, Almas Anjum, National Univ. of Sciences and Technology (Pakistan). . . . . [7624-116]

Classification of left and right eye retinal images, Ngan Meng Tan, Jiang Liu, Damon W. K. Wong, Zhang Zhuo, Shijian Lu, Joo Hwee Lim, Huiqi Li, A*STAR Institute for Infocomm Research (Singapore); Tien Yin Wong M.D., Singapore Eye Research Institute (Singapore) . . . . . [7624-117]

Enhancement of optic cup detection through an improved vessel kink detection framework, Damon W. K. Wong, Jiang Liu, Ngan Meng Tan, Zhang Zhuo, Shijian Lu, Joo Hwee Lim, Huiqi Li, A*STAR Institute for Infocomm Research (Singapore); Tien Yin Wong M.D., National Univ. of Singapore (Singapore) and Singapore Eye Research Institute (Singapore) . . [7624-118]

Retinal blood vessel tortuosity: a prospective diagnostic tool for the analysis of retinopathies, Vinayak S. Joshi, Joseph M. Reinhardt, Michael D. Abramoff, The Univ. of Iowa (USA) . . . . . [7624-119]

A new algorithm for detecting smaller retinal blood vessels in fundus images, Robert W. LeAnder, Praveen Bidari, Tauseef A. Mohammed, Moumita Das, Scott E. Umbaugh, Southern Illinois Univ. Edwardsville (USA) . . . . . [7624-120]

Vertical cup-to-disc ratio measurement for diagnosis of glaucoma on fundus images, Yuji Hatanaka, Univ. of Shiga Prefecture (Japan); Atsushi Noudo, Chisako Muramatsu, Akira Sawada, Takeshi Hara, Tetsuya Yamamoto M.D., Hiroshi Fujita, Gifu Univ. (Japan) . . . . . [7624-121]

3D reconstruction of the optic nerve head using stereo fundus images for computer-aided diagnosis of glaucoma, Li Tang, Young H. Kwon, Wallace L. M. Alward M.D., Emily C. Greenlee, The Univ. of Iowa Hospitals and Clinics (USA); Kyungmoo Lee, Mona K. Garvin, The Univ. of Iowa (USA); Michael D. Abramoff, The Univ. of Iowa Hospitals and Clinics (USA) and The Univ. of Iowa (USA) and Veteran's Administration Medical Ctr. (USA)[7624-122]

Fundus image registration for vestibularis research, Vamsi K. Ithapu, Indian Institute of Technology Guwahati (India); Armin Fritsche, Ariane Oppelt, Martin Westhofen M.D., Thomas M. Deserno, RWTH Aachen (Germany) . . . . . [7624-123]

Toward automatic phenotyping of retinal images from genetically determined mono- and dizygotic twins using amplitude modulation-frequency modulation methods, Peter Soliz, Herbert T. Davis III, VisionQuest Inc. (USA); Victor Murray, Marios Pattichis, The Univ. of New Mexico (USA); E. Simon Barriga, VisionQuest Biomedical, LLC (USA); Stephen R. Russell, The Univ. of Iowa Hospitals and Clinics (USA). . . . [7624-124]

Other

Interobserver variability effects on computerized volume analysis of treatment response of head and neck lesions in CT, Lubomir M. Hadjiiski, Heang-Ping Chan, Mohannad Ibrahim, Berkman Sahiner, Univ. of Michigan (USA); Sachin Gujar, The Johns Hopkins Hospital (USA); Suresh K. Mukherji, Univ. of Michigan (USA) . . . . . [7624-125]

Evaluation of universal plan-indices and quality-factor of treatment plans in radiation therapy treatment of cancer, Anil P. Pyakuryal, Univ. of Illinois at Chicago (USA) and Northwestern Memorial Hospital (USA) . . . . . [7624-126]

Source separation on hyperspectral cube applied to dermatology, Jhimli Mitra, Romuald Jolivot, Pierre Vabres, Franck S. Marzani, Univ. de Bourgogne (France) . . . . . [7624-127]

Segmentation of individual ribs from low-dose chest CT, Jaesung Lee, Anthony P. Reeves, Cornell Univ. (USA) . . . . [7624-128]

A comparison of basic deinterlacing approaches for a computer assisted diagnosis approach of videoscope images, Andreas Kage, Fraunhofer-Institut für Integrierte Schaltungen (Germany); Marcia I. Canto M.D., Emmanuel Gorospe M.D., Antonio Almario, The Johns Hopkins Univ. (USA); Christian Münzenmayer, Fraunhofer-Institut für Integrierte Schaltungen (Germany). . . . . [7624-129]

Segmentation and classification of dermatological lesions, Aurora Saez, Begoña Acha Pinero, Carmen Serrano Gotarredona, Univ. de Sevilla (Spain) . . . . . [7624-130]

Pathology detection in medical images based on oriented active appearance models, Xinjian Chen, Jayaram K. Udupa, Drew A. Torigian, Abass Alavi, The Univ. of Pennsylvania Health System (USA) . . . . . [7624-131]

Automated segmentation of mucosal change in rhinosinusitis patients, William F. Sensakovic, Jayant Pinto, Faud Baroody, Adam Starkey, Samuel G. Armato III, The Univ. of Chicago (USA) . . . . . [7624-132]

Diagnosis of disc herniation based on classifiers and features generated from spine MR images, Jaehan Koh, Vipin Chaudhary, Univ. at Buffalo (USA); Gurmeet S. Dhillon, Proscan Imaging, LLC (USA) . . . . . [7624-133]

Skin lesion progression with optical spectroscopy navigation and tracking, Alexandru Duliu, Asad Safi, Tobias R. Lasser, Thomas Wendler, Sibylle Ziegler, Nassir Navab, Technische Univ. München (Germany) . . . . . [7624-134]

Computer aided diagnosis of osteoporosis using multislice CT images, Eiji Takahashi, Shinsuke Saita, Yoshiki Kawata, Noboru Niki, Univ. of Tokushima (Japan); Masako Ito M.D., Nagasaki Univ. (Japan); Hiromu Nishitani M.D., Univ. of Tokushima (Japan); Noriyuki Moriyama, National Cancer Ctr. Hospital East (Japan). . . . . [7624-135]

Conference 7627 Posters

Image Perception, Observer Performance, and Technology Assessment

Session Chairs: **Darrin C. Edwards,** The Univ. of Chicago; **David J. Manning,** Univ. of Cumbria (UK)

Assessment of automated detection of analyzable metaphase chromosome cells depicted on scanned digital microscopic images, Yuchen Qiu, Univ. of Oklahoma (USA); Xingwei Wang, Univ. of Pittsburgh (USA); Yuhua Li, Hong Liu, Shibo Li, Univ. of Oklahoma (USA); Bin Zheng, Univ. of Pittsburgh (USA) . . . . . [7627-43]

Does a spatial frequency pathway lead to the first overt decision in the pulmonary nodule search task?, Mariusz W. Pietrzyk, David J. Manning, Tim Donovan, Univ. of Cumbria (UK); Alan Dix, Lancaster Univ. (UK) . . . . . [7627-44]

Effect of background detail on CD curve slope in CT head images, Kent M. Ogden, SUNY Upstate Medical Univ. (USA); Walter Huda, Sameer Tipnis, Medical Univ. of South Carolina (USA). . . . . [7627-45]

A support vector machine designed to identify breasts at high risk using multi-probe generated REIS signals: a preliminary assessment, David Gur, Bin Zheng, Univ. of Pittsburgh (USA); Sreeram Dhurjaty, Dhurjaty Electronics Consulting LLC (USA); Dror Lederman, Jules H. Sumkin M.D., Margarita Zuley, Univ. of Pittsburgh (USA) . . . . . [7627-46]

Comparison of algorithms for ultrasound image segmentation without ground truth, Karan Sikka, Indian Institute of Technology Guwahati (India); Thomas M. Deserno, RWTH Aachen (Germany) . . . . . [7627-47]

Optimization of detector thickness for single slice helical CT with ROC study, Cheng Shi, Yuxiang Xing, Tsinghua Univ. (China) . . . . . [7627-48]

Evaluation of deformable registration on preclinical datasets using mass conservation, Shekhar Dwivedi, Yogish Mallya, Philips Electronics India Ltd. (India). . . . . [7627-49]

Quantification of diagnostic radiography image quality based on patient anatomical contrast-to-noise ratio: a preliminary study with chest images, Yuan Lin, Duke Univ. (USA); Xiaohui Wang, William J. Sehnert, David H. Foos, Lori L. Barski, Carestream Health, Inc. (USA); Ehsan Samei, Duke Univ. (USA) . . [7627-50]

Efficacy of fractal analysis in identifying glaucomatous damage, Paul Young June Kim, Khan M. Iftekharuddin, The Univ. of Memphis (USA); Pinakin Gunvant, Southern College of Optometry (USA) . . . . . [7627-51]

Conference 7628 Posters

Advanced PACS-based Imaging Informatics and Therapeutic Applications

DICOMGrid: a middleware to integrate PACS and EELA-2 grid infrastructure, Ramon A. Moreno, Marina de Sá Rebelo, Marco A. Gutierrez, Univ. de São Paulo (Brazil) . . . . . [7628-22]

Content-based numerical report searching for image enabled case retrieval, Liang Xue, Tonghui Ling, Zhenyu He, Jianguo Zhang, Shanghai Institute of Technical Physics (China) . . . . . [7628-32]

Web-accessible cervigram automatic segmentation tool, Zhiyun Xue, Sameer K. Antani, L. Rodney Long, George R. Thoma, National Library of Medicine (USA) [7628-33]

Image consistency rendering for portable chest radiography, Zhimin Huo, Jane Y. Zhang, David H. Foos, Carestream Health, Inc. (USA). . . . . [7628-34]

Displaying Dicom-SR reports on non-SR aware radiology workstations, Goran Carlsson, Sahlgrenska Univ. Hospital (Sweden); Lars Lindsköld, Mikael Wintell, Västra Götalandsregionen (Sweden) . . . . . [7628-35]

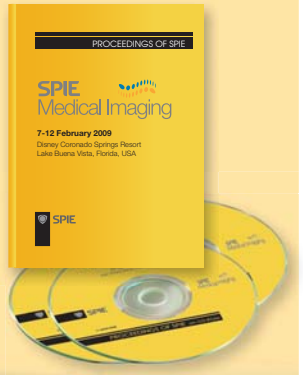
Data migration and persistence management in a medical imaging informatics data grid, Jasper Lee IV, The Univ. of Southern California (USA) [7628-36]

Computer-aided diagnosis workstation and teleradiology network system for chest diagnosis using the web medical image conference system with a new information security solution, Hitoshi Satoh, Tokyo Health Care Univ. (Japan). . . . . [7628-37]

Symposium Procedings/CD-ROMs

Order Proceedings volumes now and receive low prepublication prices

Vol#	Title *(Editor)*	Prepublication Price
7622	**Medical Imaging 2010: Physics of Medical Imaging** *(E. Samei/N. J. Pelc)*	$205
7623	**Medical Imaging 2010: Image Processing** *(B. M. Dawant/ D. R. Haynor)*	$185
7624	**Medical Imaging 2010: Computer-Aided Diagnosis** *(N. Karssemeijer/ R. M. Summers)*	$145
7625	**Medical Imaging 2010: Visualization, Image-Guided Procedures, and Modeling** *(K. H. Wong/M. I. Miga)*	$135
7626	**Medical Imaging 2010: Biomedical Applications in Molecular, Structural, and Functional Imaging** *(R. C. Molthen/J. B. Weaver)*	$105
7627	**Medical Imaging 2010: Image Perception, Observer Performance, and Technology Assessment** *(D. J. Manning/ C. K. Abbey)*	$80
7628	**Medical Imaging 2010: Advanced PACS-based Imaging Informatics and Therapeutic Applications** *(B. J. Liu/W. W. Boonn)*	$60
7629	**Medical Imaging 2010: Ultrasonic Imaging, Tomography, and Therapy** *(J. D'hooge/ S. A. McAleavey)*	$80



Proceedings on CD-ROM

Full-text papers from all 8 Proceedings volumes. PC, Macintosh, and Unix compatible.

Medical Imaging 2010
(Includes Vols. 7622-7629)
Order No. **CDS377** • Est. pub. April 2010
Meeting attendee: $135
Nonattendee member price: $700
Nonattendee nonmember price: $905

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 8
Room: Town & Country. . . . Wed. 8:00 to 9:40 am

Selenium-based Detectors

Session Chairs: **John A. Rowlands,** Sunnybrook Health Sciences Ctr. (Canada); **John Yorkston,** Carestream Health, Inc.

8:00 am: **Monte Carlo simulation of amorphous selenium imaging detectors**, Yuan Fang, Univ. of Waterloo (Canada) and U.S. Food and Drug Administration (USA); Andreu Badal, U.S. Food and Drug Administration (USA); Nicholas Allec, Karim S. Karim, Univ. of Waterloo (Canada); Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [7622-39]

8:20 am: **50 µm pixel size a-Se mammography imager with high DQE and increased temperature resistance**, George Zentai, Larry Partain, Michelle Richmond, Varian Medical Systems, Inc. (USA); Koichi Ogusu, Satoshi Yamada, Hamamatsu Photonics K.K. (Japan). . . . . [7622-40]

8:40 am: **Investigation of x-ray induced ghosting and its recovery mechanisms in multilayer selenium structures under low bias for mammography**, Shaikh A. Mahmood, M. Zahangir Kabir, Concordia Univ. (Canada); Olivier Tousignant, Jonathan Greenspan, Mélissa F. Mokam, Habib Mani, Luc Laperriere, Anrad Corp. (Canada) . . . . . [7622-41]

9:00 am: **Amorphous selenium metal-semiconductor-metal photodetector integrated with an amorphous silicon passive pixel sensor array for large area, high speed, indirect detection, medical imaging applications**, Kai Wang, Univ. of Waterloo (Canada) and Thunder Bay Regional Research Institute (Canada); Kyung-Wook Shin, Karim S. Karim, Univ. of Waterloo (Canada) . . . . . [7622-42]

9:20 am: **Removal of trapped charge in selenium detectors**, Denny L. Lee, DxRay, Inc. (USA); Andrew D. A. Maidment, The Univ. of Pennsylvania Health System (USA) . . . . . [7622-43]

Coffee Break . . . . . 9:40 to 10:10 am

7622 continues on page 40

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 5
Room: Golden West . . . . . .Wed. 8:00 to 9:40 am

Cardiac and Vascular

Session Chair: **Heang-Ping Chan,** Univ. of Michigan

8:00 am: **Auto-biometric for M-mode echocardiography**, Wei Zhang, Jin-Hyeong Park, Shaohua K. Zhou, Siemens Corporate Research (USA) . . . . . [7624-20]

8:20 am: **Automatic coronary calcium scoring in low-dose non-ECG-synchronized thoracic CT scans**, Ivana Isgum, Mathias Prokop, Peter C. Jacobs, Martijn J. Gondrie, Willem P. Th. M. Mali, Max A. Viergever, Bram van Ginneken, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [7624-21]

8:40 am: **An hybrid CPU-GPU framework for quantitative follow-up of abdominal aortic aneurysm volume by CT angiography**, Claude Kauffmann, An Tang, Gilles Soulez, Ctr. Hospitalier de l'Univ. de Montréal (Canada) . . . . . [7624-22]

9:00 am: **Automated segmentation and tracking of coronary arteries in cardiac CT scans: comparison of performance with a clinically used commercial software**, Chuan Zhou, Heang-Ping Chan, Aamer R. Chughtai, Smita Patel, Lubomir M. Hadjiiski, Berkman Sahiner, Jun Wei, Ella A. Kazerooni, Univ. of Michigan (USA) . . . . . [7624-23]

9:20 am: **MACD: an imaging marker for cardiovascular disease**, Melanie Ganz, Univ. of Copenhagen (Denmark); Marleen de Bruijne, Univ. Medical Ctr. Rotterdam (Netherlands); Mads Nielsen, Copenhagen Univ. (Denmark) and Nordic Bioscience (Denmark) . . . . . [7624-24]

Coffee Break . . . . . 9:40 to 10:10 am

7624 continues on page 40

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

SESSION 1
Room: San Diego . . . . . .Wed. 8:00 to 9:40 am

Keynote and Breast Lesions

Session Chair: **Berkman Sahiner,** Univ. of Michigan

8:00 am: **Maintaining quality in the UK breast screening program** *(Keynote Presentation),* Alastair G. Gale, Loughborough Univ. (UK). [7627-01]

9:00 am: **Rating scales for observer performance studies**, Robert M. Nishikawa, Yulei Jiang, Charles E. Metz, Ingrid S. Reiser, The Univ. of Chicago (USA) . . . . . [7627-02]

9:20 am: **Evaluating the realism of synthetically generated mammographic lesions: an observer study**, Michael A. Berks, David Barbarosa da Silva, The Univ. of Manchester (UK); Caroline R. M. Boggis, Univ. Hospital of South Manchester (UK); Susan M. Astley, The Univ. of Manchester (UK) . . . . . [7627-03]

Coffee Break . . . . . 9:40 to 10:10 am

7627 continues on page 40

SPIE Career Center
Career Advancement Made Easy

The SPIE Career Center is the ideal place to be seen by employers who are specifically looking for optics and photonics professionals. Whether or not you are actively looking for new employment, it makes sense to post your resume on the SPIE Career Center because you never know what opportunities may be out there looking for you. Also, checking the job listings is a great way to see what is hot and what is not in the job market, and whether your particular skills are among those most in demand.

The SPIE Career Center offers:

✔ CONFIDENTIAL RESUME POSTING
Make your resume available to employers, and release your contact information only when you are ready.

✔ JOB SEARCH AGENT
Create a password-protected account and receive automatic email notification of new jobs that match your search criteria.

✔ SAVED JOBS CAPABILITY
Save up to 100 jobs to a folder in your account so you come back to apply when you are ready.

SPIE Career Center makes finding the perfect job easy.

Contact Robert Dentel for information.

spie.org/careercenter

+1 360 715 3705 jobsales@spie.org

SPIE

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 9
Room: Town & Country. . Wed. 10:10 am to 12:10 pm

Photon Counting Detectors

Session Chairs: **Mats E. Danielsson,** Royal Institute of Technology (Sweden); **John M. Sabol,** GE Healthcare

10:10 am: **Noise in energy-discriminating photon-counting x-ray imaging detectors**, Jesse Tanguay, Ian A. Cunningham, Robarts Research Institute (Canada) . . . . . [7622-44]

10:30 am: **Photon counting pixel and array in amorphous silicon technology for large area digital medical imaging applications**, Mohammad Yeke Yazdandoost, Kyung-Wook Shin, Nader Safavian, Karim S. Karim, Univ. of Waterloo (Canada) . . . . . [7622-45]

10:50 am: **Microcomputed tomography with a second generation photon-counting x-ray detector: contrast enhancement and material separation**, Xiaolan Wang, The Johns Hopkins Univ. (USA); Dirk Meier, Bjørn M. Sundal, Petter Oya, Gunnar E. Maehlum, Gamma Medica-Ideas, Inc. (Norway); Douglas J. Wagenaar, Gamma Medica-Ideas, Inc. (USA); Benjamin M. W. Tsui, The Johns Hopkins Univ. (USA); Bradley E. Patt, Gamma Medica-Ideas, Inc. (USA); Eric C. Frey, The Johns Hopkins Univ. (USA) . . . . . [7622-46]

11:10 am: **An analytical model of the effects of pulse pileup on the energy spectrum recorded by energy resolved photon counting x-ray detectors**, Katsuyuki Taguchi, Eric C. Frey, Xiaolan Wang, The Johns Hopkins Univ. (USA); Jan S. Iwanczyk, William C. Barber, DxRay, Inc. (USA). . . . . [7622-47]

11:30 am: **Practical energy response estimation of photon counting detectors for spectral x-ray imaging**, Dong-Goo Kang, Jongha Lee, Younghun Sung, Seong-Deok Lee, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [7622-48]

11:50 am: **Fast photon counting CdTe detectors for diagnostic clinical CT: dynamic range, stability, and temporal response**, William C. Barber, Einar Nygard, Jan C. Wessel, Nail Malakhov, Gregor Wawrzyniak, Neal E. Hartsough, Thulasi Gandhi, Jan S. Iwanczyk, DxRay, Inc. (USA). . . . . [7622-49]

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

7622 continues on page 41

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 6
Room: Golden West . Wed. 10:10 am to 12:10 pm

Liver and Lymph Nodes

Session Chair: **Carol L. Novak,** Siemens Corporate Research

10:10 am: **Automated classification of lymph nodes in USPIO-enhanced MR-images: a comparison of three segmentation methods**, Oscar A. Debats M.D., Nico Karssemeijer, Jelle O. Barentsz, Henkjan J. Huisman, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [7624-25]

10:30 am: **CT liver volumetry using geodesic active contour segmentation with a level-set algorithm**, Kenji Suzuki, Mark L. Epstein, Ryan Kohlbrenner, Ademola Obajuluwa, Jianwu Xu, The Univ. of Chicago (USA); Masatoshi Hori M.D., Osaka Univ. (Japan); Richard Baron M.D., The Univ. of Chicago (USA) . . . . . [7624-26]

10:50 am: **Multi-class SVM model for fMRI-based classification and grading of liver fibrosis**, Moti Freiman, Yehonathan Sela, The Hebrew Univ. of Jerusalem (Israel); Yifat Edrei, Orit Pappo, Hadassah Hebrew Univ. Medical Ctr. (Israel); Leo Joskowicz, The Hebrew Univ. of Jerusalem (Israel); Rinat Abramovitch, Hadassah Hebrew Univ. Medical Ctr. (Israel) . [7624-27]

11:10 am: **Semi-automatic central-chest lymph-node definition from 3D MDCT images**, William E. Higgins, Kongkuo Lu, The Pennsylvania State Univ. (USA) . . . . . [7624-28]

11:30 am: **Computer-aided lymph node detection in abdominal CT images**, Jiamin Liu, Jacob White, Ronald M. Summers, National Institutes of Health (USA) . . . . . [7624-29]

11:50 am: **Automated liver lesion characterization using fast kV switching dual energy computed tomography imaging**, Alberto Santamaria-Pang, Rahul Bhotika, GE Global Research (USA); Amy K. Hara M.D., William Pavlicek, Alvin Silva M.D., Mayo Clinic Scottsdale (USA); David A. Langan, GE Global Research (USA); Sokratis Makrogiannis, Medstar Research Institute (USA); Brian W. Thomsen, Scott X. Robertson, Darin R. Okerlund, GE Healthcare (USA). . . . . [7624-30]

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

7624 continues on page 41

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

SESSION 2
Room: San Diego . . . Wed. 10:10 am to 12:10 pm

Image Display and Presentation

Session Chair: **David L. Wilson,** Case Western Reserve Univ.

10:10 am: **Use of a visual discrimination model to detect compression artifacts in virtual pathology images**, Jeffrey P. Johnson, Siemens Corporate Research (USA); Elizabeth A. Krupinski, The Univ. of Arizona (USA); Michelle Yan, Siemens Corporate Research (USA); Hans Roehrig, The Univ. of Arizona (USA) . . . . . [7627-04]

10:30 am: **Spatial noise suppression for LCD displays: noise contrast**, William J. Dallas, Hans Roehrig, The Univ. of Arizona (USA); Jiahua Fan, GE Healthcare (USA); Elizabeth A. Krupinski, The Univ. of Arizona (USA); Jeffrey P. Johnson, Siemens Corporate Research (USA) . . . . . [7627-05]

10:50 am: **High-fidelity color video reproduction of open surgery by six-band camera**, Masahiro Yamaguchi, Yuri Murakami, Tokyo Institute of Technology (Japan); Hiroyuki Hashizume, Kasaoka Daiichi Hospital (Japan); Hideaki Haneishi, Chiba Univ. (Japan); Koshi Kanno, NTT Data i Corp. (Japan); Yasuhiro Komiya, Olympus Corp. (Japan) . . . [7627-06]

11:10 am: **DICOM GSPS affects on contrast detection threshold**, David L. Leong, Analogic Corp. (USA) and Univ. College Dublin (Ireland); Tamara Miner Haygood M.D., Gary J. Whitman, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . . [7627-07]

11:30 am: **Comprehensive quantitative image quality evaluation of compressed sensing MRI reconstructions using a weighted perceptual difference model (Case-PDM): selective evaluation, disturbance calibration and aggregative evaluation of noise, blur, aliasing and oil-painting artifacts**, Jun Miao, Case Western Reserve Univ. (USA); Feng Huang, Invivo Corp. (USA); David L. Wilson, Case Western Reserve Univ. (USA) and Univ. Hospitals of Cleveland (USA) . . . . . [7627-08]

11:50 am: **A gaze-contingent high-dynamic range display for medical imaging applications**, Wei-Chung Cheng, Aldo Badano, US Food and Drug Administration (USA) . . . . . [7627-09]

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

7627 continues on page 41

SPIE iPhone App
Get it at the app store

What? When? Find anything happening at the conference.

Who? Find anyone at the conference.

Who's exhibiting? Find your key vendors on the exhibit floor.

Final Program In the palm of your hand.

Have an extra hour? A simple way to find any presentation, course or special event—at any hour.

My Schedule Lay out your schedule for the week.

Search Quickly search the entire conference program.

SPIE

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 10
Room: Town & Country. . . . .Wed. 1:20 to 3:00 pm

CT Dose, Quality, and Techniques

Session Chair: **Michael Grass,**
Philips Research (Germany)

1:20 pm: **Performance assessment of a new dynamic scan mode for perfusion computed tomography using a biological phantom**, Ulrike Haberland, Siemens Medical Solutions GmbH (Germany) and Technische Univ. Dresden (Germany); Ernst Klotz, Siemens Medical Solutions GmbH (Germany); Nasreddin Abolmaali, Technische Univ. Dresden (Germany). . . . . [7622-50]

1:40 pm: **Design, optimization and testing of a multi-beam micro-CT scanner based on nanotechnology enabled x-ray source**, Rui Peng, Jian Zhang, Xiomara Calderon-Colon, Sigen Wang, Shabana Sultana, The Univ. of North Carolina at Chapel Hill (USA); Peng Wang, Xintek Inc. (USA); Sha Chang, Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [7622-51]

2:00 pm: **High power distributed x-ray source**, Kris Frutschy, Bogdan Neculaes, Lou Inzinna, Antonio Caiafa, Joseph Reynolds, Yun Zou, Xi Zhang, Satish Gunturi, Yang Cao, Bruno De Man, Dan McDevitt, GE Global Research (USA); Rick Roffers, Brian Lounsberry, GE Healthcare (USA); Norbert J. Pelc, Stanford Univ. (USA) . . . . . [7622-52]

2:20 pm: **Improved CT image quality using a new fully physical imaging chain**, Jens Wiegert, Matthias Bertram, Steffen Wiesner, Philips Research (Germany); Richard Thompson, Kevin M. Brown, Philips Medical Systems (USA); Yoad Yagil, Tsvi Katchalski, Philips Medical Systems Technologies Ltd. (Israel) . . [7622-53]

2:40 pm: **Patient-specific dose and risk estimation in pediatric chest CT: a study in 28 patients**, Xiang Li, Ehsan Samei, W. Paul Segars, Gregory M. Sturgeon, James G. Colsher, Donald P. Frush, Duke Univ. (USA) . . . . . [7622-54]

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

7622 continues on page 42

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 7
Room: Golden West . . . . . .Wed. 1:20 to 3:00 pm

Pulmonary Patterns

Session Chair: **Rafael Wiemker,**
Philips Research (Germany)

1:20 pm: **What catches a radiologist's eye? A comprehensive comparison of feature types for saliency prediction**, Mohammad A. Alzubaidi, Vineeth Balasubramanian, Arizona State Univ. (USA); Ameet Patel, Mayo Clinic (USA); Sethuraman Panchanathan, John A. Black, Jr., Arizona State Univ. (USA) . [7624-33]

1:40 pm: **Interactive annotation of textures in thoracic CT scans**, Thessa T. J. P. Kockelkorn, Pim A. de Jong, Hester A. Gietema, Univ. Medical Ctr. Utrecht (Netherlands); Jan C. Grutters, St. Antonius Ziekenhuis Nieuwegein (Netherlands); Mathias Prokop, Bram van Ginneken, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [7624-31]

2:00 pm: **Rib suppression in chest radiographs to improve classification of textural abnormalities**, Laurens E. Hogeweg, Christian Mol, Pim A. de Jong, Bram van Ginneken, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [7624-32]

2:20 pm: **Combinational feature optimization for classification of lung tissue images**, Ravi K. Samala, The Univ. of Texas at El Paso (USA); Tatyana Zhukov, H. Lee Moffitt Cancer Ctr. & Research Institute (USA); Jianying Zhang, The Univ. of Texas at El Paso (USA); Melvyn S. Tockman, H. Lee Moffitt Cancer Ctr. & Research Institute (USA); Wei Qian, The Univ. of Texas at El Paso (USA) . . . . . [7624-34]

2:40 pm: **Classification of interstitial lung disease patterns with topological texture features**, Markus B. Huber, Mahesh B. Nagarajan, Univ. of Rochester Medical Ctr. (USA); Gerda Leinsinger, Ludwig-Maximilians-Univ. München (Germany); Lawrence A. Ray, Carestream Health, Inc. (USA); Axel Wismueller, Univ. of Rochester Medical Ctr. (USA) . . . . . [7624-35]

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

7624 continues on page 42

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

SESSION 3
Room: San Diego . . . . . .Wed. 1:20 to 3:00 pm

Eyetracking and Vision

Session Chair: **David J. Manning,**
Univ. of Cumbria (UK)

1:20 pm: **The assessment of stroke multidimensional CT and MR imaging using eye movement analysis: does modality preference enhance observer performance?**, Lindsey H. K. Cooper, Alastair G. Gale, Loughborough Univ. (UK); Janak Saada, Swamy Gedela, Norfolk and Norwich Univ. Hospital (UK); Hazel J. Scott, Loughborough Univ. (UK); Andoni Toms, Norfolk and Norwich Univ. Hospital (UK) . . . . . [7627-10]

1:40 pm: **Breast Screening: visual search as an aid for digital mammographic interpretation training**, Yan Chen, Alastair G. Gale, Hazel J. Scott, Loughborough Univ. (UK); Andrew Evans, Jonathan C. James, Nottingham Breast Institute (UK); Anne Turnbull, Derby Breast Screening Ctr. (UK); Gary Rubin, Brighton Breast Screening Ctr. (UK) . . . . . [7627-11]

2:00 pm: **Visual search characteristics in mammogram reading: SFM vs. FFDM**, Claudia R. Mello-Thoms, Univ. of Pittsburgh (USA) . . . . . [7627-12]

2:20 pm: **Eye-position recording during brain MRI examination to identify and characterize steps of glioma diagnosis**, Christine Cavaro-Ménard, Jean-Yves Tanguy, Ctr. Hospitalier Univ. de Angers (France); Patrick Le Callet, Univ. de Nantes (France). . . [7627-13]

2:40 pm: **Reading a radiologist's mind: monitoring rising and falling interest levels while scanning chest x-rays**, Mohammad A. Alzubaidi, Arizona State Univ. (USA); Ameet Patel, Mayo Clinic (USA); Sethuraman Panchanathan, John A. Black, Jr., Arizona State Univ. (USA) . . . . . [7627-14]

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

7627 continues on page 42

Conference 7628 continued
Advanced PACS-based Imaging Informatics and Therapeutic Applications
Room: California

SESSION 1
Room: California . . . . . .Wed. 1:20 to 3:00 pm

Keynote and Database and Data Mining I

Session Chair: **William W. Boonn,**
Hospital of the Univ. of Pennsylvania

1:20 pm: **Imaging informatics in the era of healthcare reform** *(Keynote Presentation),* Khan M. Siddiqui, Microsoft Corp. (USA) . . . . . [7628-01]

2:00 pm: **An automatic system to detect and extract texts of medical images for de-identification**, Yingxuan Zhu, Syracuse Univ. (USA); Prabhdeep Singh, Khan M. Siddiqui, Michael Gillam, Microsoft Corp. (USA) . . . . . [7628-38]

2:20 pm: **Database schema models of integrated relational databases for biomedical information systems**, Dongkyu Kim, Adil Alaoui, Betty A. Levine, Kevin R. Cleary, Georgetown Univ. Medical Ctr. (USA) . . . . . [7628-02]

2:40 pm: **Managing and querying image annotation and markup in XML**, Fusheng Wang, Tony C. Pan, Emory Univ. (USA); Justin Permar, The Ohio State Univ. (USA); Ashish Sharma, Joel Saltz M.D., Emory Univ. (USA) . . . . . [7628-03]

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

7628 continues on page 42

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 11
Room: Town & Country. . . . .Wed. 3:30 to 5:30 pm

Detectors

Session Chairs: **Katsuyuki Taguchi,** The Johns Hopkins Univ.; **Stephen J. Glick,** Univ. of Massachusetts Medical School

3:30 pm: **Fluoroscopic x-ray demonstrator using a CdTe polycrystalline layer coupled to a CMOS readout chip**, Marc Arques, Sebastien Renet, Andrea Brambilla, Guy Feuillet, Adrien Gasse, Nicolas Billon Pierron, Muriel Jolliot, Lydie Mathieu, Lab. d'Electronique de Technologie de l'Information (France); Pierre Rohr, Trixell (France) . . . . . [7622-55]

3:50 pm: **Pixel electronic noise as a function of position in an active matrix flat panel imaging array**, Mohammad Yeke Yazdandoost, Karim S. Karim, Univ. of Waterloo (Canada). . . . . [7622-56]

4:10 pm: **Multilayer x-ray detector for contrast-enhanced digital subtraction mammography**, Nicholas Allec, Karim S. Karim, Univ. of Waterloo (Canada) . . . . . [7622-57]

4:30 pm: **Gain uniformity in a novel two TFT, current programmed amorphous silicon active pixel sensor for fluoroscopy, chest radiography and mammography tomosynthesis applications**, Nader Safavian, Mohammad Y. Yazdandoost, Dali Wu, Mohammad H. Izadi, Karim S. Karim, John A. Rowlands, Univ. of Waterloo (Canada) . . . . . [7622-58]

4:50 pm: **Effect of scintillator crystal geometry and surface finishing on depth of interaction resolution in PET detectors: Monte Carlo simulation and experimental results using silicon photomultipliers**, Farhad Taghibakhsh, Sunnybrook Health Sciences Ctr. (Canada) and Univ. of Toronto (Canada); Sarah Cuddy, Sunnybrook Health Sciences Ctr. (Canada); Alla Reznic, Lakehead Univ. (Canada) and Thunderbay Health Sciences Ctr. (Canada); John A. Rowlands, Sunnybrook Health Sciences Ctr. (Canada) and Thunder Bay Health Sciences Ctr. (Canada) . . . . . [7622-59]

5:10 pm: **The solid state x-ray image intensifier (SSXII) in single photon counting (SPC) mode,** Andrew T. Kuhls-Gilcrist, Univ. at Buffalo (USA); Amit Jain, Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke Research Ctr. (USA). . . . . [7622-60]

7622 continues on page 43

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 8
Room: Golden West . . . . . .Wed. 3:30 to 5:30 pm

Lung Nodules

Session Chair: **Michael F. McNitt-Gray,** Univ. of California, Los Angeles

3:30 pm: **3D segmentation of lung nodules in CT images based on improved level set method**, Zhifang Min, Renchao Jin, Enmin Song, Hong Liu, Xiaotong Wang, Huazhong Univ. of Science and Technology (China); Chih-Cheng Hung, Southern Polytechnic State Univ. (USA) . . . . . [7624-36]

3:50 pm: **Standard moments based vessel bifurcation filter for computer-aided detection of pulmonary nodules**, Sergei V. Fotin, Anthony P. Reeves, Alberto M. Biancardi, Cornell Univ. (USA); David F. Yankelevitz M.D., Claudia I. Henschke, Weill Cornell Medical College (USA) . . . . . [7624-37]

4:10 pm: **Micro CT based truth estimation of nodule size**, Lisa M. Kinnard, U.S. Army Medical Research and Material Command (USA); Marios A. Gavrielides, Kyle J. Myers, Rongping Zeng, U.S. Food and Drug Administration (USA); Bruce R. Whiting, Washington Univ. in St. Louis (USA); Sheng Lin-Gibson, National Institute of Standards and Technology (USA); Nicholas A. Petrick, U.S. Food and Drug Administration (USA) . . . . . [7624-38]

4:30 pm: **Approximations of noise structures in helical multi-detector CT scans: application to lung nodule volume estimation**, Rongping Zeng, Nicholas A. Petrick, Marios A. Gavrielides, Kyle J. Myers, U.S. Food and Drug Administration (USA) . . . . . [7624-39]

4:50 pm: **A shape-dependent variability metric for evaluating panel segmentations with a LIDC case study**, Stephen A. Siena, Univ. of Notre Dame (USA) and DePaul Univ. (USA); Olga Zinoveva, Harvard Univ. (USA) and DePaul Univ. (USA); Daniela Stan Raicu, Jacob D. Furst, DePaul Univ. (USA); Samuel G. Armato III, The Univ. of Chicago (USA) . . . . . [7624-40]

5:10 pm: **FDA phantom CT database: a resource for the assessment of lung nodule size estimation methodologies and software development,** Marios A. Gavrielides, Lisa M. Kinnard, Kyle J. Myers, Rongping Zeng, Nicholas A. Petrick, U.S. Food and Drug Administration (USA) . . . . . [7624-41]

7624 continues on page 43

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

SESSION 4
Room: San Diego . . . . . .Wed. 3:30 to 5:30 pm

Technology Assessment and Impact

Session Chair: **Weijie Chen,** U.S. Food and Drug Administration

3:30 pm: **Effects of fixed-rate CT projection data compression on perceived and measured CT image quality**, Albert W. Wegener, Samplify Systems Inc. (USA); Naveen Chandra, Robert F. Senzig, GE Healthcare (USA); Yi Ling, Samplify Systems Inc. (USA); Robert J. Herfkens M.D., Stanford Univ. Hospital (USA) . . . . . [7627-15]

3:50 pm: **Flexible endoscope shape visualization and NOTES application**, Elvis C. S. Chen, Lawrence C. Hookey, Randy E. Ellis, Queen's Univ. (Canada) . . . . . [7627-16]

4:10 pm: **Image fade in computed radiography is exacerbated by increased kVp**, Mark F. McEntee, Univ. College Dublin (Ireland); Michelle Foley, Adelaide and Meath Hospital Dublin, Inc. (Ireland) . . . . [7627-17]

4:30 pm: **Optimal processing of isotropic 3D black-blood MRI for accurate estimation of carotid wall thickness**, Bernard Chiu, Niranjan Balu, Li Dong, Chun Yuan, William S. Kerwin, Univ. of Washington (USA) . . . . . [7627-18]

4:50 pm: **Color calibration and color-managed medical displays: does the calibration method matter**, Hans Roehrig, Kelly Rehm, The Univ. of Arizona (USA); Jiahua Fan, GE Healthcare (USA); William J. Dallas, Elizabeth A. Krupinski, The Univ. of Arizona (USA) . . . . . [7627-19]

5:10 pm: **Evaluating segmentation algorithms for diffusion-weighted MR images: a task-based approach,** Abhinav K. Jha, The Univ. of Arizona (USA); Matthew A. Kupinski, College of Optical Sciences, The Univ. of Arizona (USA); Jeffrey J. Rodriguez, Renu M. Stephen, Alison T. Stopeck, The Univ. of Arizona (USA) . . . . . [7627-20]

7627 continues on page 43

Conference 7628 continued
Advanced PACS-based Imaging Informatics and Therapeutic Applications
Room: California

SESSION 2
Room: California . . . . . .Wed. 3:30 to 5:30 pm

Database and Data Mining II

Session Chair: **Steven C. Horii,** The Univ.of Pennsylvania Health System

3:30 pm: **Evaluation of an open source tool for indexing and searching enterprise radiology and pathology reports**, Woojin Kim, William W. Boonn, Hospital of the Univ. of Pennsylvania (USA) . . [7628-04]

3:50 pm: **Minimizing the semantic gap in biomedical content-based image retrieval**, Haiying Guan, Sameer K. Antani, L. Rodney Long, George R. Thoma, National Library of Medicine (USA) . . . . . [7628-05]

4:10 pm: **Semantic annotation of medical images**, Sascha Seifert, Michael Kelm, Siemens AG (Germany); Manuel Moeller, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH (Germany); Saikat Mukherjee, Siemens Corporate Research (USA); Alexander Cavallaro, Universitätsklinikum Erlangen (Germany); Martin Huber, Siemens Corporate Research (Germany); Dorin Comaniciu, Siemens AG (USA) . . . . . [7628-06]

4:30 pm: **A hierarchical SVG image abstraction layer for medical imaging**, Edward Kim, Xiaolei Huang, Gang Tan, Lehigh Univ. (USA); L. Rodney Long, Sameer K. Antani, National Library of Medicine (USA) . . . [7628-07]

4:50 pm: **CBIR for mammograms using medical image similarity**, David Tahmoush, Univ. of Maryland, College Park (USA) . . . . . [7628-08]

5:10 pm: **Exemplary design of a DICOM structured report template for CBIR integration into radiological routine,** Petra Welter, Thomas M. Deserno, Ralph Gülpers, RWTH Aachen (Germany); Berthold B. Wein, Private Practice for Radiology and Nuclear Medicine (Germany); Christoph Grouls, Rolf W. Günther, RWTH Aachen (Germany). . . . . [7628-09]

7628 continues on page 43

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 12
Room: Town & Country . . . Thurs. 8:00 to 9:40 am

CT Algorithms

Session Chairs: **Jinyi Qi,** Univ. of California, Davis; **Guang-Hong Chen,** Univ. of Wisconsin-Madison

8:00 am: **A super resolution technique for clinical multislice CT**, Xin Liu, Lifeng Yu, Armando Manduca, Mayo Clinic (USA); Erik L. Ritman, Mayo Clinic College of Medicine (USA); Cynthia H. McCollough, Mayo Clinic (USA) . . . . . [7622-61]

8:20 am: **Iterative circular conebeam CT reconstruction using fast hierarchical backprojection/reprojection operators**, Jeffrey Brokish, Daniel B. Keesing, Yoram Bresler, InstaRecon, Inc. (USA). . . . . [7622-62]

8:40 am: **Histogram-driven cupping correction (HDCC) in CT**, Yiannis Kyriakou, Michael Meyer, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Robert M. Lapp, CT Imaging GmbH (Germany); Willi A. Kalender, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [7622-63]

9:00 am: **Constrained optimization for CT metal artifact reduction**, Xiaomeng Zhang, Jing Wang, Lei Xing, Stanford Univ. (USA) . . . . . [7622-64]

9:20 am: **Accurate image reconstruction of a small ROI using fully truncated data in differential phase contrast computed tomography,** Pascal Theriault Lauzier, Zhihua Qi, Joseph N. Zambelli, Nicholas B. Bevins, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . . [7622-65]

Poster Award Announcements
Room: Town & Country. Thurs. 9:40 to 9:45 am
The Physics of Medical Imaging conference poster award recipients will be recognized and certificates distributed.

Coffee Break . . . . . .9:40 to 10:10 am

7622 continues on page 44

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 9
Room: Golden West . . . . . Thurs. 8:00 to 9:40 am

Abdominal and Skeleton

Session Chair: **Kensaku Mori,** Nagoya Univ. (Japan)

8:00 am: **Toward the assessment of pelvic organs dynamic with shape descriptors**, Mehdi Rahim, Marc-Emmanuel Bellemare, Univ. Paul Cézanne (France); Nicolas Pirró M.D., Hôpital de la Timone (France) and Univ. de la Méditerranée (France); Rémy Bulot, Univ. Paul Cézanne (France) . . . . . [7624-42]

8:20 am: **Computer aided segmentation of kidneys using locally shape constrained deformable models on CT images**, Marius Erdt, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Georgios Sakas, Technische Univ. Darmstadt (Germany)[7624-43]

8:40 am: **Automatic diagnosis of lumbar disc herniation using shape and appearance features from MRI**, Raja S. Alomari, Jason J. Corso, Vipin Chaudhary, Univ. at Buffalo (USA); Gurmeet S. Dhillon, ProScan Imaging Buffalo (USA) . . . . . [7624-44]

9:00 am: **Content-based image retrieval applied to bone age assessment**, Benedikt Fischer, André Brosig, Petra Welter, Christoph Grouls, Rolf W. Günther, Thomas M. Deserno, RWTH Aachen (Germany)[7624-45]

9:20 am: **Computer-aided diagnosis of lumbar stenosis conditions,** Soontharee Koompairojn, Univ. of Central Florida (USA); Kathleen Hua, Emory Univ. (USA); Kien A. Hua, Univ. of Central Florida (USA); Jintavaree Srisomboon M.D., BMA General Hospital (Thailand). . . . . [7624-46]

Poster Award Announcements
Room: Golden West . . . Thurs. 9:40 to 9:45 am
The Computer-Aided Diagnosis conference poster award recipients will be recognized and certificates distributed.

Coffee Break . . . . . .9:40 to 10:10 am

7624 continues on page 44

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

SESSION 5
Room: San Diego . . . . . Thurs. 8:00 to 9:40 am

Human Performance

Session Chair: **Claudia R. Mello-Thoms,** Univ. of Pittsburgh

8:00 am: **Does reader visual fatigue impact interpretation accuracy?**, Elizabeth A. Krupinski, The Univ. of Arizona (USA); Kevin S. Berbaum, The Univ. of Iowa Hospitals and Clinics (USA) . . . . . [7627-21]

8:20 am: **The varying effects of ambient lighting on low contrast detection tasks**, Mark F. McEntee, Barbara Martin, Univ. College Dublin (Ireland) [7627-22]

8:40 am: **Nuisance levels of noise effects radiologists performance**, Mark F. McEntee, Amina Coffey, John T. Ryan, Aaron O Beirne, Univ. College Dublin (Ireland); Micheal G. Evanoff, The American Board of Radiology (USA); David J. Manning, Univ. of Cumbria (UK); Patrick C. Brennan, The Univ. of Sydney (Australia) . . [7627-23]

9:00 am: **Impact of adaptation time on contrast sensitivity**, Doerte Apelt, MeVis BreastCare Solutions GmbH & Co. KG (Germany); Hans Strasburger, Georg-August-Univ. Göttingen (Germany); Jan Klein, Fraunhofer MEVIS (Germany); Bernhard Preim, Otto-von-Guericke-Univ. Magdeburg (Germany) . . [7627-24]

9:20 am: **Spatial resolution and chest nodule detection: an interesting incidental finding,** Rachel J. Toomey, Mark F. McEntee, John T. Ryan, Anthony Hayes, Univ. College Dublin (Ireland); Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . [7627-25]

Poster Award Announcements
Room: San Diego . . . . . Thurs. 9:40 to 9:45 am
The Image Perception, Observer Performance, and Technology Assessment conference poster award recipients will be recognized and certificates distributed.

Coffee Break . . . . . .9:40 to 10:10 am

7627 continues on page 44

Conference 7628 continued
Advanced PACS-based Imaging Informatics and Therapeutic Applications
Room: California

SESSION 3
Room: California . . . . . Thurs. 8:00 to 9:40 am

Imaging Informatics-based Therapeutic Applications

Session Chair: **Heinz U. Lemke,** Computer Assisted Radiology and Surgery (Germany)

8:00 am: **Support of surgical process modeling by using adaptable software user interfaces**, Thomas Neumuth, Bernadett Kaschek, Michael Czygan, Dayana Goldstein, Gero Strauss M.D., Juergen Meixensberger, Oliver Burgert, Univ. Leipzig (Germany) . . . . . [7628-10]

8:20 am: **Storing data generated by optical surface scanners using DICOM: a white paper**, Oliver Burgert, Thomas Treichel, Michael Gessat, Univ. Leipzig (Germany) . . . . . [7628-11]

8:40 am: **Migration from a prototype ePR for IA-MISS system to alpha version**, Jorge R. Documet, Brent J. Liu, Anh H. Le, The Univ. of Southern California (USA) . . . . . [7628-12]

9:00 am: **Decision support tools for proton therapy ePR: intelligent treatment planning navigator and radiation toxicity tool for evaluating of prostate cancer treatment**, Anh H. Le, Ruchi R. Deshpande, Brent J. Liu, The Univ. of Southern California (USA) . . . . . [7628-13]

9:20 am: **The development of a disease oriented eFolder for multiple sclerosis decision support,** Kevin C. Ma, Paymann Moin, James Reza F. Fernandez, Colin Jacobs, Lilyana Amezcua, Brent J. Liu, The Univ. of Southern California (USA) . . . . . [7628-14]

Poster Award Announcements
Room: California . . . . . Thurs. 9:40 to 9:45 am
The Advanced PACS-based Imaging Informatics and Therapeutic conference poster award recipients will be recognized and certificates distributed.

Coffee Break . . . . . .9:40 to 10:10 am

7628 continues on page 44

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 13
Room: Town & Country. Thurs. 10:10 am to 12:10 pm

CT, Dual Energy and Photon-counting

Session Chairs: **Dianna D. Cody,** The Univ. of Texas M.D. Anderson Cancer Ctr.; **Mats E. Danielsson,** Royal Institute of Technology (Sweden)

10:10 am: **Initial use of fast switched dual energy CT for coronary artery disease**, William Pavlicek, Prasad Panse M.D., Mayo Clinic Scottsdale (USA); Amy K. Hara M.D., Mayo Clinic Scottsdale (Albania); Thomas Boltz, Robert Paden, Mayo Clinic Scottsdale (USA); Paul Licato, Naveen Chandra, Darin R. Okerlund, GE Healthcare (USA); Rahul Bhotika, David A. Langan, GE Global Research (USA) . . . . . [7622-66]

10:30 am: **Multi-material decomposition of dual-energy CT data**, Paulo R. Mendonca, Rahul Bhotika, GE Global Research (USA); Brian W. Thomsen, Paul Licato, Mukta C. Joshi, GE Healthcare (USA) . [7622-67]

10:50 am: **Material decomposition with inconsistent rays (MDIR) for cone-beam dual energy CT**, Clemens Maass, Rainer Grimmer, Marc Kachelrieß, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)[7622-68]

11:10 am: **Head and body CTDIw of dual energy x-ray CT with fast-kVp switching**, Baojun Li, Girijesh Yadava, Jiang Hsieh, GE Healthcare (USA) . . [7622-69]

11:30 am: **A research prototype system for quantum-counting clinical CT**, Steffen G. Kappler, Silke Janssen, Edgar Kraft, Mario Reinwand, Siemens Medical Solutions GmbH (Germany); Francis Glasser, Commissariat à l'Énergie Atomique (France) . [7622-70]

11:50 am: **ChromAIX: high-rate energy-resolving photon-counting ASIC for computed tomography**, Roger Steadman, Christoph Herrmann, Oliver Muelhens, Philips Research (Germany); Dale G. Maeding, Innovative Design (USA); James Colley, Zera Engineering (USA); Ted Firlit, Aeroflex Colorado Springs (USA); Randy P. Luhta, Marc A. Chappo, Brian Harwood, Philips Medical Systems (USA); Doug Kosty, Aeroflex Colorado Springs (USA) . . . . . [7622-71]

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

7622 continues on page 45

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 10
Room: Golden West Thurs. 10:10 am to 12:10 pm

Breast MRI and Tomosynthesis

Session Chair: **Nico Karssemeijer,** Radboud Univ. Nijmegen Medical Ctr. (Netherlands)

10:10 am: **Digital tomosynthesis mammography: computerized detection of microcalcifications in reconstructed breast volume using a 3D approach**, Heang-Ping Chan, Berkman Sahiner, Jun Wei, Lubomir M. Hadjiiski, Chuan Zhou, Mark A. Helvie, Univ. of Michigan (USA) . . . . . [7624-47]

10:30 am: **The reconstruction of microcalcification clusters in digital breast tomosynthesis**, Candy Ho, Chris E. Tromans, Julia A. Schnabel, J. Michael Brady, Univ. of Oxford (UK) . . . . . [7624-48]

10:50 am: **Digital breast tomosynthesis mammgoraphy: feasibility of automated detection of microcalcification clusters on projections views**, Lubomir M. Hadjiiski, Heang-Ping Chan, Jun Wei, Berkman Sahiner, Chuan Zhou, Mark A. Helvie, Univ. of Michigan (USA) . . . . . [7624-49]

11:10 am: **Analysis of breast lesions on contrast-enhanced magnetic resonance images using high-dimensional texture features**, Mahesh B. Nagarajan, Markus B. Huber, Univ. of Rochester Medical Ctr. (USA); Gerda Leinsinger, Ludwig-Maximilians-Univ. München (Germany); Axel Wismueller, Univ. of Rochester Medical Ctr. (USA). . . . . [7624-50]

11:30 am: **Heterogeneity of kinetic curve parameters as indicator for the malignancy of breast lesions in DCE MRI**, Thomas Buelow, Axel Saalbach, Philips Medizin Systeme GmbH (Germany); Rafael Wiemker, Philips Research (Germany); Hans Buurman, Philips Medical Systems International B.V. (Netherlands); Lina Arbash Meinel, Philips Research (USA); Gillian M. Newstead, The Univ. of Chicago (USA). . . . . [7624-51]

11:50 am: **Optimization of a fuzzy C-means approach to determining probability of lesion malignancy and quantifying lesion enhancement heterogeneity in breast DCE-MRI**, Jeremy C. Bancroft Brown, Maryellen L. Giger, Neha Bhooshan, Gillian M. Newstead, Sanaz A. Jansen, The Univ. of Chicago (USA) . . . . . [7624-52]

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

7624 continues on page 45

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

SESSION 6
Room: San Diego . . Thurs. 10:10 am to 12:10 pm

Model Observers

Session Chair: **Matthew A. Kupinski,** College of Optical Sciences, The Univ. of Arizona

10:10 am: **Validation of the NPWE model observer to predict the CDMAM performance**, Valentina Ravaglia, Referenzzentrum Mammographie Berlin (Germany); Barbara Lazzari, Azienda USL 3 Pistoia (Italy) [7627-26]

10:30 am: **The use of steerable channels for detecting asymmetrical signals with random orientations**, Bart Goossens, Ljiljana Plati?a, Ewout Vansteenkiste, Wilfried R. Philips, Univ. Gent (Belgium) . . . . . [7627-27]

10:50 am: **Personalized numerical observer**, Jovan G. Brankov, Illinois Institute of Technology (USA); Petrus H. Pretorius, Univ. of Massachusetts Medical School (USA) . . . . . [7627-28]

11:10 am: **Using channelized Hotelling observers to quantify temporal effects of medical liquid crystal displays on detection performance**, Ljiljana Platiša, Bart Goossens, Ewout Vansteenkiste, Univ. Gent (Belgium); Aldo Badano, U.S. Food and Drug Administration (USA); Wilfried R. Philips, Univ. Gent (Belgium) . . . . . [7627-29]

11:30 am: **Rapid performance evaluation for ideal FROC and AFROC observers**, Gene R. Gindi, Bin Liu, Stony Brook Univ. (USA); Parmeshwar K. Khurd, Siemens Corporate Research (USA) . . . . . [7627-30]

11:50 am: **Model observers for complex discrimination tasks: assessment of multiple coronary stent placements**, Sheng Zhang, Craig K. Abbey, Univ. of California, Santa Barbara (USA); Xiaolin Da, James S. Whiting, Cedars-Sinai Medical Ctr. (USA); Miguel P. Eckstein, Univ. of California, Santa Barbara (USA) . . . . . [7627-31]

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

7627 continues on page 45

Conference 7628 continued
Advanced PACS-based Imaging Informatics and Therapeutic Applications
Room: California

SESSION 4
Room: California . . . Thurs. 10:10 am to 12:10 pm

System Integration and Visualization I: Decision Support

Session Chair: **Adil Alaoui,** Georgetown Univ. Medical Ctr.

10:10 am: **Multi-site evaluation of a computer aided detection (CAD) algorithm for small acute intra-cranial hemorrhage and development of a stand-alone CAD system ready for deployment in a clinical environment**, Ruchi R. Deshpande, Kevin C. Ma, Joon Lee, Tao Chan, Brent J. Liu, Han K. Huang, The Univ. of Southern California (USA) . . . . . [7628-15]

10:30 am: **Computer-aided bone age assessment for ethnically diverse older children using integrated fuzzy logic system**, Kevin C. Ma, Paymann Moin, Brent J. Liu, The Univ. of Southern California (USA). [7628-16]

10:50 am: **Quality control of diffusion weighted images**, Zhexing Liu, Yi Wang, The Univ. of North Carolina at Chapel Hill (USA); Guido Gerig, Sylvain Gouttard, Ran Tao, Thomas Fletcher, The Univ. of Utah (USA); Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [7628-17]

11:10 am: **An automatic quantification system for MS lesions with integrated DICOM structured reporting (DICOM-SR) for implementation within a clinical environment**, Colin Jacobs, Kevin C. Ma, Paymann Moin, Brent J. Liu, The Univ. of Southern California (USA) . . . . . [7628-18]

11:30 am: **A proxy of DICOM services**, Luís S. Ribeiro, Carlos M. Azevedo Costa, José L. Oliveira, Univ. de Aveiro (Portugal) . . . . . [7628-19]

11:50 am: **A practical fast method for medical imaging transmission based on the DICOM protocol**, Rouzbeh Maani, Sergio Camorlinga, Neil Arnason, Rasit Eskicioglu, Univ. of Manitoba (Canada) . . . . . [7628-20]

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

7628 continues on page 45

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 14
Room: Town & Country . . . Thurs. 1:20 to 3:00 pm

CT Algorithms and Compressed Sensing

Session Chairs: **Guang-Hong Chen,** Univ. of Wisconsin-Madison; **Bruce R. Whiting,** Washington Univ. in St. Louis

1:20 pm: **The dependence of image quality on the number of high and low kVp projections in dual energy CT using the prior image constrained compressed sensing (PICCS) algorithm**, Timothy P. Szczykutowicz, Univ. of Wisconsin-Madison (USA); Jiang Hsieh, GE Healthcare (USA); Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . . [7622-72]

1:40 pm: **Performance study of the temporal resolution improvement using prior image constrained compressed sensing (TRI-PICCS)**, Jie Tang, Univ. of Wisconsin-Madison (USA); Jiang Hsieh, GE Healthcare (USA); Guang-Hong Chen, Univ. of Wisconsin-Madison (USA). . . . . [7622-73]

2:00 pm: **Compressive sensing of images with a priori known spatial support**, Joshua D. Trzasko, Armando Manduca, Mayo Clinic College of Medicine (USA) . . . . . [7622-74]

2:20 pm: **Direct pharmacokinetic parameter estimation using spectral weighted least squares**, Andrew McLennan, J. Michael Brady, Univ. of Oxford (UK) . . . . . [7622-75]

2:40 pm: **Noise properties as a function of energy of monoenergetic images from DECT used for attenuation correction with PET/CT and SPECT/CT**, Ting Xia, Adam M. Alessio, Paul E. Kinahan, Univ. of Washington (USA) . . . . . [7622-76]

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

7622 continues on page 46

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 11
Room: Golden West . . . . . Thurs. 1:20 to 3:00 pm

Brain Image Analysis

Session Chair: **Marleen de Bruijne,** Copenhagen Univ. (Denmark)

1:20 pm: **Computer-aided classification of patients with dementia of Alzheimer's type based on cerebral blood flow determined with arterial spin labeling technique**, Yasuo Yamashita, Hidetaka Arimura, Takashi Yoshiura M.D., Akira Monji, Tomoyuki Noguchi, Fukai Toyofuku, Masafumi Oki, Yasuhiko Nakamura, Hiroshi Honda, Kyushu Univ. (Japan) . . . . . [7624-53]

1:40 pm: **Predictive modeling of neuroanatomic structures for brain atrophy detection**, Xintao Hu, Lei Guo, Jingxin Nie, Gang Li, Northwestern Polytechnical Univ. (China); Tianming Liu, The Univ. of Georgia (USA) . . . . . [7624-54]

2:00 pm: **Spatial prior in SVM-based classification of brain images**, Remi Cuingnet, Marie Chupin, Univ. Pierre et Marie Curie (France) and INSERM (France); Habib Benali, Univ. Pierre et Marie Curie (France); Olivier Colliot, Univ. Pierre et Marie Curie (France) and INSERM (France) . . . . . [7624-55]

2:20 pm: **Model-free functional MRI analysis for detecting low-frequency functional connectivity in the human brain**, Axel Wismueller, Oliver Lange, Univ. of Rochester (USA); Dorothee P. Auer, The Univ. of Nottingham (UK); Gerda Leinsinger, Ludwig-Maximilians-Univ. München (Germany). . . . . [7624-56]

2:40 pm: **Supervised method to build an atlas database for multi-atlas segmentation-propagation**, Kaikai Shen, Australian e-Health Research Ctr. (Australia) and Univ. de Bourgogne (France); Pierrick T. Bourgeat, Jurgen E. Fripp, Australian e-Health Research Ctr. (Australia); Fabrice Mériaudeau, Univ. de Bourgogne (France); Oscar Acosta Tamayo, Australian e-Health Research Ctr. (Australia); Gael Chetelat, The Univ. of Melbourne (Australia); Victor L. Villemagne, The Univ. of Melbourne (Australia) and The Mental Health Research Institute (Australia); David Ames, The Univ. of Melbourne (Australia); Kathryn Ellis, The Mental Health Research Institute (Australia) and The Univ. of Melbourne (Australia); Colin Masters, The Mental Health Research Institute (Australia) and The Univ. of Melbourne (Australia); Christopher Rowe, The Univ. of Melbourne (Australia); Olivier Salvado, Australian e-Health Research Ctr. (Australia) . . . . . [7624-57]

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

7624 continues on page 46

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

SESSION 7
Room: San Diego . . . . . Thurs. 1:20 to 3:00 pm

ROC and Decision Metrics

Session Chair: **Craig K. Abbey,** Univ. of California, Santa Barbara

1:20 pm: **Influencing clinicians and healthcare managers: can ROC be more persuasive?**, Sian Taylor-Phillips, Loughborough Univ. (UK); Matthew G. Wallis, Addenbrooke's Hospital (UK); Alison Duncan, Univ. Hospitals Coventry and Warwickshire NHS Trust (UK); Alastair G. Gale, Loughborough Univ. (UK) . . . . . [7627-32]

1:40 pm: **Behavior of the decision variables of the three-class ideal observer for univariate trinormal data**, Darrin C. Edwards, Charles E. Metz, The Univ. of Chicago (USA) . . . . . [7627-33]

2:00 pm: **Therapy operating characteristic (TOC) curves and their application to the evaluation of segmentation algorithms**, Harrison H. Barrett, College of Optical Sciences, The Univ. of Arizona (USA); Stefan P. Mueller, Univ.-Klinik Essen (Germany); Donald W. Wilson, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [7627-34]

2:20 pm: **Comparisons of binary ROC curve, three-class 2D ROC surface and three-class 5D ROC hypersurface**, Xin He, Eric C. Frey, The Johns Hopkins Univ. (USA) . . . . . [7627-35]

2:40 pm: **Modality ordering consistency between ROC and JAFROC**, Dev P. Chakraborty, Univ. of Pittsburgh (USA); Federica Zanca, Univ. Hospital Gasthuisberg (Belgium) . . . . . [7627-36]

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

7627 continues on page 46

Conference 7628 continued
Advanced PACS-based Imaging Informatics and Therapeutic Applications
Room: California

SESSION 5
Room: California . . . . . Thurs. 1:40 to 3:00 pm

System Integration and Visualization II: Translational Research and Large-scale Collaborations

Session Chair: **Janice C. Honeyman-Buck,** Univ. of Florida

1:40 pm: **Framework design and development of an informatics architecture for a systems biology approach to traumatic brain injury**, Adil Alaoui, Dongkyu Kim, Betty A. Levine, Howard J. Federoff, Kevin R. Cleary, Timothy R. Mhyre, Georgetown Univ. Medical Ctr. (USA) . . . . . [7628-21]

2:00 pm: **An investigator-centric data model for organizing multimodality images and structured reports within small animal imaging facilities**, Jasper Lee IV, Alparslan Gurbuz, Brent J. Liu, The Univ. of Southern California (USA) . . . . . [7628-23]

2:20 pm: **ePR for data grid breast imaging: design and specifications**, Jorge R. Documet, Brent J. Liu, The Univ. of Southern California (USA) . . . . . [7628-24]

2:40 pm: **Pitfalls in radiology informatics when deploying a enterprise solution**, Lars Lindsköld, Karolinska Institutet (Sweden) and Västra Götalandsregionen (Sweden); Mikael Wintell, Västra Götalandsregionen (Sweden); Nina Lundberg, Karolinska Institutet (Sweden) and SLL, Stockholm (Sweden) . . . . . [7628-25]

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

7628 continues on page 46

Conference 7622 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 15
Room: Town & Country. . . Thurs. 3:30 to 5:30 pm

Cone Beam CT
Session Chairs: **Jeffrey H. Siewerdsen,** The Johns Hopkins Univ.; **Michael Grass,** Philips Research (Germany)

3:30 pm: **Low dose, low noise, and high resolution volume of interest (VOI) imaging in C-arm flat-detector CT**, Daniel Kolditz, Yiannis Kyriakou, Willi A. Kalender, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [7622-77]

3:50 pm: **4D-DSA and fluoroscopy: preliminary implementation**, Charles A. Mistretta, Erick Oberstar, Brian Davis, Ethan Brodsky, Charles M. Strother, Univ. of Wisconsin-Madison (USA). . . . . [7622-78]

4:10 pm: **Image reconstruction in cardiac interventions using a small flat-panel detector**, Pascal Theriault Lauzier, Jie Tang, Zhihua Qi, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA)[7622-79]

4:30 pm: **Investigating the dose distribution in the uncompressed breast with a dedicated CT mammotomography system**, Dominic J. Crotty, Duke Univ. Medical Ctr. (USA) and Duke Univ. (USA); Samuel L. Brady, Duke Univ. Medical Ctr. (USA) and Duke Univ. (USA) and Duke Univ. Health System (USA); D'Vone C. Jackson, Duke Univ. (USA) and Duke Univ. Medical Ctr. (USA); Greta I. Toncheva, Duke Univ. Medical Ctr. (USA) and Duke Univ. Health System (USA); Colin E. Anderson, Duke Univ. (USA) and Duke Univ. Health System (USA); Terry T. Yoshizumi, Duke Univ. Health System (USA) and Duke Univ. Medical Ctr. (USA); Martin P. Tornai, Duke Univ. Medical Ctr. (USA) and Duke Univ. (USA) . . . . . [7622-80]

4:50 pm: **Optimization of system parameters for modulator design in x-ray scatter correction using primary modulation**, Hewei Gao, Stanford Univ. (USA); Lei Zhu, Georgia Institute of Technology (USA); Rebecca Fahrig, Stanford Univ. (USA) . . . . . [7622-81]

5:10 pm: **Nanotechnology enabled desktop micro-CT system for 4D high-resolution micro-CT of mouse heart**, Guohua Cao, Laurel M. Burk, Yueh Z. Lee, Xiomara Calderon-Colon, Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill (USA) . . [7622-82]

Conference 7624 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 12
Room: Golden West . . . . . Thurs. 3:30 to 5:10 pm

Lung Imaging
Session Chair: **Samuel G. Armato III,** The Univ. of Chicago

3:30 pm: **Reproducibility of airway wall thickness measurements**, Michael Schmidt, Jan-Martin Kuhnigk, Stefan Krass, Heinz-Otto Peitgen, Fraunhofer MEVIS (Germany) . . . . . [7624-58]

3:50 pm: **Automated volumetric segmentation method for computerized-diagnosis of pure nodular ground-glass opacity in high-resolution CT**, Wooram Son, Sang-Joon Park, Chang Min Park, Jin Mo Goo, Jong-Hyo Kim, Seoul National Univ. College of Medicine (Korea, Republic of). . . . . [7624-59]

4:10 pm: **Analysis of computer quantification of emphysema distribution and measurement variability using low-dose whole-lung CT scans from a large cohort**, Brad M. Keller, Anthony P. Reeves, Cornell Univ. (USA); David F. Yankelevitz, Claudia I. Henschke, Weill Cornell Medical College (USA) . . . . . [7624-60]

4:30 pm: **Semi-automated method to measure pneumonia severity in mice through computed tomography (CT) scan analysis**, Ansh Johri, Daniel M. Schimel, Audrey C. Noguchi, Lewis L. Hsu, National Institutes of Health (USA) . . . . . [7624-61]

4:50 pm: **Quantitative analysis of airway abnormalities in CT**, Jens Petersen, Univ. of Copenhagen (Denmark); Pechin Lo, Mads Nielsen, Copenhagen Univ. (Denmark); Goutham Edula, AstraZeneca R&D Lund (Sweden); Haseem Ashraf, Asger Dirksen, Amtssygehuset i Gentofte (Denmark); Marleen de Bruijne, Copenhagen Univ. (Denmark) . . . . . [7624-62]

Conference 7627 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

SESSION 8
Room: San Diego . . . . . Thurs. 3:30 to 5:30 pm

Characterization and Training
Session Chair: **Kevin S. Berbaum,** The Univ. of Iowa Hospitals and Clinics

3:30 pm: **The effect of image interpretation training on the fracture recognition performance of radiographers**, Mark F. McEntee, Naomi Bergin, Univ. College Dublin (Ireland) . . . . . [7627-37]

3:50 pm: **User modeling for improved computer-aided training in radiology: concepts and preliminary experiments**, Maciej A. Mazurowski, Joseph Y. Lo, Georgia D. Tourassi, Duke Univ. (USA) . . . . . [7627-38]

4:10 pm: **A novel methodology for display 2D MTF evaluation: the pixel spread function (PxSF)**, Arnout Vetsuypens, Cédric Marchessoux, Tom R. Kimpe, Barco N.V. (Belgium) . . . . . [7627-39]

4:30 pm: **Mammographic feature type and reader variability by occupation: an ROC study**, Hazel J. Scott, Alastair G. Gale, Loughborough Univ. (UK) . . . . . [7627-40]

4:50 pm: **Towards validation of a 3D structured background model for breast imaging**, Ingrid S. Reiser, Kevin Little, Robert M. Nishikawa, The Univ. of Chicago (USA) . . . . . [7627-41]

5:10 pm: **Fuzzy description of skin lesions**, Nikolaos Laskaris, Lucia Ballerini, Robert B. Fisher, Ben Aldridge, Jonathan Rees, The Univ. of Edinburgh (UK) . [7627-42]

Conference 7628 continued
Advanced PACS-based Imaging Informatics and Therapeutic Applications
Room: California

SESSION 6
Room: California . . . . . Thurs. 3:30 to 5:30 pm

Advanced PACS-based Workflow
Session Chair: **Brent J. Liu,** The Univ. of Southern California

3:30 pm: **Transforming the radiological interpretation process: TRIP™, Where are we now?**, Janice C. Honeyman-Buck, Society for Imaging Informatics in Medicine (USA) . . . . . [7628-26]

3:50 pm: **Analyzing how radiologists recommend follow-up: towards development of an automated tracking and feedback system for clinical, laboratory and radiologic studies**, Tessa S. Cook, Jason N. Itri, William Boonn, The Univ. of Pennsylvania Health System (USA); Woojin Kim, Hosptial of the Univ. of Pennsylvania (USA) . . . . . [7628-27]

4:10 pm: **Minerva: using a software program to improve resident performance during independent call**, Jason N. Itri, Regina O. Redfern, Tessa S. Cook, Mary H. Scanlon, The Univ. of Pennsylvania Health System (USA) . . . . . [7628-28]

4:30 pm: **A zero-footprint 3D visualization system utilizing mobile display technology for timely evaluation of stroke patients**, Brent J. Liu, Meng Law, Kevin Wang, Jasper Lee IV, Gilbert Whang, The Univ. of Southern California (USA) . . . . . [7628-29]

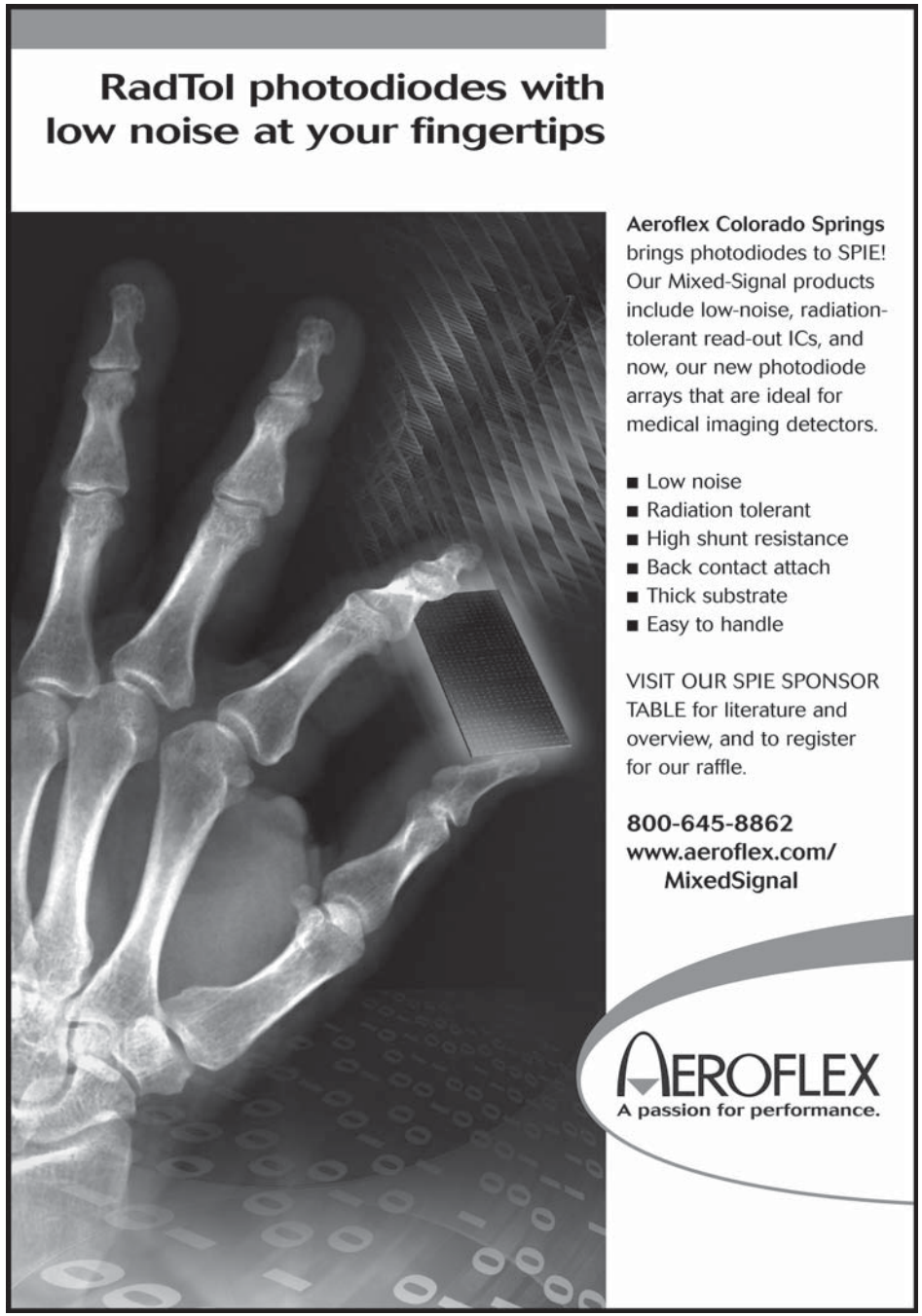
4:50 pm: **Parallel image registration with a thin-client interface**, Ganesh Saiprasad, Yi-Jung Lo, William Plishker, Peng Lei, Tabassum Ahmad, Raj Shekhar, Univ. of Maryland Medical Ctr. (USA) . . . . . [7628-30]

5:10 pm: **Performance evaluation for volumetric segmentation of multiple sclerosis lesions using MATLAB and computing engine in the graphical processing unit (GPU)**, Anh H. Le, Kevin C. Ma, Colin Jacobs, Brent J. Liu, The Univ. of Southern California (USA) . . . . . [7628-31]

C

D

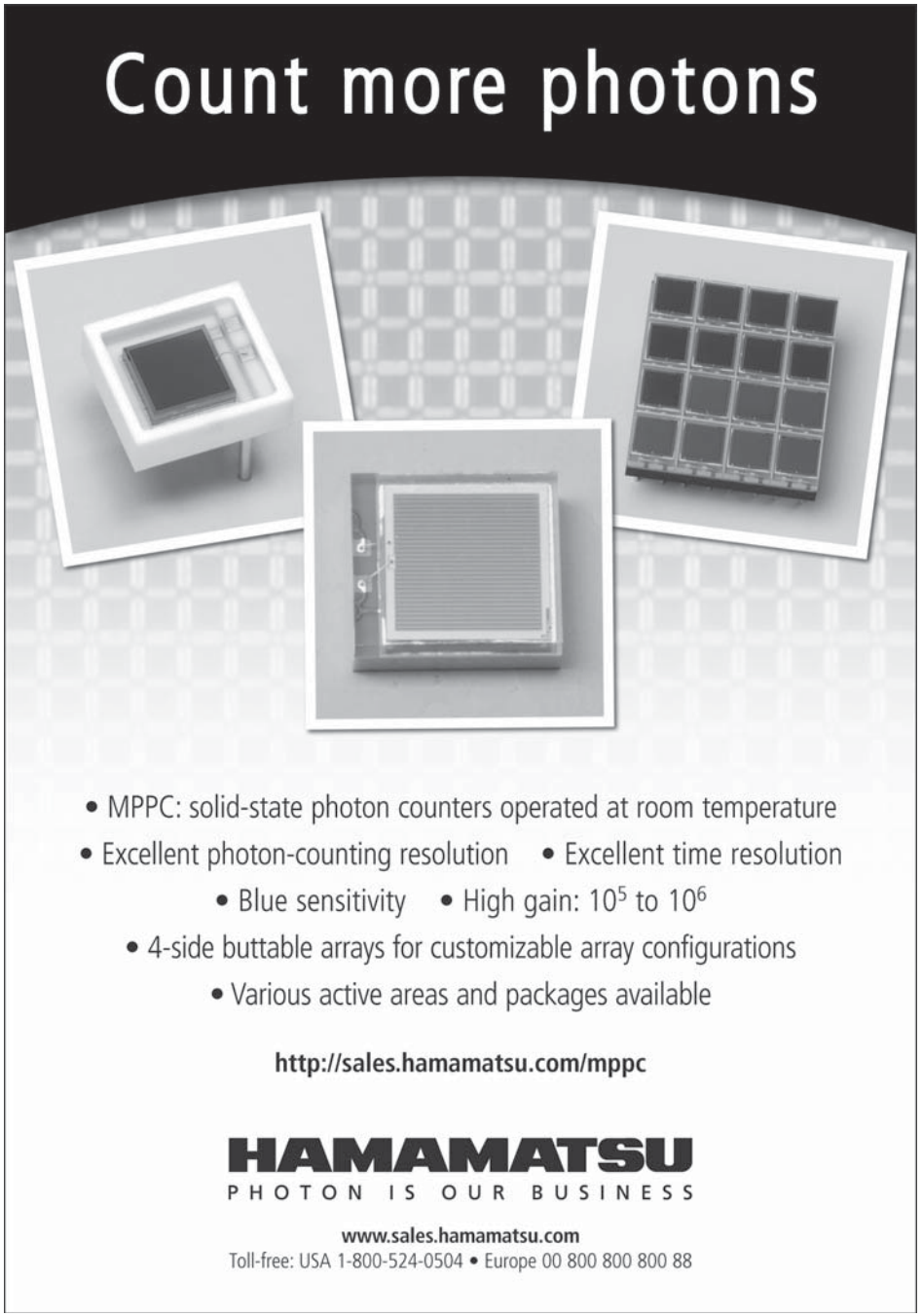
E



F

G

H



I

J

K

L

OpenXi

Opening access to real-time x-ray images for independent research and development

Our mission is to support development of new on-line applications and empower independent researchers by providing access to live, unprocessed x-ray images.

Working with health-care and medical imaging organizations we are developing:

Minimally intrusive, low latency interfaces for tapping into real-time digital radiographic images data from detectors and x-ray machines.

Python-based framework and libraries for hardware accelerated on-line image processing.

For more information please visit:

OpenXi.com

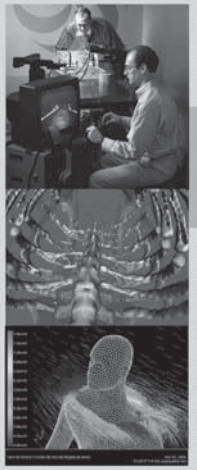
E-mail: info@openxi.com

M

N

Create
Explore
Innovate
Creare®

(Krē • är' • ē: from the Latin root "to create")



Creare Inc., established in 1961, is a small, privately held research and development firm located in Hanover, NH. Creare engineers work in small project teams on a variety of cutting edge problems in:

• Biomedical • Controls
• Electronics • Optics

Our work is inherently interdisciplinary and demands the ability to understand and integrate concepts from different engineering disciplines including: numerical analysis, thermal and fluids, electronics and sensors, and biomedical engineering. Successful candidates have the opportunity to conceive and lead projects in areas of their choosing, leading to long-term leadership/ownership opportunities. We seek candidates with recently completed doctoral degrees and strong academic credentials, as well as candidates with masters degrees and several years of relevant experience. Candidates must have outstanding written and verbal communication skills.

Creare is located two hours northwest of Boston off I-89. Our location on the Connecticut River, bordering Vermont, offers a professional work environment in a rural setting. Excellent schools and four-season living in a beautiful New England setting offer a quality-of-life alternative.

Please send cover letter and resume (summarizing your professional interests and longer-term career goals) to:

www.creare.com
We are an equal opportunity employer F/M/D/V

Creare Inc.
Attn: Engineer Recruiter
P.O. Box 71, Hanover, NH 03755

O

P

Q

R

S

T

U

V

W

X

Y

Z

Registration

Onsite Registration Hours

Atlas Foyer

Saturday 13 February	7:30 am to 4:00 pm
Sunday 14 February	7:15 am to 5:00 pm
Monday 15 February	7:30 am to 4:00 pm
Tuesday 16 February	7:30 am to 4:00 pm
Wednesday 17 February	7:30 am to 4:00 pm
Thursday 18 February	7:30 am to 1:30 pm

Full Conference Registration Includes:

- Choice of conference proceedings: CD-ROM or Printed
- Access to all presentations, panel discussions, and technical events
- Access to the poster sessions
- Poster Receptions and coffee breaks
- Hosted Lunches (Sunday–Thursday)
- Courses are not included.

Course and Workshop Registration

Courses and workshops are priced separately. Course-only registration includes your selected course(s), course notes, coffee breaks, and admittance to the exhibition. Prices increase $50 USD after 29 January 2010.

Business Services

Business Center

The business center can make copies, print documents from your laptop or storage device, and provides small package Fedex shipping, packing supplies, color copying services, fax services and office supplies. Prices for services are posted onsite.

Message Center

The SPIE Message Center telephone number is **1-619-752-7743**. Messages will be taken during registration hours Saturday through Thursday. Please check the message board at the message center near SPIE registration daily to receive your messages.

Policies

Audio, Video, Digital Recording Policy

In the Meeting Rooms and Poster Sessions: For copyright reasons, recordings of any kind are strictly prohibited without prior written consent of the presenter in any conference session, course or of posters presented. Each presenter being taped must file a signed written consent form. Individuals not complying with this policy will be asked to leave a given session and asked to surrender their film or recording media. Consent forms are available at the SPIE Registration Desk.

Laser Pointer Safety Information

SPIE supplies tested and safety approved laser pointers for all conference meeting rooms, and for course rooms if instructors request one. For safety reasons, SPIE requests that presenters use our provided laser pointers available in each meeting room.

If using your personal laser pointer:

- Please have it tested at your facility to make sure it has <5 mW power output. Laser pointers in Class II and IIIa (<5 mW) are eye safe if power output is correct - but don't automatically trust the labeling. Commercially available laser pointers, red or green (or any color), could be incorrectly labeled as to their wavelength and power output.
- We require that you to come to the Audiovisual Desk onsite and test you pointer on our power meter. If the pointer fails the safe power level you may not use the pointer at the conference. You will be required to sign a waiver releasing SPIE of any liability for use of potentially non-safe laser pointers.
- Use of a personal laser pointer at an SPIE event represents user's acceptance of liability for use of a non-SPIE supplied laser pointer device. Misuse of any laser pointer could lead to eye damage. In California, it is a criminal misdemeanor to shine a laser pointer at individuals "who perceive they are at risk."

Unsecured Items

Personal belongings such as briefcases, backpacks, coats, book bags, etc. should not be left unattended in meeting rooms or public areas. These items will be subject to removal by security upon discovery.

Author/Presenter Information

SPIE Receipts, Badge Corrections, Cashier

Location: Atlas Foyer

Receipts - Preregistered attendees who did not receive a receipt prior to the meeting may obtain a new copy of their registration receipt onsite at the SPIE Registration Desk.

Badge Corrections - Attendees who need a correction to their badge information onsite may do so at the SPIE Registration Desk. Please have your badge removed from the badge holder, marked with your changes, and ready to hand to the attendant upon approaching the counter.

Cashier Station - If you are paying by cash or check as part of your onsite registration, wish to add a course, workshop, or special event requiring payment, or have questions regarding your registration, please see the onsite cashier at the Cashier station in the registration area.

Speaker Check In Desk / Audiovisual Preview Station

Location: Terrace Salon I

Saturday . . . . . 7:30 am to 5:00 pm

Sunday through Thursday. . . . . 7:30 am to 5:00 pm

SPIE will provide computers in all Medical Imaging conference rooms. Authors are required to check in at the Speakers Check In Room by 5pm of the day prior to presentation to submit oral presentations and confirm compatibility. Oral presentations are best presented in PowerPoint or Adobe Acrobat PDF formats. Presentations can be accepted on pen drive, CD, or directly from your laptop.

Course Materials Desk

Location: Atlas Foyer

SPIE Registration Area

Open during Registration hours

If you have registered to attend a course, please stop by the Registration Desk AFTER you pick up your badge. Your badge kit will include a course ticket allowing you to obtain your course notes.

Town and Country Resort & Convention Center

500 Hotel Circle North
San Diego, CA 92108

Hotel Phone:
619/291-7131

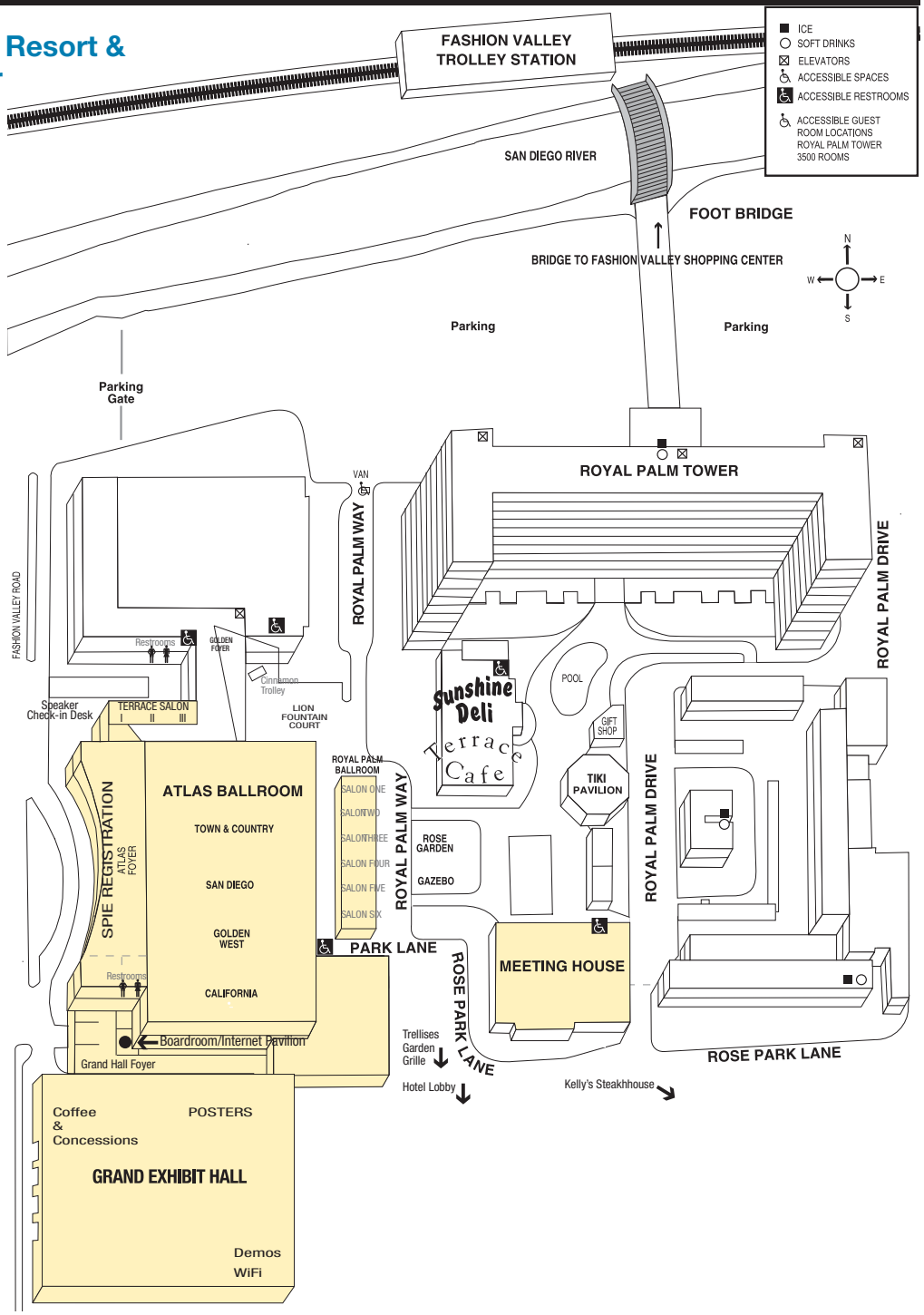
Parking

Parking at the Town and Country Resort & Convention Center for Hotel Guests and Local Guests is complimentary.

Hertz

Hertz Car Rental has been selected as the official car rental agency for this Symposium. To reserve a car, identify yourself as a Medical Imaging Conference attendee using the Hertz Meeting Code CV# 029B0013. Discount rates apply for round-trip rentals up to one week prior through one week after the conference dates. Note: When booking from International Hertz locations, the CV # must be entered with the letters CV before the number, i.e. CV029B0013.

- In the United States call 1-800-654-2240.



Food and Beverage Services

Coffee Breaks

Complimentary coffee will be served twice each day of the conference.

Saturday . . . . . 10:00 am and 3:00 pm
Location: Rose Garden Fountain

Sunday . . . . . 9:30 am and 3:00 pm
Location: Rose Garden Fountain and Grand Exhibit Hall

Monday . . . . . 9:30 am and 3:00 pm
Location: Rose Garden Fountain and Grand Exhibit Hall

Tuesday - Wednesday . . . . . 9:40 am and 3:00 pm
Location: Grand Exhibit Hall

Thursday . . . . . 9:40 am and 3:00 pm
Location: Grand Exhibit Hall

Lunches

SPIE hosted lunches will be served Sunday through Thursday from 12:10 pm to 12:50 pm. Lunches will be served in the Lion Fountain Court and Grand Exhibit Hall, depending on the weather. Complimentary tickets for lunches will be included in registration packets for full-conference registrants.

Student attendees will receive a complimentary lunch ticket for Monday, Tuesday and Wednesday. Students may purchase lunch tickets from the cashier at the SPIE Registration Desk if tickets are available starting 10 minutes after the last conference room breaks, usually about 12:20-12:30pm. Attendees need to make their own lunch arrangements on Saturday.

Onsite Services

SPIE Marketplace & Membership Services

Location: Atlas Foyer

The SPIE Marketplace is your source for the latest SPIE Press books, Proceedings, and Educational and Professional Development materials. Become a SPIE Member at the Marketplace and get discounts on these products.

Internet Pavilion

Location: Grand Exhibit Hall Foyer

Sunday . . . . . Noon to 9:00 pm
Monday through Wednesday . . . . . 7:00 am to 9:00 pm
Thursday . . . . . 7:00 am to 1:30 pm

The Pavilion will be equipped with multiple workstations allowing attendees to access their internet email during the conference and several Ethernet connections to use with your personal laptop. There will be a 10-minute time limit per each person's internet session.

Wireless Internet Access

Guest rooms at Town and Country Resort are equipped with high speed wireless internet, available at a special discounted rate of $9.95 for 24 hours for attendees to the SPIE Medical Imaging Symposium.

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

There will also be complimentary high-speed wireless internet access in the Grand Exhibit Hall, look for signs to the designated area.

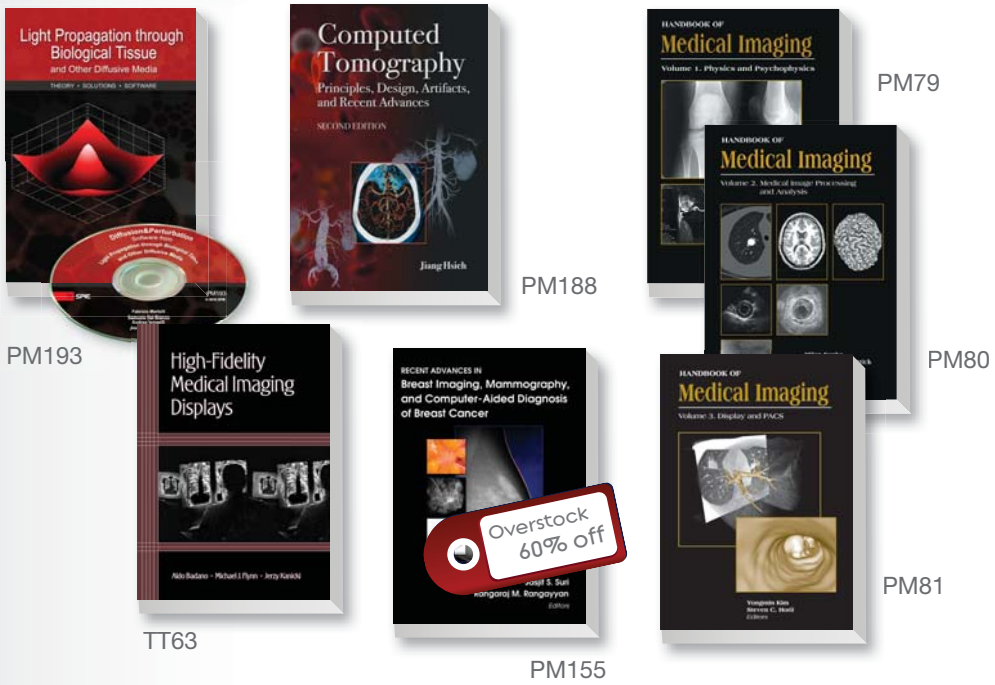
SPIE iPhone App
Get it at the app store

SPIE

SPIE Medical Imaging

Visit the Marketplace

SPIE Press



PM193 PM188 PM79 PM80 TT63 PM155 PM81

SPIE Journals

Journal of Electronic Imaging

Journal of Biomedical Optics

CDs

- Top 100 papers
- Journals
- Proceedings
- Selected Papers
- Professional Development

Join SPIE

Join SPIE or renew your Membership today.

Come talk with us about the offerings available and how SPIE can help you advance your career and research.

SPIE
Connecting minds. Advancing light.

Notes

SPIE Digital Library
SPIEDigitalLibrary.org

Research driving technological innovation

The world's largest collection of optics and photonics research

Conference Proceedings
Available in 2–4 weeks

SPIE Medical Imaging

SPIE Journals

Journal of Electronic Imaging

Journal of Biomedical Optics

eBooks
Ask your librarian for access

SPIE
Connecting minds. Advancing light.

SPIE Medical Imaging

Attend SPIE Medical Imaging 2011

Where the future is on display




Coast to coast every other year

2011 **12-17 February**	Orlando, Florida, USA Disney's Coronado Springs Resort
2012 4-9 February	San Diego, California, USA Town and Country Resort & Convention Center
2013 9-14 February	Orlando, Florida, USA Disney's Coronado Springs Resort

spie.org/mi

SPIE
Connecting minds. Advancing light.